R15

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What is quarter wave monopole?	[2]
b)	Write the relation between effective aperture and Directivity.	[3]
c)	Draw the structure of helical antenna with a coaxial line feed.	[2]
d)	What is the spacing between elements of Yagi - Uda antenna	[3]
e)	What are the disadvantages of lens antennas?	[2]
f)	Write short notes on horn antenna.	[3]
g)	What is the main disadvantage of binomial array?	[2]
h)	Draw uniform linear array.	[3]
i)	Derive the expression for refractive index of ionosphere.	[2]
j)	Explain the concept of super refraction.	[3]

PART - B

(50 Marks)

2.a) Derive an expression for the radiation resistance of a Half wave dipole antenna.
 b) What is meant by the effective area of an antenna? How is it related to the gain?   [5+5]

OR

3. Discuss about loop antenna. What are the disadvantages of loop antenna? What are applications loop antennas?   [10]

4.a) Write short notes on Yagi-Uda array Antenna and its applications, advantages and drawbacks.
 b) Discuss different types of horn antennas with neat sketches.   [7+3]

OR

5. With neat sketch, explain the operation of helical antenna.   [10]

6.a) Explain the geometry of paraboloidal reflector with neat diagram.
 b) Calculate the 3dB beam width and power gain of a parabolic antenna at a frequency of 1.6GHz with 2.4 meter diameter and 48% antenna efficiency?   [6+4]

OR

7.a) Compare UHF and VHF antennas.
 b) What are the various feeds used in reflectors?   [7+3]

8.a) Discuss broadside array and end fire array with neat diagrams.
 b) Derive expression for antenna array factor. [7+3]

OR

9.a) An end fire array consisting of several half wave length long isotropic radiators having directive gain of 30. Find the length of array for broad side antenna?
 b) A broadside array of identical antennas consists 8 isotropic radiators separated by distance $\lambda/2$. Find radiation field in a plane containing the line of array showing directions of maxima and null. [7+3]

10. Briefly describe the following terms connected with sky-wave propagation:
 a) Virtual height
 b) Critical frequency
 c) Maximum usable frequency
 d) Skip distance. [10]

OR

11.a) Describe the troposphere and explain how ducts can be used for microwave Propagation.
 b) Write a short note on Multi-hop propagation. [6+4]

---oo0oo---

Code No: 125DT

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPUTER NETWORKS
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Write the advantages of optical fiber over twisted-pair and coaxial cables.   [2]
  b) What are the advantages of having layered architecture?   [3]
  c) Briefly explain the difference between switch and router.   [2]
  d) Sketch the Manchester encoding for the bit stream: 0001110101.   [3]
  e) Give the advantages of hierarchical routing.   [2]
  f) Differences between CO and CL.   [3]
  g) Explain DHCP.   [2]
  h) What are the functions of ICMP?   [3]
  i) What is the architecture of WWW?   [2]
  j) Explain the differences between POP3 and IMAP.   [3]

PART - B

(50 Marks)

2.a) Compare and contrast the OSI and TCP/IP reference models.
  b) What are the different types of error detection methods? Explain the CRC error detection technique using generator polynomial x^4+x^3+1 and data 11100011.   [5+5]
OR
3.a) Discuss about the various transmission media available at the physical layer.
  b) Explain about GBN Sliding Window Protocol.   [5+5]

4.a) Explain the differences between the switching methods.
  b) Elucidate the CSMA schemes.   [5+5]
OR
5.a) Illustrate the frame structure of IEEE 802.3.
  b) Give a detail note on the ALOHA protocols.   [5+5]

6.a) Elucidate Distance Vector Routing Algorithm with example.
  b) Describe the problem and solutions associated with distance vector routing.   [5+5]
OR
7.a) Explain the general principles of congestion control.
  b) Describe congestion control in datagram subnets.   [5+5]

8.a) Elucidate the special IP addresses used in internet.
  b) Discuss the significance and the operation of NAT.   [5+5]

OR

9.a) Illustrate the connection establishment and release in transport layer.
  b) How crash recovery is managed at the transport layer?   [5+5]

10.a) Explain Real-time transport protocol.
   b) When user clicks a hyperlink, what are the steps that occur between the user's click and
      the page being displayed?   [5+5]

OR

11. Write short notes on the following: [10]
     (a) MIME   (b) Audio compression   (c) DNS   (d) Voice over IP.

---oo0oo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRICAL MACHINES – III
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

Graph sheets are to be provided during the examination

PART –A

(25 Marks)

1.a) What happens to the value of synchronous reactance if air gap is increased?   [2]
  b) A 50Hz alternator has a flux of 0.1 Wb/pole, sinusoidally distributed. Calculate the rms
      value of the emf generated in one turn of the winding, which spans 3/4 of a pole pitch.
                                                                                          [3]
  c) Explain, why the field winding is placed on rotor, instead on stator of an alternator?
                                                                                          [2]
  d) What is synchronous reactance?   [3]
  e) Briefly explain the two main controls of an alternator.   [2]
  f) Give the condition for presence of no dc decaying component in the fault current of an
      alternator.   [3]
  g) Why synchronous motors are not self-staring? Explain.   [2]
  h) How are 'V' and 'Λ' curves of synchronous motor are defined?   [3]
  i) The full load slip of a single phase induction motor is higher than of corresponding
      3 phase induction motor. Why?   [2]
  j) Give the working principle of universal motor.   [3]

PART – B

(50 Marks)

2.a) What is armature reaction? With the help of neat diagrams explain its effect on main
      flux in synchronous machines.
  b) Explain the following terms related 3-phase a.c. windings.
      i) Single-layer and double-layer windings.
      ii) Full-pitch and short-pitch windings.
      iii) Integral slot and fractional slot windings.   [5+5]

OR

3.a) Explain the experimental determination of synchronous impedance.
  b) Derive the relation between speed, frequency and number of poles in an alternator.
                                                                                          [5+5]

4. Derive an expression for finding regulation of salient - pole alternator using two reaction theory. Draw its Phasor diagram. [10]

OR

5.a) Discuss about experimental determination of X_d and X_q of salient pole alternator using slip test.

b) A 3- phase generator rated at 25 MVA, 13.8 kV is operating at normal terminal voltage and rated load at 0.8 pf lag. The direct axis synchronous reactance is 7.62Ω, Quadrature axis synchronous reactance is 4.57Ω and the armature resistance is 0.15Ω/ph. Determine the direct axis and quadrature axis components of armature current and internal induced voltage. Also find the regulation. [5+5]

6.a) Explain the step by step procedure for synchronization of an alternator to the infinite bus system.

b) Show that synchronizing power is essential for maintaining synchronism of two alternators running in parallel. Deduce the relevant expression for it. [5+5]

OR

7. Explain the effect of change in excitation and mechanical power input on the alternator performance. [10]

8.a) Why at any load, the power factor decreases and the armature current increases if the field current is varied above and below the normal excitation.

b) A 500V, 3-phase mesh connected motor has an excitation emf of 600V. The motor synchronous impedance is (0.4+j5) ohms while the wind age, friction andiron losses are 1200W. What maximum power output can it deliver? [5+5]

OR

9.a) Explain how a synchronous motor can be operated as synchronous condenser.

b) A synchronous motor has an equivalent armature reactance of 3.3Ω. The exciting current is adjusted to such a value that the open circuit emf is 950V. Find the p.f. at which the motor would operate when it takes 80kW from 800V supply line. [5+5]

10.a) Draw the slip-torque characteristics of all types of single phase induction motors and compare their merits and demerits.

b) Explain the working principle of split-phase and capacitor start single-phase induction motors. [5+5]

OR

11.a) Draw the equivalent circuit diagram of single-phase induction motor.

b) Explain the principle of operation of stepper motor and ac series motor. [5+5]

---ooOoo---

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DYNAMICS OF MACHINERY
(Common to AME, MSNT, ME, MCT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) What is the gyroscopic effect on aeroplanes, when it is steered right-hand side on horizontal plane. [2]

b) Write the formula for velocity of the piston in reciprocating engine, and explain how does velocity is related to crank angle θ. [3]

c) What is principle of clutches, list out different types of clutches? [2]

d) How does differential band brake works, write the condition for self locking when drum rotates clockwise. [3]

e) Explain the term "Coefficient of fluctuation of energy" what are the parameters required to calculate coefficient of fluctuation of energy. [2]

f) Define the term "sensitiveness" in governors. [3]

g) What is secondary balancing in multi-cylinder in-line engine? [2]

h) What are primary and secondary forces in the reciprocating engine? [3]

i) Write the formula for natural frequency "f" and static deflection "δ" of the cantilever beam loaded at free end(shaft is of negligible mass). [2]

j) Write about the terms "free vibrations", "forced vibrations" and damped vibrations. [3]

PART - B

(50 Marks)

2. The rotor of the turbine of a ship has a mass of 2500 kg and rotates at a speed of 3200 rpm counter-clockwise when viewed from stern. The rotor has radius of gyration of 0.4m. Determine the gyroscopic couple and its effect when
a) The ship steers to the left in a curve of 80m radius at a speed of 15 knots (1 knot = 1860 m/h)
b) The ship pitches 5 degrees above and 5 degrees below the normal position and the bow is descending with its maximum velocity. The pitching motion is simple harmonic with a periodic time of 40 seconds. [5+5]

OR

3. In a four-link mechanism shown in Figure 1. Torque T_3 and T_4 have magnitudes of 30 N.m and 20 N.m respectively. The link lengths are AD = 800 mm, AB = 300 mm, BC = 700 mm and CD = 400 mm. For the static equilibrium of the mechanism, determine the required input torque T_2. [10]
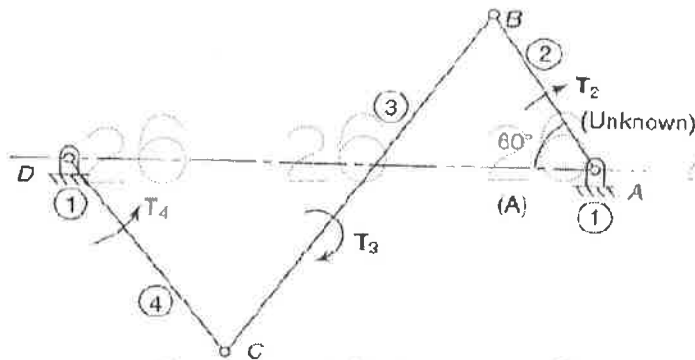
Figure 1

4. Derive an expression for the efficiency of an inclined plane when a body moves
   a) up a plane,
   b) down a plane. [5+5]

OR

5.a) Explain uniform pressure and solve the following problem.

  b) A conical pivot with angle of cone as 100^0 supports a load of 18 KN. The external radius is 2.5 times the internal radius. The shaft rotates at 150 rpm. If the intensity of pressure is to be 300 KN/m^2 and coefficient of friction as 0.05, what is the power lost in working against the friction? [5+5]

6. The turning moment diagram for a multi-cylinder engine has been drawn to a scale of 1 mm = 325 Nm vertically and 1 mm = 3^0 horizontally. The areas above and below the mean torque line are -26, +378, -256, +306, -302, +244, -380, +261 and -225 mm^2. The engine is running at a mean speed of 600 r.p.m. The total fluctuation of speed is not to exceed ±1.8% of the mean speed. If the radius of flywheel is 0.7 m, find the mass of the flywheel. [10]

OR

7. The lengths of the upper and lower arms of a Porter governor are 200 mm and 250 mm respectively. Both the arms are pivoted on the axis of the rotation. The central load is 150 N, the weight of each ball is 20 N and the friction of the sleeve together with the resistance of the operating gear is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30^0 and 40^0. Determine the range of the speed of the governor. [10]

8. The cranks of a two-cylinder uncoupled inside cylinder locomotive are at right angles and are 300 mm long. The distance between the centre lines of the cylinder is 650 mm. The wheel centre lines are 1.6 m apart. The reciprocating mass per cylinder is 300 kg. The driving wheel diameter is 1.8 m. If the hammer blow is not to exceed 45 kN at 100 km/hr, determine:
   a) The fraction of the reciprocating masses to be balanced;
   b) The variation in tractive effort
   c) The maximum swaying couple. [10]

OR

9. A shaft carries four rotating masses A, B, C and D which are completely balanced. The masses B, C and D are 50 kg, 80 kg and 70 kg respectively. The masses C and D make angles of 90^0 and 195^0 respectively with mass B in the same sense. The masses A, B, C and D are concentrated at radius 75 mm, 100mm, 50 mm and 90 mm respectively. The plane of rotation of masses B and C are 250 mm apart. Determine: (a) the mass A and its angular position (b) the position of planes of A and D. [5+5]

10. An electric motor is to drive a centrifuge, running vat four times the motor speed through a spur gear and pinion. The steel shaft from the motor to the gear wheel is 54 mm diameter and L meter long; the shaft from the pinion to the centrifuge is 45 mm diameter and 400 mm long. The masses and radii of gyration of motor and centrifuge are respectively 37.5 kg, 100 mm; 30 kg and 140 mm. Neglecting the inertia effect of the gears, find the value of L if the gears are to be at the node for torsional oscillation of the system and hence determine the frequency of torsion oscillation. Assume modulus of rigidity for material of shaft as 84 GN/m^2. [10]

OR

11. A shaft 1.5 m long, supported in flexible bearings at the ends carries two wheels each of 50 kg mass. One wheel is situated at the center of the shaft and the other at distance of 375 mm from the center towards left. The shaft is hollow of external diameter 75mm and internal diameter 40 mm. The density of the material is 7700kg/m^3 and its modulus of elasticity is 200 GN/m^2. Find the lowest whirling speed of the shaft, taking into account the mass of the shaft. [10]

---ooOoo---

Code No: 115DQ

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ANTENNAS AND WAVE PROPAGATION
(Common to ECE, ETM)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What is quarter wave monopole?	[2]
b)	Write the relation between effective aperture and Directivity.	[3]
c)	Draw the structure of helical antenna with a coaxial line feed.	[2]
d)	What is the spacing between elements of Yagi - Uda antenna	[3]
e)	What are the disadvantages of lens antennas?	[2]
f)	Write short notes on horn antenna.	[3]
g)	What is the main disadvantage of binomial array?	[2]
h)	Draw uniform linear array.	[3]
i)	Derive the expression for refractive index of ionosphere.	[2]
j)	Explain the concept of super refraction.	[3]

PART - B

(50 Marks)

2.a) Derive an expression for the radiation resistance of a Half wave dipole antenna.
 b) What is meant by the effective area of an antenna? How is it related to the gain? [5+5]

OR

3. Discuss about loop antenna. What are the disadvantages of loop antenna? What are applications loop antennas? [10]

4.a) Write short notes on Yagi-Uda array Antenna and its applications, advantages and drawbacks.
 b) Discuss different types of horn antennas with neat sketches. [7+3]

OR

5. With neat sketch, explain the operation of helical antenna. [10]

6.a) Explain the geometry of paraboloidal reflector with neat diagram.
 b) Calculate the 3dB beam width and power gain of a parabolic antenna at a frequency of 1.6GHz with 2.4 meter diameter and 48% antenna efficiency? [6+4]

OR

7.a) Compare UHF and VHF antennas.
 b) What are the various feeds used in reflectors? [7+3]

8.a) Discuss broadside array and end fire array with neat diagrams.
   b) Derive expression for antenna array factor. [7+3]

OR

9.a) An end fire array consisting of several half wave length long isotropic radiators having directive gain of 30. Find the length of array for broad side antenna?
   b) A broadside array of identical antennas consists 8 isotropic radiators separated by distance $\lambda/2$. Find radiation field in a plane containing the line of array showing directions of maxima and null. [7+3]

10. Briefly describe the following terms connected with sky-wave propagation:
   a) Virtual height
   b) Critical frequency
   c) Maximum usable frequency
   d) Skip distance. [10]

OR

11.a) Describe the troposphere and explain how ducts can be used for microwave Propagation.
   b) Write a short note on Multi-hop propagation. [6+4]

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R13

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Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) What is the gyroscopic effect on aeroplanes, when it is steered right-hand side on horizontal plane. [2]

b) Write the formula for velocity of the piston in reciprocating engine, and explain how does velocity is related to crank angle θ. [3]

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j) Write about the terms "free vibrations", "forced vibrations" and damped vibrations. [3]

PART - B

(50 Marks)

2. The rotor of the turbine of a ship has a mass of 2500 kg and rotates at a speed of 3200 rpm counter-clockwise when viewed from stern. The rotor has radius of gyration of 0.4m. Determine the gyroscopic couple and its effect when
a) The ship steers to the left in a curve of 80m radius at a speed of 15 knots (1 knot = 1860 m/h)
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OR

3. In a four-link mechanism shown in Figure 1. Torque T_3 and T_4 have magnitudes of 30 N.m and 20 N.m respectively. The link lengths are AD = 800 mm, AB = 300 mm, BC = 700 mm and CD = 400 mm. For the static equilibrium of the mechanism, determine the required input torque T_2. [10]
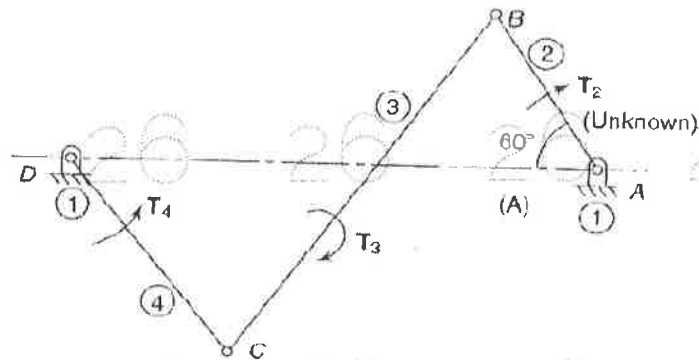
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7. The lengths of the upper and lower arms of a Porter governor are 200 mm and 250 mm respectively. Both the arms are pivoted on the axis of the rotation. The central load is 150 N, the weight of each ball is 20 N and the friction of the sleeve together with the resistance of the operating gear is equivalent to a force of 30N at the sleeve. If the limiting inclinations of the upper arms to the vertical are 30^0 and 40^0. Determine the range of the speed of the governor. [10]

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11. A shaft 1.5 m long, supported in flexible bearings at the ends carries two wheels each of 50 kg mass. One wheel is situated at the center of the shaft and the other at distance of 375 mm from the center towards left. The shaft is hollow of external diameter 75mm and internal diameter 40 mm. The density of the material is 7700kg/m^3 and its modulus of elasticity is 200 GN/m^2. Find the lowest whirling speed of the shaft, taking into account the mass of the shaft. [10]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRICAL MACHINES – III
(Electrical and Electronics Engineering)

Time: 3 hours
Max. Marks: 75

Note: This question paper contains two parts A and B.
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PART –A

(25 Marks)

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  i) The full load slip of a single phase induction motor is higher than of corresponding 3 phase induction motor. Why? [2]
  j) Give the working principle of universal motor. [3]

PART – B

(50 Marks)

2.a) What is armature reaction? With the help of neat diagrams explain its effect on main flux in synchronous machines.
  b) Explain the following terms related 3-phase a.c. windings.
  i) Single-layer and double-layer windings.
  ii) Full-pitch and short-pitch windings.
  iii) Integral slot and fractional slot windings. [5+5]
OR
3.a) Explain the experimental determination of synchronous impedance.
  b) Derive the relation between speed, frequency and number of poles in an alternator. [5+5]

4. Derive an expression for finding regulation of salient - pole alternator using two reaction theory. Draw its Phasor diagram. [10]

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5.a) Discuss about experimental determination of X_d and X_q of salient pole alternator using slip test.

b) A 3- phase generator rated at 25 MVA, 13.8 kV is operating at normal terminal voltage and rated load at 0.8 pf lag. The direct axis synchronous reactance is 7.62Ω, Quadrature axis synchronous reactance is 4.57Ω and the armature resistance is 0.15Ω/ph. Determine the direct axis and quadrature axis components of armature current and internal induced voltage. Also find the regulation. [5+5]

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OR

11.a) Draw the equivalent circuit diagram of single-phase induction motor.

b) Explain the principle of operation of stepper motor and ac series motor. [5+5]

---ooOoo---

R13

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
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consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Write the advantages of optical fiber over twisted-pair and coaxial cables.   [2]
  b) What are the advantages of having layered architecture?   [3]
  c) Briefly explain the difference between switch and router.   [2]
  d) Sketch the Manchester encoding for the bit stream: 0001110101.   [3]
  e) Give the advantages of hierarchical routing.   [2]
  f) Differences between CO and CL.   [3]
  g) Explain DHCP.   [2]
  h) What are the functions of ICMP?   [3]
  i) What is the architecture of WWW?   [2]
  j) Explain the differences between POP3 and IMAP.   [3]

PART - B

(50 Marks)

2.a) Compare and contrast the OSI and TCP/IP reference models.
  b) What are the different types of error detection methods? Explain the CRC error
     detection technique using generator polynomial x^4+x^3+1 and data 11100011.   [5+5]

OR

3.a) Discuss about the various transmission media available at the physical layer.
  b) Explain about GBN Sliding Window Protocol.   [5+5]

4.a) Explain the differences between the switching methods.
  b) Elucidate the CSMA schemes.   [5+5]

OR

5.a) Illustrate the frame structure of IEEE 802.3.
  b) Give a detail note on the ALOHA protocols.   [5+5]

6.a) Elucidate Distance Vector Routing Algorithm with example.
  b) Describe the problem and solutions associated with distance vector routing.   [5+5]

OR

7.a) Explain the general principles of congestion control.
  b) Describe congestion control in datagram subnets.   [5+5]

8.a) Elucidate the special IP addresses used in internet.
 b) Discuss the significance and the operation of NAT. [5+5]

OR

9.a) Illustrate the connection establishment and release in transport layer.
 b) How crash recovery is managed at the transport layer? [5+5]

10.a) Explain Real-time transport protocol.
 b) When user clicks a hyperlink, what are the steps that occur between the user's click and the page being displayed? [5+5]

OR

11. Write short notes on the following: [10]
 (a) MIME (b) Audio compression (c) DNS (d) Voice over IP.

---oo0oo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DESIGN OF REINFORCED CONCRETE STRUCTURES
(Civil Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks

- - -

1.a) What are different methods of design in R.C.C?

 b) Draw stress block diagram and evaluate the following expressions for limit state design: i) Neutral Axis depth ii) Lever arm iii) Moment of resistance. [5+10]

2. The T beam floor consists of 12cm thick R.C. slab monolithic with 30cm wide beams. The beams are spaced at 3.5m center to center and their effective span is 8m. If the super imposed on the slab is 6.5 kN/m^2, design an intermediate beam and an end beam. Use M20 mix and TMT 415 grade steel. [15]

3. An RC beam has an effective depth of 450mm and breadth of 300mm. It contains 5-20mm bars mild steel out of which two bars curtailed at a section where shear force at service load is 100kN. Design the shear reinforcement if the concrete is M20. [15]

4. A one-way slab has been designed for a simply supported span of 4.0m with an overall depth of 170mm and clear cover of 20mm. using M20 concrete and Fe415 steel. The dead load is taken as 5.0 kN/m^2 and live load of 2.0m kN/m^2. The longitudinal bars are designed as 10mm diameter 150mm c/c. verify the adequacy of the thickness provided.
a) Applying the limiting span/ effective depth ratio
b) Actual calculation of total deflections [15]

5. Design a square spread footing to carry a column of 1200kN from a 40 cm square tied column containing 20m bars as the longitudinal reinforcement. The bearing capacity of soil is 150 kN/m^2. Consider base of footing as 1m below the ground level. The unit weight of earth is 20 kN/m^3. Use f$_y$ = 415 N/mm^2 and f$_{ck}$ = 20 N/mm^2. [15]

6. A short R.C. column has a diameter of 450 mm, and is reinforced with 8 bars of 16mm dia, placed with a clear cover of 40mm. Determine load carrying capacity of the column if the transverse reinforcement consists of a) 8 mm dia. Mild steel tiles @250mm c/c. b) 8 mm spirals of Fe 415 steel, arranged at a pitch of 50mm. Use M 20 concrete and Fe 415 steel for longitudinal bars. [15]

7.a) Explain the difficulty in estimating the short term deflection as per IS code procedure when the applied moments at service loads is marginally less than the cracking moment calculated using the modulus of rupture of concrete.

 b) The IS Code does not call for explicit checks on serviceability limit states of deflection provided certain requirements are complied with in the design. What are the requirements?

 c) Are the nominal detailing requirements of the code adequate for ensuring crack-width control? Briefly comment. [5+5+5]

8.   Design a flight (waist slab) between landing to landing of a tread-riser type of staircase, with 10 risers, each 150 mm, and with tread of 270 mm. The upper and lower landings are 1200 mm wide each supported on 230 mm thick masonry walls at the edges, parallel to the risers. The risers are liable to be overcrowding. The materials to be used for construction are M20 grade concrete and HYSD bars of grade Fe 415.   [15]

---ooOoo---

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MANAGEMENT SCIENCE
(Common to AE, EEE)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1. Explain Douglas McGregor's theory X and theory Y.   [15]

2. What are the objectives of a good plant layout? Critically evaluate process and product layouts.   [15]

3. Write short notes on:
   a) Social responsibilities of management
   b) Leadership styles
   c) Merit rating.   [5+5+5]

4.a) Elucidate the objectives of material management.
   b) What do you understand by 'marketing mix'? Explain in detail 'channels of distribution' and selection.   [7+8]

5. Explain the following;   [5+5+5]
   a) Training and development
   b) Performance appraisal
   c) Promotion

6. Draw a network diagram for the following data.   [15]

Task	Immediate Predecessor
A	-
B	-
C	B
D	B
E	B
F	E
G	A,D,C

7.a) Narrate the elements of corporate planning.
   b) What do you understand by competitive advantage and how can it be achieved?   [7+8]

8. Enumerate the 5S model in business process Re-engineering.   [15]

Code No: 55029

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
SOFTWARE ENGINEERING
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) What is a legacy software? What type of changes are made to legacy systems if it exhibits poor quality?
  b) List and explain various Key Process Areas assessed by CMMI.   [8+7]

2. Write down the characteristics of Unified process model. Explain its various phases briefly.   [15]

3. Give the classification of non-functional requirements? Explain all types of non-functional requirements.   [15]

4.a) What is Architecture? Why is Architecture important? Explain how it differs from the design process of software?
  b) Explain the requirements elicitation process.   [8+7]

5.a) Explain briefly about different models that may be used to document an object oriented design.
  b) List and explain the three golden rules for user interface design.   [8+7]

6.a) Describe the terms: Alpha testing and Beta testing.
  b) Explain how size-oriented metrics are different from function-oriented metrics.   [7+8]

7. Explain how the risk management can be organized into a separate RMMM plan with an example risk information sheet.   [15]

8.a) Give a brief note on Formal Technical Reviews.
  b) Write about the ISO 9000 quality standards.   [8+7]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) What are the different types of errors found in a measurement? Explain statistical analysis of errors.
  b) With a neat sketch explain the working of a true RMS voltmeter.   [8+7]

2.a) With an example explain the working of successive approximation DVM.
  b) The accuracy of five digital voltmeters are checked by using each of them to measure a standard 1.0000V from a calibration instrument. The voltmeter readings are as follows: V_1=1.001v, V_2=1.002v, V_3=0.999v, V_4=0.998v and V_5=1.0000v. Calculate the average measured voltage and the average deviation.   [7+8]

3.a) What is meant by distortion factor? How is it measured? Explain.
  b) Explain the working of harmonic distortion analyzer using bridged T-network.   [7+8]

4.a) Explain the principle and working of Maxwells Bridge.
  b) Derive the condition for balancing of an Anderson's bridge. Give its limitations. [8+7]

5.a) Write a short note on Lissajous Figures and CRO Probes.
  b) Explain with neat sketches the time base generator in the CRO.   [7+8]

6.a) Draw the schematic diagram of a dual beam CRO and explain its functioning.
  b) Briefly discuss the errors in time / frequency measurements.   [7+8]

7.a) Describe the construction and working of potentiometer type resistance transducer for measuring linear displacement.
  b) Explain the basic principle of strain gauge.   [10+5]

8.a) Draw the block diagram of analog data acquisition system and explain the function of the components.
  b) Explain how liquid level and force measured?   [7+8]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL MICROBIOLOGY

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question
carries 10 marks and may have a, b, c as sub questions.

PART – A   (25 Marks)

1.a)	Discuss the identification of microorganisms.	[2]
b)	Explain the theory proposed by Louis Pasteur.	[3]
c)	Define and explain biosafety.	[2]
d)	Explain the purpose of disinfecting agents.	[3]
e)	State and explain synchronous growth.	[2]
f)	What is nutrient media? Explain.	[3]
g)	State and explain gene regulation.	[2]
h)	What is drug resistance? Explain.	[3]
i)	Write briefly on assay of antibiotics.	[2]
j)	What is microbial limit? Explain.	[3]

PART – B   (50 Marks)

2.a)	Explain the domains of life forms and their characteristics.	
b)	Discuss the work carried about by Joseph Lister and Robert Koch.	[5+5]

OR

3.a)	Discuss the technique used for identification of microorganisms.	
b)	Give a comparison of Eukaryotes and Prokaryotes.	[5+5]

4.a)	Explain about nutritional requirement and types of nutrient media for growth of microbes.	
b)	Narrate about sterility testing and antimicrobial activity.	[5+5]

OR

5.a)	Discuss various techniques of sterilization.	
b)	Write about inhibition of growth, killing and sanitation of microbes.	[5+5]

6.	Write notes on the following	
	a) Continuous culture and exponential growth.	
	b) Aerobic and anaerobic cultivation and preservation.	[5+5]

OR

7.a)	Explain about chemostat and turbidostat and their significance.	
b)	Discuss the affect of environmental factors on microbial growth.	[5+5]

8. Write notes on the following.
   a) DNA replication and its importance.
   b) Physical and chemical mutagens. [5+5]

OR

9. Explain the following with details.
   a) Gene regulation – applications
   b) Drug resistance – significance [5+5]

10.a) Discuss about microbiology of milk.
   b) Explain the assay techniques of amino acids. [5+5]

OR

11. Write detailed notes on the following.
    a) Microbial Contamination and Evaluation.
    b) Biosensors – Analysis - Application. [5+5]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL MICROBIOLOGY

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question
carries 10 marks and may have a, b, c as sub questions.

PART – A   (25 Marks)

1.a)	Discuss the identification of microorganisms.	[2]
b)	Explain the theory proposed by Louis Pasteur.	[3]
c)	Define and explain biosafety.	[2]
d)	Explain the purpose of disinfecting agents.	[3]
e)	State and explain synchronous growth.	[2]
f)	What is nutrient media? Explain.	[3]
g)	State and explain gene regulation.	[2]
h)	What is drug resistance? Explain.	[3]
i)	Write briefly on assay of antibiotics.	[2]
j)	What is microbial limit? Explain.	[3]

PART – B   (50 Marks)

2.a)	Explain the domains of life forms and their characteristics.	
b)	Discuss the work carried about by Joseph Lister and Robert Koch.	[5+5]

OR

3.a)	Discuss the technique used for identification of microorganisms.	
b)	Give a comparison of Eukaryotes and Prokaryotes.	[5+5]

4.a)	Explain about nutritional requirement and types of nutrient media for growth of microbes.	
b)	Narrate about sterility testing and antimicrobial activity.	[5+5]

OR

5.a)	Discuss various techniques of sterilization.	
b)	Write about inhibition of growth, killing and sanitation of microbes.	[5+5]

6.	Write notes on the following	
	a) Continuous culture and exponential growth.	
	b) Aerobic and anaerobic cultivation and preservation.	[5+5]

OR

7.a)	Explain about chemostat and turbidostat and their significance.	
b)	Discuss the affect of environmental factors on microbial growth.	[5+5]

8. Write notes on the following.
   a) DNA replication and its importance.
   b) Physical and chemical mutagens. [5+5]

OR

9. Explain the following with details.
   a) Gene regulation – applications
   b) Drug resistance – significance [5+5]

10.a) Discuss about microbiology of milk.
   b) Explain the assay techniques of amino acids. [5+5]

OR

11. Write detailed notes on the following.
   a) Microbial Contamination and Evaluation.
   b) Biosensors – Analysis - Application. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL BIOCHEMISTRY

Time: 3hours   Max.Marks:75

Answer any five questions
All questions carry equal marks
- - -

1. How are enzymes classified? Describe the general properties of enzymes and mention their mechanism of action.   [15]

2. Explain the organization and components of the respiratory chain in mitochondria.   [15]

3. Give an account of the metabolism of fat with particular to beta oxidation. [15]

4. What is ketosis? How are the ketone bodies produced in the body? How does body try to combat ketosis.   [15]

5. Draw a flow diagram showing the reactions of Krebs cycle. Discuss its importance.   [15]

6. Describe the metabolism of nucleic acid.   [15]

7. Name the fat soluble vitamins, their occurrence, daily adult requirements and their importance to the body.   [15]

8.a) What is urea? Describe the synthesis of urea in the body.
 b) Write a note on Nitrogen balance.   [15]

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Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Distinguish between Software products and Software services.	[2]
b)	Explain Software Crisis.	[3]
c)	Define an Interface.	[2]
d)	Explain about data models.	[3]
e)	What are the golden rules for User Interface Design?	[2]
f)	Explain the Design concept coupling.	[3]
g)	Define Testing.	[2]
h)	List the metrics for Design model.	[3]
i)	Define Risk Refinement.	[2]
j)	Define Software reliabilty.	[3]

PART - B

(50 Marks)

2.a)	What is a Legacy Software? Explain.	
b)	Explain the Software Process Framework.	[5+5]

OR

3.a)	Explain the various software myths.	
b)	Explain the working of specialized process models.	[5+5]

4.a)	Explain the structure of Software Requirements document.	
b)	What are the feasibility studies for requirements engineering process?	[5+5]

OR

5.	Explain the following system models: a) Object Models b) Structured methods.	[5+5]

6. Explain the following five Component characteristics:
   a) Standardized
   b) Independent
   c) Composable
   d) Deployable
   e) Documented. [10]

OR

7.a) Explain the basic elements of a component model with suitable diagram.
  b) Explain the Component Based Software Engineering (CBSE). [5+5]

8.a) Explain the methods of System Testing.
  b) Explain the metrics for Analysis Model. [5+5]

OR

9.a) Explain metrics for Software Quality.
  b) Describe test strategies for Conventional Software. [5+5]

10.a) Explain Software Risks.
   b) Describe the methods for Risk Identification. [5+5]

OR

11.a) Explain the use of Software Reviews.
   b) Describe the methods for Risk Projection. [5+5]

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R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ANALOG COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the advantages of ring modulator?	[2]
b)	What is the difference between coherence detection and noncoherent detection?	[3]
c)	What are the advantages of SSB over DSB?	[2]
d)	What are the applications of VSB?	[3]
e)	Give the average power of an FM signal.	[2]
f)	What are the disadvantages of FM systems?	[3]
g)	Define Shot noise?	[2]
h)	What are the sources of Noise?	[3]
i)	Define Intermediate frequency?	[2]
j)	What are the advantages of PPM over PWM?	[3]

PART - B

(50 Marks)

2.a) Explain the generation of AM signal using Switching Modulator.
b) What is the effect of frequency and phase over error in demodulation of DSB-SC wave using synchronous detector. [5+5]

OR

3.a) Explain about balanced modulator to generate DSB-SC signal.
b) Discuss AM in detail in time and frequency domains. Derive the expression for power content of an AM signal. [5+5]

4.a) Draw the block diagram for the generation of a VSB signal and explain the principle of operation.
b) Compare AM with DSB-SC and SSB-SC. [5+5]

OR

5.a) Explain the generation AM SSB Modulated waves using Phase discrimination method for generating.
b) What are the Applications of different AM Systems? Explain any one. [5+5]

6.a)   Derive an expression for single tone FM wave and Wide band FM wave.
  b)   With neat sketch explain the working principle of Zero crossing detector.   [5+5]

OR

7.a)   Discuss threshold effect in angle modulation systems.
  b)   Explain the Comparison of FM over AM.   [5+5]

8.a)   Discuss the noise performance in DSB-SC receiver in detail.
  b)   Derive the noise figure for cascade stages.   [5+5]

OR

9.a)   What is Narrowband Noise discuss the properties of the quadrature components of Narrowband Noise.
  b)   With neat sketches explain the Pre-emphasis and de-emphasis.   [5+5]

10.a) What are the advantages of Superhetrodyne receiver over Tuned radio frequency receiver? Explain.
  b)   Discuss the effect of aliasing due to under sampling.   [5+5]

OR

11.a) Differentiate between simple, delayed and amplify AGC and explain the function with the help of neat diagram.
  b)   With neat sketch explain the TDM multiplexing and demultiplexing.   [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
IC APPLICATIONS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) Realize EX-OR gate with CMOS circuit.   [2]
  b) Mention the reasons why open loop is not preferred for linear applications.   [3]
  c) List out the ideal characteristics of op-amp.   [2]
  d) Write the features of 741 op-amp.   [3]
  e) Mention the differences between band pass and Band Reject filter.   [2]
  f) Mention the blocks present in IC565.   [3]
  g) What are the modes of operation of a Timer?   [2]
  h) List various applications of IC 555 Timer.   [3]
  i) Explain how Dual-slope ADC provides noise rejection?   [2]
  j) Compare R-2R and Weight Resistor types of ADC.   [3]

PART - B
(50 Marks)

2.a) Design a TTL 2-state NAND gate and explain its operation.
  b) Draw the resistive model of a CMOS inverter and explain its behaviour for LOW and
     HIGH outputs.   [5+5]
                                    OR
3.a) Classify IC s and write about the Chip size.
  b) Explain about the TTL driving CMOS gate.   [5+5]

4.a) Derive input resistance for inverting amplifier with feedback arrangement.
  b) What is the operation performed by an inverting Op-Amp amplifier if its feedback
     resistance is replaced by a capacitance? Explain the functioning of such circuit. What
     are the practical difficulties associated with this circuit?   [5+5]
                                    OR
5.a) An IC op-amp 741 used as an inverting amplifier with a gain of 100. The voltage gain
     vs frequency characteristic is flat up to 12 kHz. Find the maximum peak to peak input
     signal that can be feed without causing any distortion to the output.
  b) Explain the operation of V to I converter.   [5+5]

6.a) Derive the expression for the transfer function of first order high pass filter.
  b) Draw the schematic diagram of Wein bridge oscillator and explain its working. [5+5]

OR

7.a) Explain the operation of VCO.
  b) Discuss about the operation of Wein Bridge Oscillator. [5+5]

8.a) Describe the functional block diagram of 555 timer.
  b) How 555 timer can be used in Schmitt Trigger circuit. [5+5]

OR

9.a) With a neat diagram explain the operation of PLL.
  b) Write about the applications of PLL. [5+5]

10.a) Explain the operation of Successive approximation ADC.
  b) Write about the ADC specifications. [5+5]

OR

11.a) Discuss about the binary weighted resistor DAC.
  b) Mention the applications of DAC and ADC. [5+5]

---ooOoo---

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MACHINE TOOLS
(Common to MSNT, ME, MCT)
Time: 3 hours
Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Describe the basic elements of machining.	[2]
b)	How does a build up edge is formed? Explain its effects.	[3]
c)	What is a Lathe what are the types of Lathe.	[2]
d)	List out various types of Lathe attachment explain any one.	[3]
e)	Classify different types of Drilling machines.	[2]
f)	Explain the working principle of slotter.	[3]
g)	Explain the principle of milling machine.	[2]
h)	Write about various advantage and limitations of honing and lapping.	[3]
i)	How are abrasives selected for grinding operation?	[2]
j)	Compare and contrast grinding, lapping and honing.	[3]

PART - B

(50 Marks)

2.a) Derive the expression for chip thickness ratio.

b) Determine the cutting speed and machining time per cut when the work piece having 45 mm diameter is rotating at 400 rpm. The feed given as 0.15 mm/rev and length of cut 6cm. [5+5]

OR

3.a) In orthogonal cutting of mid steel component, if the rake angle of the cutting tool is 12^0 and the shear angle is 42^0. Find the chip thickness ratio.

b) What are the desirable Characteristics of cutting material? Describe them in brief. [5+5]

4.a) Draw the tool layout of Hexagonal head bolt.

b) Diagrammatically explain the thread cutting on the lathe machine. [5+5]

OR

5.a) How lathe is specified explain briefly the operations that are performed on a lathe.

b) Explain what is meant by a Taper. Discuss in detail the taper turning by compound rest swelling method? [5+5]

6.a) Describe the operation of quick return motion in mechanical Shaper.
 b) Find the machining time required for machining the surface 600 × 800 mm, on a shaping machine. Assume, cutting speed as 8 m/min. The return to cutting time ratio is 1:4, and the feed is 2 mm/ stroke. The approach and overrun at each end is 70 mm. [5+5]

OR

7.a) With the help of neat sketch explain the radial drilling machine.
 b) Estimate the time required to drill a hole on a wider face of a give workpiece of size 2m × 1m × 50mm. Assuming the cutting angle as 230 degrees, approach and overrun be 30 mm each, cutting velocity 52m/min, feed be 2mm/stroke and clearance on both side be 20mm. [5+5]

8.a) Differentiate between up milling and down milling and explain their applications.
 b) Explain in detail various operations performed on milling machine. [5+5]

OR

9.a) Explain the procedure for simple indexing with an example.
 b) With the help of neat sketch explain the geometry of milling cutter. [5+5]

10.a) What are surface grinding machine, explain various surface grinding machines.
 b) Describe grinding wheel structure with a neat sketch. [5+5]

OR

11.a) What are special types of grinding machine explain two in detail.
 b) What is meant by centerless grinding? State its advantages and limitation of it. [5+5]

---ooOoo---

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

Illustrate your answers with NEAT sketches wherever necessary

PART - A

(25 Marks)

1.a) List the different forces acting on automobile tyres. [2]
 b) Explain the following terms: Tyre Stiffness, Effective radius, Rolling resistance. [3]
 c) What are the main differencs between the dynamics of vehicles with more than two axles and vehicles with two axles? [2]
 d) How do the vehicle dynamics differ for a car parked on a level road and for a car parked on a banked road? [3]
 e) Distinguish briefly between Translational and Rotational dynamics. [2]
 f) Explain briefly the force system acting on a rigid vehicle. [3]
 g) Define 'Time Response' in vehicle roll dynamics. [2]
 h) Write the Equations of Steady state motion in vehicle roll dynamics. [3]
 i) What is the difference between the Half Car vibrating model Full Car vibrating model? [2]
 j) Explain the applicability of Holzer's method for a multi – rotor vibrating system. [3]

PART - B

(50 Marks)

2.a) Explain the terms Aerodynamic resistance, Rolling resistance and Grade resistance.
 b) Explain about the Tread, Wheel and Rim. What are the materials used for the wheel and rim, and why? [5+5]

OR

3.a) Describe the Tyre Coordinate Frame and Tire force system in automobiles.
 b) Explain the relative advantages and applications of Radial and Non-Radial Tyres. [5+5]

4.a) What is the significance of 'Optimal Drive' in One – Dimensional vehicle dynamics? Sketch and explain its functioning.
 b) Explain the terms 'Driveline' and 'Efficiency'. [5+5]

OR

5.a) Discuss the One – Dimensional vehicle dynamics analysis for an accelerating car on a level road and on an inclined road.
 b) Explain the 'Brake Force Distribution' in automobiles. [5+5]

6.a) Analyze the force system acting on a rigid vehicle, applying Newton – Euler Dynamics.
  b) Derive the Lagrange's form of Newton's equations of motion. [5+5]

OR

7.a) Analyze the forces and moments acting on a vehicle coordinate frame.
  b) Explain the application of Lagrangian mechanics to vehicle dynamics. [5+5]

8.a) Analyze the dynamic force system acting on a velicle.
  b) Derive the Equations of motion relevant to vehicle roll dynamics. [5+5]

OR

9. Give the complete analysis of two wheel rigid vehicle dynamics. Supplement your answer with relevant sketches. [10]

10.a) Discuss the frequency response curves of vibrating systems.
   b) Why does a transducer, which is less sensitive, usually has a higher frequency response than a similar one which is more sensitive? [5+5]

OR

11.a) Explain the Holzer's method of finding the natural frequency of systems with both the ends fixed.
   b) An undamped vibration pick – up having a natural frequency of 1 Hz is used to measure a harmonic vibration of 4 Hz. If the amplitude recorded is 0.52 mm, what is the correct amplitude? [5+5]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
IC APPLICATIONS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Realize EX-OR gate with CMOS circuit.	[2]
b)	Mention the reasons why open loop is not preferred for linear applications.	[3]
c)	List out the ideal characteristics of op-amp.	[2]
d)	Write the features of 741 op-amp.	[3]
e)	Mention the differences between band pass and Band Reject filter.	[2]
f)	Mention the blocks present in IC565.	[3]
g)	What are the modes of operation of a Timer?	[2]
h)	List various applications of IC 555 Timer.	[3]
i)	Explain how Dual-slope ADC provides noise rejection?	[2]
j)	Compare R-2R and Weight Resistor types of ADC.	[3]

PART - B

(50 Marks)

2.a) Design a TTL 2-state NAND gate and explain its operation.
  b) Draw the resistive model of a CMOS inverter and explain its behaviour for LOW and HIGH outputs. [5+5]

OR

3.a) Classify IC s and write about the Chip size.
  b) Explain about the TTL driving CMOS gate. [5+5]

4.a) Derive input resistance for inverting amplifier with feedback arrangement.
  b) What is the operation performed by an inverting Op-Amp amplifier if its feedback resistance is replaced by a capacitance? Explain the functioning of such circuit. What are the practical difficulties associated with this circuit? [5+5]

OR

5.a) An IC op-amp 741 used as an inverting amplifier with a gain of 100. The voltage gain vs frequency characteristic is flat up to 12 kHz. Find the maximum peak to peak input signal that can be feed without causing any distortion to the output.
  b) Explain the operation of V to I converter. [5+5]

6.a) Derive the expression for the transfer function of first order high pass filter.
 b) Draw the schematic diagram of Wein bridge oscillator and explain its working. [5+5]

OR

7.a) Explain the operation of VCO.
 b) Discuss about the operation of Wein Bridge Oscillator. [5+5]

8.a) Describe the functional block diagram of 555 timer.
 b) How 555 timer can be used in Schmitt Trigger circuit. [5+5]

OR

9.a) With a neat diagram explain the operation of PLL.
 b) Write about the applications of PLL. [5+5]

10.a) Explain the operation of Successive approximation ADC.
 b) Write about the ADC specifications. [5+5]

OR

11.a) Discuss about the binary weighted resistor DAC.
 b) Mention the applications of DAC and ADC. [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
WATER RESOURCES ENGINEERING-I
(Civil Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	Define the terms interception loss and base flow.	[2]
b)	What is hydrograph? Draw a single peaked hydrograph and explain its components?	[3]
c)	What are the different types of aquifers?	[2]
d)	Write a short note on sprinkler method of irrigation.	[3]
e)	Describe with the help of a diagram, various forms of a soil moisture. What do you understand by the available moisture?	[2]
f)	Explain various types of canals, according to various classification systems.	[3]
g)	Differentiate between ground water flows and inter flow.	[2]
h)	Write short notes on infiltration indices.	[3]
i)	Define S-Curve hydrograph. What are its uses?	[2]
j)	Distinguish between influent stream and effluent stream.	[3]

PART - B
(50 Marks)

2.a) What do you understand by precipitation? Explain various types of precipitation.
  b) Find out the ordinates of a storm hydrograph resulting from a 3hr storm with rainfall of 3, 4.5 and 1.5cm during subsequent 3 hours intervals. The ordinates of unit hydrograph are given in the table below. Assume an initial loss of 5mm, infiltration index of 5mm/hour and base flow of 20cumecs.   [5+5]

Hours	0	03	06	09	12	15	18	21	24	03	6	09	12
Ordinates of unit hydrograph (cumecs)	0	90	200	350	450	350	260	190	130	80	45	20	0

OR

3.a) What are the factors affecting infiltration? Discuss their effect in producing variation in infiltration rate during a storm, and also in producing seasonal and spatial variations in infiltration rate.
  b) Describe the ISI standard evaporation pan with a neat sketch. In what way it is different from USWB class A land pan?   [5+5]

4.a) What are the various components of runoff? Describe how each component is derived in the runoff process?

b) The hourly ordinates of a two hour unit hydrograph are given below. Derive a 6-hour unit hydrograph for the same catchment. [5+5]

Time (Hours)	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15
Discharge (cumecs)	0.0	1.0	2.7	5.0	8.0	9.8	9.0	7.5	6.3	5.0	4.0	2.9	2.1	1.3	0.5	0.0

OR

5. What do you understand by unit hydrograph? How is it derived? Explain its use in construction of flood hydrograph resulting from two or more periods of rainfall? [10]

6.a) Explain the terms
i) Porosity
ii) Specific yield
iii) Permeability

b) Explain Darcy's law. List out the assumptions made in the analysis of steady radial flow into well. [5+5]

OR

7.a) Explain the terms
i) Cone of depression
ii) Radius of influence
iii) Drawdow

b) When 3.68 million m^3 of water was pumped out from an unconfined aquifer of $6.2km^2$ areal extent, the water table was observed to go down by 2.6m. What is the specific yield of the aquifer? During a monsoon season if the water table of the same aquifer goes up by 10.8m, what is the volume of recharge? [5+5]

8.a) Write a short notes on the following:
i) Saturation capacity
ii) Field capacity
iii) Wilting point
iv) Optimum water.

b) What are the factors affecting duty? How can duty be improved? [5+5]

OR

9.a) Discuss in brief various methods of surface irrigation.

b) Explain consumptive use and water logging. What are irrigation efficiencies? [5+5]

10.a) For a channel, the discharge Q, rugosity coefficient N, critical velocity ratio m, and the bed width-depth ratio B/D are given. Explain how would you design the channel using Kennedy's theory?

b) How do you measure and estimate stream flow? [5+5]

OR

11.a) Using Lacey's theory, design an irrigation channel for the following data:
Discharge Q=50cumecs
Silt facor f=1
Side slopes=$\frac{1}{2}$: 1

b) What is flood frequency analysis? How do you compute design discharge over a catchment? [5+5]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MACHINE TOOLS
(Common to MSNT, ME, MCT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Describe the basic elements of machining.	[2]
b)	How does a build up edge is formed? Explain its effects.	[3]
c)	What is a Lathe what are the types of Lathe.	[2]
d)	List out various types of Lathe attachment explain any one.	[3]
e)	Classify different types of Drilling machines.	[2]
f)	Explain the working principle of slotter.	[3]
g)	Explain the principle of milling machine.	[2]
h)	Write about various advantage and limitations of honing and lapping.	[3]
i)	How are abrasives selected for grinding operation?	[2]
j)	Compare and contrast grinding, lapping and honing.	[3]

PART - B

(50 Marks)

2.a) Derive the expression for chip thickness ratio.
  b) Determine the cutting speed and machining time per cut when the work piece having 45 mm diameter is rotating at 400 rpm. The feed given as 0.15 mm/rev and length of cut 6cm. [5+5]

OR

3.a) In orthogonal cutting of mid steel component, if the rake angle of the cutting tool is 12^0 and the shear angle is 42^0. Find the chip thickness ratio.
  b) What are the desirable Characteristics of cutting material? Describe them in brief. [5+5]

4.a) Draw the tool layout of Hexagonal head bolt.
  b) Diagrammatically explain the thread cutting on the lathe machine. [5+5]

OR

5.a) How lathe is specified explain briefly the operations that are performed on a lathe.
  b) Explain what is meant by a Taper. Discuss in detail the taper turning by compound rest swelling method? [5+5]

6.a) Describe the operation of quick return motion in mechanical Shaper.
  b) Find the machining time required for machining the surface 600 × 800 mm, on a shaping machine. Assume, cutting speed as 8 m/min. The return to cutting time ratio is 1:4, and the feed is 2 mm/ stroke. The approach and overrun at each end is 70 mm. [5+5]

OR

7.a) With the help of neat sketch explain the radial drilling machine.
  b) Estimate the time required to drill a hole on a wider face of a give workpiece of size 2m × 1m × 50mm. Assuming the cutting angle as 230 degrees, approach and overrun be 30 mm each, cutting velocity 52m/min, feed be 2mm/stroke and clearance on both side be 20mm. [5+5]

8.a) Differentiate between up milling and down milling and explain their applications.
  b) Explain in detail various operations performed on milling machine. [5+5]

OR

9.a) Explain the procedure for simple indexing with an example.
  b) With the help of neat sketch explain the geometry of milling cutter. [5+5]

10.a) What are surface grinding machine, explain various surface grinding machines.
  b) Describe grinding wheel structure with a neat sketch. [5+5]

OR

11.a) What are special types of grinding machine explain two in detail.
  b) What is meant by centerless grinding? State its advantages and limitation of it. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ANALOG COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours
Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) What are the advantages of ring modulator? [2]
 b) What is the difference between coherence detection and noncoherent detection? [3]
 c) What are the advantages of SSB over DSB? [2]
 d) What are the applications of VSB? [3]
 e) Give the average power of an FM signal. [2]
 f) What are the disadvantages of FM systems? [3]
 g) Define Shot noise? [2]
 h) What are the sources of Noise? [3]
 i) Define Intermediate frequency? [2]
 j) What are the advantages of PPM over PWM? [3]

PART - B
(50 Marks)

2.a) Explain the generation of AM signal using Switching Modulator.
 b) What is the effect of frequency and phase over error in demodulation of DSB-SC wave
 using synchronous detector. [5+5]
 OR
3.a) Explain about balanced modulator to generate DSB-SC signal.
 b) Discuss AM in detail in time and frequency domains. Derive the expression for power
 content of an AM signal. [5+5]

4.a) Draw the block diagram for the generation of a VSB signal and explain the principle of
 operation.
 b) Compare AM with DSB-SC and SSB-SC. [5+5]
 OR
5.a) Explain the generation AM SSB Modulated waves using Phase discrimination method
 for generating.
 b) What are the Applications of different AM Systems? Explain any one. [5+5]

6.a) Derive an expression for single tone FM wave and Wide band FM wave.
  b) With neat sketch explain the working principle of Zero crossing detector. [5+5]

OR

7.a) Discuss threshold effect in angle modulation systems.
  b) Explain the Comparison of FM over AM. [5+5]

8.a) Discuss the noise performance in DSB-SC receiver in detail.
  b) Derive the noise figure for cascade stages. [5+5]

OR

9.a) What is Narrowband Noise discuss the properties of the quadrature components of Narrowband Noise.
  b) With neat sketches explain the Pre-emphasis and de-emphasis. [5+5]

10.a) What are the advantages of Superhetrodyne receiver over Tuned radio frequency receiver? Explain.
  b) Discuss the effect of aliasing due to under sampling. [5+5]

OR

11.a) Differentiate between simple, delayed and amplify AGC and explain the function with the help of neat diagram.
  b) With neat sketch explain the TDM multiplexing and demultiplexing. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
SOFTWARE ENGINEERING
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Distinguish between Software products and Software services.	[2]
b)	Explain Software Crisis.	[3]
c)	Define an Interface.	[2]
d)	Explain about data models.	[3]
e)	What are the golden rules for User Interface Design?	[2]
f)	Explain the Design concept coupling.	[3]
g)	Define Testing.	[2]
h)	List the metrics for Design model.	[3]
i)	Define Risk Refinement.	[2]
j)	Define Software reliability.	[3]

PART - B

(50 Marks)

2.a)	What is a Legacy Software? Explain.	
b)	Explain the Software Process Framework.	[5+5]
	OR	
3.a)	Explain the various software myths.	
b)	Explain the working of specialized process models.	[5+5]
4.a)	Explain the structure of Software Requirements document.	
b)	What are the feasibility studies for requirements engineering process?	[5+5]
	OR	
5.	Explain the following system models:	
	a) Object Models	
	b) Structured methods.	[5+5]

6. Explain the following five Component characteristics:
   a) Standardized
   b) Independent
   c) Composable
   d) Deployable
   e) Documented. [10]

OR

7.a) Explain the basic elements of a component model with suitable diagram.
  b) Explain the Component Based Software Engineering (CBSE). [5+5]

8.a) Explain the methods of System Testing.
  b) Explain the metrics for Analysis Model. [5+5]

OR

9.a) Explain metrics for Software Quality.
  b) Describe test strategies for Conventional Software. [5+5]

10.a) Explain Software Risks.
   b) Describe the methods for Risk Identification. [5+5]

OR

11.a) Explain the use of Software Reviews.
   b) Describe the methods for Risk Projection. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACOGNOSY – II
Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART A   (25 Marks)

1.a) Differentiate biosynthesis and biogenesis.   [2]
  b) Mention the names and write the structures of any two phenanthrene ring
     molecules   [3]
  c) Write the source and uses of Ginger and Cardamom.   [2]
  d) Write the source, chemical constituents and uses of Citronella.   [3]
  e) How are resins formed in plants. Write the isolation procedure of resins. [2]
  f) Write the source and uses of Balsamic resins.   [3]
  g) Write the general preparations of Bhasmas.   [2]
  h) Explain Tridosa system of Ayurveda.   [3]
  i) Write the source and uses of Bentonite and Glass wool.   [2]
  j) Write a note on Thaumatin.   [3]

PART B   (50 Marks)

2. Describe in detail the pathway resulting in synthesis of aromatic amino acids. [10]
                                       OR
3. Give brief outline of Isopreniod synthesis.   [10]

4. What are volatile oils? Write in brief the general methods of extraction of volatile oils
   including merits and demerits.   [10]
                                       OR
5. Write biological source, chemical constituents, identification tests and uses of
   a) Lemon grass oil   b) Gaultheria oil   [10]

6. Define Tannins. Classify them and discuss in detail about any one Hydrolysable
   tannin.   [10]
                                       OR
7.a) Give a detailed account on resin combinations and types of resins.
  b) Write a note on a oleo resin.   [10]

8. Write an account on commercial significance of phyto pharmaceuticals.   [10]
                                       OR
9.a) Explain the principle and concepts of Ayurveda.
  b) Write the general preparation of Arishtas and specify with an example.   [10]

10. Give a detailed account on below mentioned colorants (a) Cochineal (b) Henna. [10]

OR

11. Write a brief note on importance of animal fibres used in pharmacy. [10]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DYNAMICS OF MACHINERY
(Common to AME, ME, MCT)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- - -

1. A pair of locomotive driving wheels with the axle, have a moment of inertia of 180kg-m^2. The diameter of the wheel treads is 1.8m and the distance between wheel centres is 1.5m. When the locomotive is travelling on a level track at 95km/h, defective ballasting causes one wheel to fall 6mm and to rise again in a total time of 0.1sec. If the displacement of the wheel takes place with simple harmonic motion, find the gyroscopic couple set up and the reaction between the wheel and rail due to this couple. [15]

2.a) With the help of diagram, explain the four position synthesis mechanism.

   b) Synthesize a function generator to solve the equation $y = \dfrac{1}{x}$, $1 \le x \le 2$ using three precision points. [7+8]

3. The four bar linkage has crank 2 driven by an input torque M_{12} and an external load P=120 N acts at Q on link 4. Find all the link forces and their reactions for the particular position of the linkage given in figure. O_2A=15cm, AB=45cm, O_4B=30cm, O_2O_4=20cm, O_4Q=12.5cm. [15]
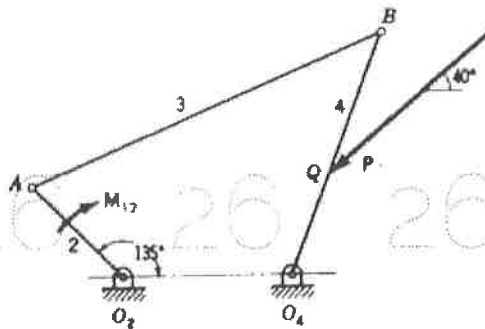
4.a) Describe with the help of a neat sketch the principles of operation of an internal expanding shoe and derive the expression for the braking torque.

   b) In a laboratory experiment, the following data were recorded with rope brake: diameter of the flywheel 1.2m, diameter of the rope 12.5mm, speed of the engine 200rpm, dead load on the brake 600N, spring balance reading 150N. Calculate the brake power of the engine. [7+8]

5.a) Draw the turning moment diagram of a single cylinder double acting steam engine.
  b) A riveting machine is driven by a constant toque 3kW motor. The moving parts including the flywheel are equivalent to 150kg at 0.6m radius. One riveting operation takes 1second and absorbs 10,000N-m of energy. The speed of the flywheel is 300rpm before riveting. Find the speed immediately after riveting. How many rivets can be closed per minute?   [7+8]

6.a) Explain the term 'height of a governor'.
  b) In a spring controlled governor, the curve of controlling force is a straight line. When balls are 400mm apart, the controlling force is 1200N and when 200mm apart, the controlling force is 450N. At what speed will the governor run when the balls are 250mm apart? What initial tension on the spring would be required for isochronism and what would then be the speed? The mass of each ball is 9kg.   [7+8]

7.a) Explain why only a part of the unbalanced force due to reciprocating masses is balanced by revolving masses.
  b) A twin V-engine has the cylinder axes at right angles and their connecting rods operate a common crank. The reciprocating mass per cylinder is 11.5kg and the crank radius is 75mm. The length of the connecting rod is 0.3m. Show that the engine may be balanced for primary forces by means of a revolving balance mass. If the engine speed is 500rpm, what is the value of maximum resultant secondary force?   [7+8]

8.a) What are the three elementary parts of a vibrating system? Explain each briefly.
  b) The mass of an electric motor is 120kg and it runs at 1500rpm. The armature mass is 35kg and its centre of gravity lies 0.5mm from the axis of rotation. The motor is mounted on five springs of negligible damping so that the force transmitted is one eleventh of the impressed force. Assume that the mass of the motor is equally distributed among the five springs. Determine stiffness of each spring, dynamic force transmitted to the base at the operating speed and natural frequency of the system. [7+8]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
CONTROL SYSTEMS
(Common to EEE, ECE, ETM)
Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Discuss about the effects of feedback on systems.
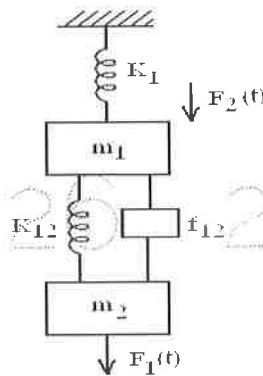 b) Obtain the equilibrium equations using F-V analogy for the following system shown in figure 1. [7+8]

Figure 1

2.a) Derive the expression for the transfer function of armature controlled D C servo motor.
  b) Explain the rules for block diagram algebra in evaluating the transfer function of a system. [8+7]

3.a) Derive the expressions for thee time domain specifications of second order system.
  b) For a second order system $\zeta = 0.6, \omega_n = 5$ rad/sec. Find the values of t_r, t_p, M_p, t_s. [7+8]

4.a) The open loop transfer function of a unity feedback system is given by
     $G(s) = K(s+13) / s(s+3)(s+7)$. Using the Routh-Hurwitz stability criterion, find the range of the K for the system to be stable. If K=1, check all the poles of the system have damping factors greater than 0.85 (or) not.
  b) Write the steps involved in the construction of root locus. [8+7]

5. Draw the Bode plot for the system having the transfer function
   $G(s)H(s) =100 / s(s+1)(s+2)$. Determine the following from Bode plot
   a) Phase margin b) Gain Margin c) Phase crossover frequency d) Gain- crossover frequency. [15]

6. What is polat plot? Sketch the polar plot for the system with
   $G(s)H(s) = 10/ s(s+1)(s+2)$. Calculate its gain margin in dB. Hence comment on its stability. [15]

7.a)   What is a compensator? List out various compensation schemes used in practice.
   b)   Derive the transfer function of lead lag compensator. Sketch and explain about its Bode plot.   [7+8]

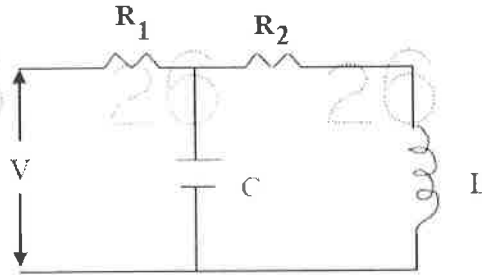8.a)   Obtain the state variable representation for the following electrical network shown in figure 2.

Figure 2

   b)   Investigate the controllability and observabilty of the following system: [8+7]

$$\begin{bmatrix} \dot{x}_1 \\ \dot{x}_2 \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; \; y(t) = \begin{bmatrix} 0 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$$

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MICRO PROCESSORS AND INTERFACING
(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Draw the Flag of register diagram of 8086 and explain the function of each flag.
 b) Explain the function of following pins of 8085. [7+8]
 (i) SID
 (ii) READY
 (iii) $\overline{INTA}$

2.a) Write an 8086 assembly language program to multiply two 16 bit unsigned numbers to provide a 32 bit result.
 b) Explain the addressing modes of 8086 with examples. [7+8]

3.a) Draw the functional block diagram of DMA controller and explain operation.
 b) State the important features of 8086 in maximum mode. [7+8]

4.a) Write a program to interface 4x4 keyboard to 8086 through ports A and B operating at I/O base addresses 0FFF9. Draw the necessary interface details.
 b) Interface 12-bit ADC to 8086 through 8255 I/O port. Give the interfacing details. [7+8]

5.a) Explain about communication standards.
 b) Write a program to generate 1 KHZ rectangular wave with duty cycle 40% using serial port. [7+8]

6.a) Assuming the contents of the mode register of 8251 are 00010100, determine the character and message formats of the 8251 serial communication.
 b) Explain the TTL to RS 232C Conversion procedure. [7+8]

7.a) Describe the each bit of TCON and SCON of 8051.
 b) Write a program to multiply the data in RAM location 3AH by the number 11H. Put the result in R_4 and R_5 registers. [7+8]

8.a) Explain the port structure of 8051 and explain the operation of the serial port in various modes.
 b) Interface external 8 K memory to 8051 microcontroller. Draw the necessary diagram. [7+8]

---ooOoo---

Code No: R9405

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACOLOGY - I

Time: 3hours   Max.Marks:75

Answer any five questions
All questions carry equal marks

- - -

1.a) Define absorption and distribution. Mention different transport mechanisms.
  b) Explain – half life, volume of distribution and clearance.   [8+7]

2.a) Enumerate the pharmacological actions, side effects and uses of Atropine.
  b) Classify adrenergic drugs with examples. Add a note on Adrenaline.   [8+7]

3.a) What are Local anaesthetics? Give its general mechanism of action.
  b) Explain in detail about nerve block, spinal and epidural anesthesia.   [6+9]

4.a) Classify general anaesthetics. Mention the stages of anaesthesia. Add a brief note on Nitrous oxide.
  b) Explain about chronic alcoholism and its treatment   [9+6]

5.a) Define Anxiety. Classify anti-anxiety agents. Add a note on atypical anxiolytics.
  b) Explain the MOA of barbiturates and benzodiazepines with a neat labelled diagram of chloride channel. Add a note on their uses.   [7+8]

6.a) Define the terms depression, mania, psychosis. Explain the pathophysiology of depression.
  b) Explain in detail the mechanism and role of Lithium carbonate in Mania.   [8+7]

7.a) Explain the mechanism, pharmacological role and uses of Levodopa. Add a note of the synergistic role of carbidopa.
  b) Define epilepsy. Mention the types of epilepsy. Write the mechanism and uses of Ethosuximide.   [8+7]

8.a) Classify NSAIDS. Add a note on acute paracetamol poisoning.
  b) Explain the pharmacological actions and uses of Morphine.   [8+7]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MANAGEMENT SCIENCE
(Common to AE, EEE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1. Explain in short notes on the following concepts:
    a) Management as a function.   [2]
    b) Decentralisation.   [3]
    c) Significance of Good Plant Layout.   [2]
    d) Control charts.   [3]
    e) JIT system.   [2]
    f) Concept of HRM.   [3]
    g) Recruitment.   [2]
    h) Transfer.   [3]
    i) Activity   [2]
    j) Balanced Score Card.   [3]

PART - B

(50 Marks)

2.a) Discuss the Systems approach to the study of management.
 b) Bring out Henry Fayol's contribution to the science of management.   [5+5]

OR

3.a) Distinguish between theory X and theory Y. Which theory do you think would work best in most situations?
 b) Explain the features, merits and demerits of Autocratic leadership style.   [5+5]

4.a) State the features of different methods of production.
 b) Define the term "Work Study" and explain its objectives and benefits.   [5+5]

OR

5.a) What is Statistical Quality control? What are its advantages?
 b) Illustrate the stages in Product Life cycle with the help of a diagram.   [5+5]

6.a) What is Manpower planning? Discuss its objectives.
 b) Explain in brief the steps involved in Selection procedure.   [5+5]

OR

7.a) Explain the relative merits and demerits of Seniority and Merit as the basis of promotion.
 b) What is a 'Grievance'? Discuss the various causes for grievances and the methodology of their redressal.   [5+5]

8.a) What are the applications of Networks?
  b) Differentiate between CPM and PERT. [5+5]

OR

9.a) Distinguish between Total float, Free float and Independent float.
  b) What is crashing in CPM technique? [5+5]

10.a) Briefly explain the terms 'Goals' 'Objectives' and 'Policy'.
  b) Outline the vital components of the Corporate Planning process. [5+5]

OR

11.a) What do you understand by Value Chain analysis?
  b) What is meant by Bench marking? How is it helpful for business development? [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ENGINEERING METROLOGY
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What is the need for tolerance?	[2]
b)	What are the limitations of interchangeable assembly?	[3]
c)	What characteristics are obtained on slip gauges during their manufacture?	[2]
d)	Comment about the corollaries for Taylor's principles of gauge design.	[3]
e)	Differentiate between flat and smooth surface.	[2]
f)	Give the symbolic representation of flatness of surface.	[3]
g)	Write a note on the adverse effects of poor surface finish.	[2]
h)	Describe with the help of sketches the types of surface imperfections found in turned, cylindrical nulled, face milled, ground and honed surfaces.	[3]
i)	Give the classification of CMMs.	[2]
j)	What is a drunken thread? Explain.	[3]

PART - B

(50 Marks)

2. Describe principal features of the Indian standard system of limits and fits for plain work. [10]

OR

3.a) In a limit system, the following limits are specified to give clearance between a shaft and hole.

$$shaft\ 30^{-0.005}_{-0.018}\ mm\ \phi$$

$$Hole\ 30^{+0.020}_{-0.000}\ mm\ \phi$$

Determine:
i) Shaft and hole tolerance
ii) The shaft and hole limits
iii) The maximum and minimum clearance.

b) Explain unilateral system and bilateral system of tolerances. [5+5]

4.a) Explain the construction and working of a bevel protractor.
b) What are the advantages and limitations of gauges? [5+5]

OR

5.a) Explain the constructional features of an inside micrometer.
b) Explain how the inside taper can be measured using spheres. [5+5]

6.a) Sketch and explain an optical projector. How do you change the magnification of the image?

   b) Bring out the importance and utility of straight edge and surface plate in laboratories.

[5+5]

OR

7.a) Discuss the method of testing the straightness by spirit level and auto collimator.

   b) What is the difficulty in using the optical flat alone? How do you overcome this difficulty in the interferometer? [5+5]

8.a) State the possible causes of each of the various types of irregularities found in surface texture. Show how surfaces having the same numerical assessment may have different properties and texture.

   b) Explain the principle, the function and operation of a stylus type surface texture measuring instrument. [5+5]

OR

9.a) With the help of a neat sketch explain the construction and working of a profilograph.

   b) A rectilinear pen recording of a diamond turned surface is shown in figure. The sampling length used was 0.8mm and the V / H magnification ratio was 5000 / 100?

A	B	C	D	E	F	
60	115	96	92	109	70	mm^2

Calculate the Ra. [5+5]

10.a) Explain the working principle of pneumatic comparator.

   b) Describe an experiment to determine the pitch error of a lead screw. [5+5]

OR

11.a) Describe various alignment tests to be conducted on drilling machines.

   b) Discuss the role of CMMs in industry. [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
CONTROL SYSTEMES ENGINEERING
(Common to ECE, ETM)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART – A
(25 Marks)

1.a) Explain about various types of control systems with examples briefly. [2]
  b) Briefly explain about the characteristics of feed-back signal. [3]
  c) Why test signals are needed? Explain various test signals used in feed-back control
     systems. [2]
  d) Define time constant and explain its importance. [3]
  e) Explain the concept of stability of a control system with an example. [2]
  f) Distinguish between qualitative stability and conditional stability of a control system.
     [3]
  g) What is compensation? Explain different types of compensators. [2]
  h) Define gain margin and phase margin in frequency domain stability analysis. [3]
  i) Discuss the significance of state Space Analysis. [2]
  j) Define state variables. [3]

PART – B
(50 Marks)

2.a) Explain the operation of ordinary traffic signal, which control automobile traffic at
     roadway intersections. Why are they open loop control systems? How can traffic be
     controlled more effectively?
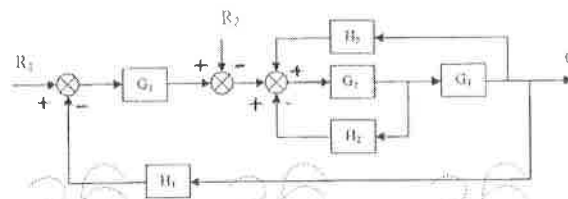 b) For the system represented in below figure 1, obtain transfer function $\frac{C}{R_1}, \frac{C}{R_2}$ [5+5]

Figure 1

OR

3.a) Derive the transfer function of the following electrical network $\frac{V_o(s)}{V_i(s)}$ figure 2.

Figure 2

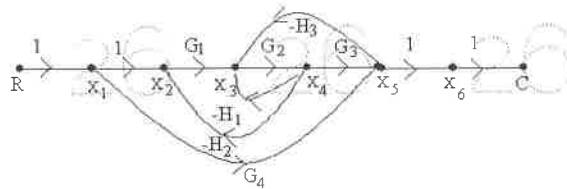b) For a signal flow graph in below figure 3, determine the overall gain by masons gain formula. [5+5]

Figure 3

4.a) A unity feedback system is characterized by an open-loop transfer function G(s)= K/s(s+5). Determine the gain K so that the system will have a damping ratio of 0.5. For this value of K determine settling time, peak overshoot and time to peak overshoot for a unit-step input.

b) The open-loop transfer function of a servo system with unity feedback is G(s)=10/s(0.1s+1) . Evaluate the static error constants (K_p, K_v, K_a) for the system. Obtain the steady-state error of the system when subjected to an input given by the polynomial r(t)=a_0+a_1t +$a_2$$t^2$/2. [5+5]

OR

5.a) A unity feedback system has forward transfer function G(s) = 20/(s+1). Determine and compare the response of the open and closed loop systems for unit step input. Suppose now that parameter variation occurring during operating conditions causes G(s) to modify to G'(s)=20/(s+0.4). What will be the effect on unit-step response of open and closed loop systems? Comment upon the sensitivity of the two systems to parameter variations.

b) The response of a system subjected to a unit step input is c(t) = 1 + 0.2e^{-60t}−1.2e^{-10t}. Obtain the expression for the closed loop transfer function of the system. Also determine the undamped natural frequency and damping ratio of the system. [5+5]

6.a) Apply R-H criterion to determine stability of the system with the following characteristic equation 2s^4+10s^3+5s^2+5s+10=0. Find the number roots with positive real parts, if any.

b) Explain the limitations of Routh's stability criteria. [5+5]

OR

7. Plot the root locus for the system with $G(s)H(s) = \frac{K(s+1)(s+3)}{s^3}$. Sketch the root locus and determine the range of K for which the system is stable. [10]

8. Sketch the Bode plots for a system $G(s) = \frac{15(s+5)}{s(s^2+16s+100)}$. Hence determine the stability of the system. [10]

OR

9.a) Explain the effect of addition of a pole at the origin on the polar plot of a given system.

b) Sketch the polar plot and hence find the frequency at which the plot intersects the positive imaginary axis for the system $G(s) = \frac{0.1}{s(1+s)(1+0.1s)}$. Also find the corresponding magnitude. [5+5]

10.a) Obtain the state variable representation of an armature controlled D.C Servomotor.

b) Derive the state models for the system described by the differential equation in phase variable form. [5+5]

$$\dddot{y} + 4\ddot{y} + 5\dot{y} + 2y = 2\dddot{u} + 6\dot{u} + 5u.$$

OR

11.a) Obtain the solution of a system whose state model is given by X = AX(t) +BU(t); X(0) =X₀ and hence define state Transition matrix.

b) Obtain the state model of the system shown in below figure 4. [5+5]
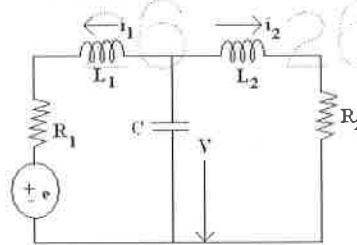Consider the state variables as i₁, i₂ and v.

Figure 4

---ooOoo---

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
OPERATING SYSTEMS
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Describe about control card in batch-system.	[2]
b)	Define Real time operating systems.	[3]
c)	What do you turn around Time?	[2]
d)	Define Process Control Block.	[3]
e)	Describe about hashed page table.	[2]
f)	What do you mean by external fragmentation?	[3]
g)	Describe about File Allocation Table.	[2]
h)	Mention two important functions of Virtual File System. (VFS) Layer.	[3]
i)	Describe about resource allocation Graph.	[2]
j)	List the necessary conditions to occur the Deadlock.	[3]

PART - B

(50 Marks)

2.a) Define operating system? Elaborate the operating system operations with examples?

b) Discuss in detail the main advantage of the layered approach to system design? What are the disadvantages of using layered approach?   [5+5]

OR

3. Explain the following terms with examples and neat diagrams: [5+5]
a) Java Virtual Machine   b) Para-Virtualization

4.a) Differentiate between Long terms, Short term, Medium term Scheduler.

b) By illustrating the structure of process P1, explain the Petersons solution to critical section problem.   [5+5]

OR

5.a) Discuss in detail about the Dining –Philosophers solution using monitors.

b) Illustrate the semaphore functions with examples.   [5+5]

6.a) Perform optimal page replacement on the following reference string:
-7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 find number of page faults and define optimal page replacement?

b) Define thrashing? Explain its causes and write any two solutions to increase CPU utilization in case of thrashing. [5+5]

OR

7. What is fragment? Explain the difference between internal and external fragments. Explain how best fit allocation scheme minimized the fragment size? [5+5]

8.a) What are the disadvantages of single contiguous memory allocation? Explain.

b) Explain and compare the FCFS and SSTF disk scheduling algorithms. [5+5]

OR

9. Illustrate the following terms with examples.
a) Bit vector
b) Swap space management. [5+5]

10. Describe in detail the implementation methods of Access matrix. [10]

OR

11. How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail. [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
GEOTECHNICAL ENGINEERING
(Civil Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) A soil has bulk unit weight of 18 kN/m^3. If the water content of soil is 10%, estimate its
dry unit weight. [2]

b) A clay soil has liquid limit and plastic limits 70% and 30% respectively. If the liquidity
index of clay is 0.5, estimate its natural moisture content and plasticity index. [3]

c) Prove that the shear strength of soil is zero during quick sand condition. [2]

d) A soil has seepage velocity as 1×10^{-3} cm/s, and porosity 0.45, estimate its discharge
velocity. [3]

e) Write the assumptions of Boussinesq's theory. [2]

f) Define compaction effort with formula. [3]

g) A soil has failure angle as 60^0, then estimate its angle of internal friction. [2]

h) Define critical void ratio and draw the void ratio variations for loose and dense sand
with the strain. [3]

i) Define coefficient of volume compressibility and compression index. [2]

j) Write the reasons for pre consolidation of soil. [3]

PART - B

(50 Marks)

2.a) Define :
(i) Void ratio, (ii) Porosity, (iii) Degree of saturation, (iv) Water content, (v) Dry
density, (vi) Bulk density, (vii) Submerged density.

b) Derive from fundamentals:
$S.e = w.G$,
Where; S represents degree of saturation, e represents void ratio, w represents water
content, and G represents grain specific gravity.

c) A soil has porosity 40% and specific gravity 2.67, estimate its dry unit weight. Assume
unit weight of water as 10 kN/m^3. [4+3+3]

OR

3.a) Sketch typical complete grain-size distribution curves for (i) well graded soil and
(ii) uniform silty sand. Form the curves, determine the uniformity coefficient and
effective size in each case. What qualitative inferences can you draw regarding the
engineering properties of each soil?

b) The following data refer to a sample of soil:
Percent passing 4.75 mm IS Sieve = 64
Percent passing 75-µ IS Sieve = 6
Uniformity Coefficient = 7.5
Coefficient of Curvature = 2.7
Plasticity index = 2.5
Classify the soil. [4+6]

4.a) What are the various parameters that effect the permeability of soil in the field ? Critically discuss.

b) A uniform homogeneous sand deposit of specific gravity 2.60 and void ratio 0.65 extends to a large depth. The ground water table is 2 m from ground level.. Determine the effective, neutral, and total stress at depths of 2 m and 6 m. Assume that the soil from 1 m to 2 m has capillary moisture leading to degree of saturation of 60%. [4+6]

OR

5.a) Define coefficient of permeability and list four factors on which the permeability depends.

b) A concrete dam retains water to a height of 9 m. It has rows of sheet piling at both heel and toe which extend half way down to an impervious stratum. From a flow net sketched on a transformed section, it is found that there are four flow channels and sixteen head drops. The average horizontal and vertical permeabilities of the soil are 6×10^{-3} mm/s and 2×10^{-3} mm/s, respectively. What is the seepage per day, if the length of the dam is 150 metres? [4+6]

6.a) Write a brief note on the 'compaction in the field' bringing out the various types of rollers and their effectiveness with respect to different soil types.

b) The following results were obtained in a compaction test. Determine the optimum moisture content and the maximum dry density by plotting the data. [4+6]

Moisture Content (%)	7.4	9.7	10.5	11.5	13.1	14.4
Bulk Unit Weight (kN/m^3)	18.81	20.07	20.52	21.06	21.06	20.07

OR

7.a) Write a brief critical note on 'Newmark's influence chart'.

b) A ring foundation is of 3 m external diameter and 2.00 m internal diameter. It transmits a uniform pressure of 90 kPa. Calculate the vertical stress at a depth of 1.5 m directly beneath the centre of the loaded area. [6+4]

8.a) Distinguish between normally consolidated and over consolidated soils. Explain in detail any one method for determining the coefficient of consolidation of a soil.

b) A clay stratum is 4.5 m thick and rests on a rock surface. The coefficient of consolidation of a sample of this clay was found to be 4.5×10^{-8} m^2/s in the laboratory. Determine probable period of time required for the clay stratum to undergo 50% of the ultimate settlement expected under a certain increment of pressure. [5+5]

OR

9.a) What is preconsolidation pressure? Explain the Casagrande's graphical method for its evaluation.

b) A soft, normally consolidated clay layer is 18 m thick. The natural water content is 45%. The saturated unit weight is 18 kN/m^3; the grain specific gravity is 2.70 and the liquid limit is 63%. The vertical stress increment at the centre of the layer due to the foundation load is 9 kN/m^2. The ground water level is at the surface of the clay layer. Determine the settlement of the foundation at the centre of the layer. [4+6]

10.a) What are the advantages and disadvantages of a triaxial compression test? Briefly explain how you conduct the test and compute the shear parameters for the soil from the test data.

b) From a direct shear test on an undisturbed soil sample, the following data have been obtained. Evaluate the undrained strength parameters by plotting the results. [5+5]

Normal Stress (kPa)	70	96	114
Shear Stress (kPa)	138	156	170

OR

11.a) Differentiate between unconsolidated undrained test and a drained test. Under what conditions are these test results used for design purposes?

b) An embankment consists of clay fill for which cohesion is 25 kPa and angle of internal friction is 27^0 (from consolidated undrained tests with pore-pressure measurement). The average bulk unit-weight of the fill is 20 kN/m^3. Estimate the shear-strength of the material on a horizontal plane at a point 20 m below the surface of the embankment, if the pore pressure at this point is 180 kPa as shown by a piezometer. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MANAGEMENT SCIENCE
(Common to AE, EEE)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1. Explain in short notes on the following concepts:
   a) Management as a function.   [2]
   b) Decentralisation.   [3]
   c) Significance of Good Plant Layout.   [2]
   d) Control charts.   [3]
   e) JIT system.   [2]
   f) Concept of HRM.   [3]
   g) Recruitment.   [2]
   h) Transfer.   [3]
   i) Activity   [2]
   j) Balanced Score Card.   [3]

PART - B

(50 Marks)

2.a) Discuss the Systems approach to the study of management.
  b) Bring out Henry Fayol's contribution to the science of management.   [5+5]
OR
3.a) Distinguish between theory X and theory Y. Which theory do you think would work best in most situations?
  b) Explain the features, merits and demerits of Autocratic leadership style.   [5+5]

4.a) State the features of different methods of production.
  b) Define the term "Work Study" and explain its objectives and benefits.   [5+5]
OR
5.a) What is Statistical Quality control? What are its advantages?
  b) Illustrate the stages in Product Life cycle with the help of a diagram.   [5+5]

6.a) What is Manpower planning? Discuss its objectives.
  b) Explain in brief the steps involved in Selection procedure.   [5+5]
OR
7.a) Explain the relative merits and demerits of Seniority and Merit as the basis of promotion.
  b) What is a 'Grievance'? Discuss the various causes for grievances and the methodology of their redressal.   [5+5]

8.a) What are the applications of Networks?
  b) Differentiate between CPM and PERT. [5+5]

OR

9.a) Distinguish between Total float, Free float and Independent float.
  b) What is crashing in CPM technique? [5+5]

10.a) Briefly explain the terms 'Goals' 'Objectives' and 'Policy'.
  b) Outline the vital components of the Corporate Planning process. [5+5]

OR

11.a) What do you understand by Value Chain analysis?
  b) What is meant by Bench marking? How is it helpful for business development? [5+5]

---ooOoo---

Code No: 115AJ

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ENGINEERING METROLOGY
(Mechanical Engineering)

Time: 3 hours
Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)   What is the need for tolerance?   [2]
  b)   What are the limitations of interchangeable assembly?   [3]
  c)   What characteristics are obtained on slip gauges during their manufacture?   [2]
  d)   Comment about the corollaries for Taylor's principles of gauge design.   [3]
  e)   Differentiate between flat and smooth surface.   [2]
  f)   Give the symbolic representation of flatness of surface.   [3]
  g)   Write a note on the adverse effects of poor surface finish.   [2]
  h)   Describe with the help of sketches the types of surface imperfections found in turned, cylindrical nulled, face milled, ground and honed surfaces.   [3]
  i)   Give the classification of CMMs.   [2]
  j)   What is a drunken thread? Explain.   [3]

PART - B

(50 Marks)

2.   Describe principal features of the Indian standard system of limits and fits for plain work.   [10]

OR

3.a)   In a limit system, the following limits are specified to give clearance between a shaft and hole,

$$shaft\ 30^{-0.005}_{-0.018}\ mm\ \phi$$

$$Hole\ 30^{+0.020}_{-0.000}\ mm\ \phi$$

Determine:
i) Shaft and hole tolerance
ii) The shaft and hole limits
iii) The maximum and minimum clearance.
  b)   Explain unilateral system and bilateral system of tolerances.   [5+5]

4.a)   Explain the construction and working of a bevel protractor.
  b)   What are the advantages and limitations of gauges?   [5+5]

OR

5.a)   Explain the constructional features of an inside micrometer.
  b)   Explain how the inside taper can be measured using spheres.   [5+5]

6.a) Sketch and explain an optical projector. How do you change the magnification of the image?

b) Bring out the importance and utility of straight edge and surface plate in laboratories. [5+5]

OR

7.a) Discuss the method of testing the straightness by spirit level and auto collimator.

b) What is the difficulty in using the optical flat alone? How do you overcome this difficulty in the interferometer? [5+5]

8.a) State the possible causes of each of the various types of irregularities found in surface texture. Show how surfaces having the same numerical assessment may have different properties and texture.

b) Explain the principle, the function and operation of a stylus type surface texture measuring instrument. [5+5]

OR

9.a) With the help of a neat sketch explain the construction and working of a profilograph.

b) A rectilinear pen recording of a diamond turned surface is shown in figure. The sampling length used was 0.8mm and the V / H magnification ratio was 5000 / 100?

A	B	C	D	E	F	
60	115	96	92	109	70	mm²

Calculate the Ra. [5+5]

10.a) Explain the working principle of pneumatic comparator.

b) Describe an experiment to determine the pitch error of a lead screw. [5+5]

OR

11.a) Describe various alignment tests to be conducted on drilling machines.

b) Discuss the role of CMMs in industry. [5+5]

---ooOoo---

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
CONTROL SYSTEMES ENGINEERING
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART – A
(25 Marks)

1.a)   Explain about various types of control systems with examples briefly.   [2]
  b)   Briefly explain about the characteristics of feed-back signal.   [3]
  c)   Why test signals are needed? Explain various test signals used in feed-back control systems.   [2]
  d)   Define time constant and explain its importance.   [3]
  e)   Explain the concept of stability of a control system with an example.   [2]
  f)   Distinguish between qualitative stability and conditional stability of a control system.   [3]
  g)   What is compensation? Explain different types of compensators.   [2]
  h)   Define gain margin and phase margin in frequency domain stability analysis.   [3]
  i)   Discuss the significance of state Space Analysis.   [2]
  j)   Define state variables.   [3]

PART – B
(50 Marks)

2.a)   Explain the operation of ordinary traffic signal, which control automobile traffic at roadway intersections. Why are they open loop control systems? How can traffic be controlled more effectively?

  b)   For the system represented in below figure 1, obtain transfer function $\frac{C}{R_1}, \frac{C}{R_2}$.   [5+5]
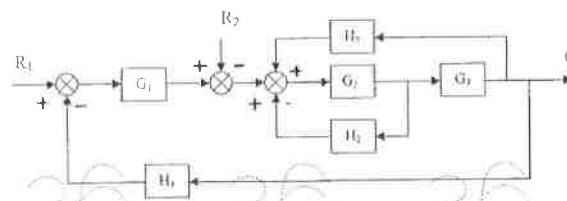

Figure 1

OR

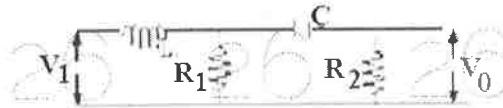3.a) Derive the transfer function of the following electrical network $\frac{V_o(s)}{V_i(s)}$ figure 2.

Figure 2

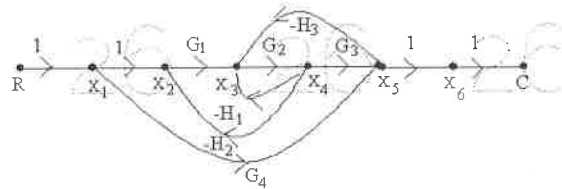b) For a signal flow graph in below figure 3, determine the overall gain by masons gain formula. [5+5]

Figure 3

4.a) A unity feedback system is characterized by an open-loop transfer function G(s)= K/s(s+5). Determine the gain K so that the system will have a damping ratio of 0.5. For this value of K determine settling time, peak overshoot and time to peak overshoot for a unit-step input.

b) The open-loop transfer function of a servo system with unity feedback is G(s)=10/s(0.1s+1) . Evaluate the static error constants (K_p, K_v, K_a) for the system. Obtain the steady-state error of the system when subjected to an input given by the polynomial r(t)=a_0+a_1t +$a_2$$t^2$/2. [5+5]

OR

5.a) A unity feedback system has forward transfer function G(s) = 20/(s+1). Determine and compare the response of the open and closed loop systems for unit step input. Suppose now that parameter variation occurring during operating conditions causes G(s) to modify to G'(s)=20/(s+0.4). What will be the effect on unit-step response of open and closed loop systems? Comment upon the sensitivity of the two systems to parameter variations.

b) The response of a system subjected to a unit step input is c(t) = 1 + 0.2e^{-60t}−1.2e^{-10t}. Obtain the expression for the closed loop transfer function of the system. Also determine the undamped natural frequency and damping ratio of the system. [5+5]

6.a) Apply R-H criterion to determine stability of the system with the following characteristic equation 2s^4+10s^3+5s^2+5s+10=0. Find the number roots with positive real parts, if any.

b) Explain the limitations of Routh's stability criteria. [5+5]

OR

7. Plot the root locus for the system with $G(s)H(s) = \frac{K(s+1)(s+3)}{s^3}$. Sketch the root locus and determine the range of K for which the system is stable. [10]

8. Sketch the Bode plots for a system $G(s) = \frac{15(s+5)}{s(s^2+16s+100)}$. Hence determine the stability of the system. [10]

OR

9.a) Explain the effect of addition of a pole at the origin on the polar plot of a given system.
 b) Sketch the polar plot and hence find the frequency at which the plot intersects the positive imaginary axis for the system $G(s) = \frac{0.1}{s(1+s)(1+0.1s)}$. Also find the corresponding magnitude. [5+5]

10.a) Obtain the state variable representation of an armature controlled D.C Servomotor.
 b) Derive the state models for the system described by the differential equation in phase variable form. [5+5]
$$\dddot{y} + 4\ddot{y} + 5\dot{y} + 2y = 2\ddot{u} + 6\dot{u} + 5u.$$

OR

11.a) Obtain the solution of a system whose state model is given by X = AX(t) +BU(t); X(0) =X_0 and hence define state Transition matrix.
 b) Obtain the state model of the system shown in below figure 4. [5+5]
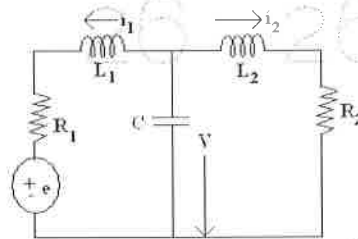Consider the state variables as i_1, i_2 and v.

Figure 4

---ooOoo---

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
OPERATING SYSTEMS
(Common to CSE, IT)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Describe about control card in batch-system.	[2]
b)	Define Real time operating systems.	[3]
c)	What do you turn around Time?	[2]
d)	Define Process Control Block.	[3]
e)	Describe about hashed page table.	[2]
f)	What do you mean by external fragmentation?	[3]
g)	Describe about File Allocation Table.	[2]
h)	Mention two important functions of Virtual File System. (VFS) Layer.	[3]
i)	Describe about resource allocation Graph.	[2]
j)	List the necessary conditions to occur the Deadlock.	[3]

PART - B

(50 Marks)

2.a) Define operating system? Elaborate the operating system operations with examples?
  b) Discuss in detail the main advantage of the layered approach to system design? What are the disadvantages of using layered approach?   [5+5]

OR

3.   Explain the following terms with examples and neat diagrams: [5+5]
   a) Java Virtual Machine   b) Para-Virtualization

4.a) Differentiate between Long terms, Short term, Medium term Scheduler.
  b) By illustrating the structure of process P1, explain the Petersons solution to critical section problem.   [5+5]

OR

5.a) Discuss in detail about the Dining –Philosophers solution using monitors.
  b) Illustrate the semaphore functions with examples.   [5+5]

6.a) Perform optimal page replacement on the following reference string:
-7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1 find number of page faults and define optimal page replacement?

b) Define thrashing? Explain its causes and write any two solutions to increase CPU utilization in case of thrashing. [5+5]

OR

7. What is fragment? Explain the difference between internal and external fragments. Explain how best fit allocation scheme minimized the fragment size? [5+5]

8.a) What are the disadvantages of single contiguous memory allocation? Explain.

b) Explain and compare the FCFS and SSTF disk scheduling algorithms. [5+5]

OR

9. Illustrate the following terms with examples.
a) Bit vector
b) Swap space management. [5+5]

10. Describe in detail the implementation methods of Access matrix. [10]

OR

11. How does deadlock avoidance differ from deadlock prevention? Write about deadlock avoidance algorithm in detail. [10]

--ooOoo---

R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MECHANICS OF FLUIDS AND HYDRAULIC MACHINES
(Automobile Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What is kinematic viscosity? What are its units?	[2]
b)	Define the term static head and manometric head.	[3]
c)	Define the term streak lines?	[2]
d)	What is velocity head?	[3]
e)	What is a pitot tube?	[2]
f)	Write a note on flow nozzle.	[3]
g)	Where is Kaplan turbine used?	[2]
h)	What is a surge tank?	[3]
i)	What is an air vessel?	[2]
j)	What is NPSH?	[3]

PART - B

(50 Marks)

2.a) State and prove Pascal's law.
 b) A U-tube differential manometer is used to measure the difference of pressure between inlet throat of a venturimeter placed with its axis horizontal in a pipe line. Calculate the difference in pressure between inlet and throat when the manometer reading is 250mm and water flows through the pipe.   [5+5]

OR

3.a) Describe giving a sketch, a micro manometer. Explain how it could be used for measuring small pressure difference.
 b) A liquid has a specific gravity of 1.9 and kinematic viscosity of 6 stokes. What is its dynamic viscosity?   [5+5]

4.a) Write briefly about the classification of flows?
 b) 250 lires/sec of water is flowing in a pipe having a diameter of 300mm. If the pipe is bent by 135^0, find the magnitude and direction of the resultant force on the bend. The pressure of the water flowing is $400kN/m^2$. Take specific weight of water as $9.81kN/m^3$.   [5+5]

OR

5.a) State and derive continuity equation for one dimensional flow.
 b) The water is flowing through a pipe having diameters 200mm and 100mm at sections 1 and 2 respecitvely. The rate of flow through the pipe is 35 litres/s. The section 1 is 6m above the datum and section 2 is 4m above the datum. If the pressure at section 1 is $400kN/m^2$, find the intensity of pressure at section 2.   [5+5]

6.a) Derive formulae for calculating loss of head due to
    i) Sudden enlargement
    ii) Sudden contraction

   b) A horizontal pipe of 100mm diameter is joined sudden enlargement to a 150mm diameter pipe. Water is flowing though it at the rate of $2m^3$/min. find:
    i) Loss of head due to abrupt expansion
    ii) Pressure difference in two pipes and
    iii) Change in pressure if the change of section is gradual, without any loss.   [5+5]

OR

7.a) Explain the terms total energy line and hydraulic gradient line.

   b) Show that for velocity distribution, $\frac{u}{U} = 2\left(\frac{y}{\delta}\right) - \left(\frac{y}{\delta}\right)^2$, the ration of $\delta/\delta^* = 3$.   [5+5]

8. A Kaplan turbine produces 44000kW under a head of 24.7m, with an overall efficiency of 90 percent. Taking the value of speed ratio as 1.6, flow ratio as 0.5 and the hub diameter as 0.35 times the outside diameter, find the runner diameter and speed of the turbine.   [10]

OR

9. A jet of water moving with a velocity of 20m/s impinges on a curved vane, which is moving with a velocity of 10m/s. The jet makes an angle of 20^0 with the direction of motion of vane at inlet and leaves at an angle of 130^0 to the direction of motion of vane at outlet. Determine:
   a) The angles of curved vane tips so that water enters and leaves without shock;
   b) The work done per N of water entering the vane.   [5+5]

10. Draw an indicator diagram, considering the effect of acceleration and friction in suction and delivery pipes. Find an expression for the work done per second in case of single-acting reciprocation pump.   [10]

OR

11. What is negative slip in reciprocating pump? Explain with neat sketches the function of air vessels in a reciprocating pump.   [10]

---ooOoo---

Code No: 55013

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
POWER ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 hours
Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain the different methods to Turn – on and Turn – off the SCR.
  b) A thyristor string with 7 SCR's in series is supplied with 7 KV. The maximum permissible blocking voltage of each SCR is 1500 V. Calculate the value of static equalizing resistance of each SCR if the maximum leakage current is 20 mA. [8+7]

2.a) Explain how the turn-on and turn-off snubber circuits reduce the power losses during the switching operations of a power transistor?
  b) How does the negative resistance property of the UJT helpful for its operation as an oscillator? [8+7]

3.a) Explain the operation of single phase half controlled bridge converter with RL load for continuous and discontinuous current mode of operations with relevant waveforms for $\alpha = 45^0$.
  b) Derive an expression for average voltage of output for a Single phase half wave controlled rectifier with Resistive load. [8+7]

4.a) Explain the working of Single phase full converter with a neat circuit diagram for R load with necessary waveforms.
  b) A single phase fully controlled bridge converter is having load of R = 8 ohms. Determine the i) Average output voltage ii) RMS output voltage. If the supply voltage is 220 V, 50 Hz and firing angle is 45^0. [8+7]

5. With a neat circuit diagram and relevant waveforms, explain the operation of Bridge type three phase half controlled rectifier with RL – load along with its waveforms. [15]

6.a) With a neat diagram and relevant waveforms, explain the operation of single phase bridge type cyclo converter for RL load.
  b) Explain the principle of ON – OFF control used in voltage controller. [8+7]

7.a) Give the classification of choppers based on quadrants; also give their circuit diagrams along with a brief description of operation.
  b) Explain the role played by the saturable reactor in a Morgan Chopper. [8+7]

8.a) Compare the methods of commutation used in bridge inverter circuits.
  b) A Parallel inverter has input dc voltage of 40 V. It is desired that output voltage be 220 V, 50 Hz and peak load current 2A. Design the parallel inverter. Choose correct ratings of thyristor. [7+8]

---oo0oo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MACHINE TOOLS
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) What are the characteristics of cutting tool materials? List out the different types of cutting tool materials.
  b) Derive the expression for shear angle in orthogonal cutting in terms of rake angle and chip thickness ratio. [7+8]

2.a) What are the different methods of taper turning? Describe any one of them.
  b) Describe any two work holding devices used on the lathe? Explain. [7+8]

3.a) With the help of the line diagram, explain the working of the main parts of shaper.
  b) Describe with line diagram of Whitworth quick return mechanism, used in slotter. [7+8]

4.a) Draw a sketch of a simple twist drill with tapered shank and explain its important parts.
  b) Enumerate the horizontal boring machine with neat sketch in detail. [7+8]

5.a) Explain the construction of universal milling machine with schematic sketch.
  b) What are the differences between compound indexing and differential indexing? Explain the relative merits. [7+8]

6.a) What is the cutting tool used for performing the grinding operation on what factors the cutting tool selection is made in the case of grinding.
  b) What are natural and artificial abrasives? Why are the later preferred over the former? [8+7]

7.a) Explain the difference between the type of abrasive cutting tool used for honing that used for lapping.
  b) Sketch different elements of a broach and describe them briefly. [8+7]

8.a) List out the advantages and disadvantages of jigs and fixtures.
  b) What are the important considerations while designing a Jig and fixture? [7+8]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPUTER ORGANIZATION
(Electronics and Communication Engineering)

Time: 3 hours
Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain about the connection between the processor and the main memory with a neat diagram.
 b) Explain the floating point representation of addition and subtraction. [8+7]

2.a) Show the hardware that implements the following statement. Include the logic gates for the control function and a block diagram for the binary counter with a count enable input.
 $xyT0 + T1 + y'T2: AR \leftarrow AR + 1$
 b) Explain about various instruction formats in detail with suitable example. [8+7]

3.a) Formulate a mapping procedure that provides eight consecutive microinstructions for each routine. The operation code has six bits and the control memory has 2048 words.
 b) Explain about the design of hardwired control. [7+8]

4.a) Derive an algorithm in flowchart form for the non restoring method of fixed point binary division.
 b) Design hardware for signed-magnitude addition and subtraction. [8+7]

5.a) Explain about Virtual memory.
 b) Explain about RAID. [7+8]

6.a) Explain about PCI bus architecture.
 b) How many characters per second can be transmitted over a 1200-baud line in each of the following modes? (Assume a character code of eight bits.)
 i) Synchronous serial transmission.
 ii) Asynchronous serial transmission with two stop bits.
 iii) Asynchronous serial transmission with one stop bit. [7+8]

7.a) Draw a space-time diagram for a six-segment pipeline showing the time it takes to process eight tasks.
 b) Explain about array processors. [7+8]

8.a) Explain about the Time-shared common bus and Multiport memory with a neat sketch.
 b) Explain about different types of Dynamic Arbitration Algorithms. [7+8]

---ooOoo---

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DESIGN OF MACHINE ELEMENTS
(Automobile Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

Assume suitable data if necessary:

1.a) Distinguish between selective assembly and interchangeable assembly. List their advantages and disadvantages.

  b) A 50 mm diameter shaft is made to rotate in the bush. The tolerances for both shaft and bush are 0.050 mm. Determine the dimension of the shaft and bush to give a maximum clearance of 0.075 mm with the hole basis system. [7+8]

2.a) A solid circular shaft, 15 mm in diameter, is subjected to torsional shear stress, which varies from which varies from 0 to 35 N/mm^2, and at the same time, it is subjected to an axial stress that varies from -15 to $+30$ N/mm^2. The frequency of variation of these stresses is equal to the shaft speed. The shaft is made of Steel FeE 400 (S_{ut} = 540 N/mm^2 and S_{yt} = 400 N/mm^2), and the corrected endurance limit of the shaft is 200 N/mm^2. Determine the factor of safety.

  b) What are Goodman's line and Soderberg's line? Define them, and explain their purpose. [9+6]

3.a) What factors are to be considered in the design of welded joint?

  b) A double riveted double cover butt joint in plates 16 mm thick made with 24 mm dia. Rivets at 120 mm pitch. The permissible stresses are 130 MPa in tension, 110 MPa in shear and 160 MPa in crushing, find the efficiency of joint assuming the strength rivet in double shear is twice that in single shear. [7+8]

4.a) How do you design a hollow shaft on torsional rigidity basis? Explain.

  b) It is required to design a square key for fixing a pulley on the shaft, which is 50 mm in diameter. The pulley transmits 10 kW power at 200 rpm to the shaft. The key is made of steel 45C8 (S_{ut} = S_{yt} = 380 N/mm^2), and the factor of safety is 3. Determine the dimensions of the key. [6+9]

5. A semi-elliptical spring has ten leaves in all, with the two full length leaves extending 625 mm. It is 62.5 mm wide and 6.25 mm thick. Design a helical spring with mean diameter of coil 100 mm which will have approximately the same induced stress and deflection for any load. The Young's modulus for the material of the semi-elliptical spring may be taken as 200 kN/mm^2 and modulus of rigidity for the material of helical spring is 80 kN/mm^2. [15]

6. Design a full hydrodynamic journal bearing with the following specifications for the machine tool application: [15]

Journal diameter   : 75 mm
Radial load   : 10 kN
Journal speed   : 1440 rpm
Minimum oil film thickness   : 25 microns
Inlet temperature   : 40^0C
Bearing material   : babbitt

Determine the length of the bearing and select suitable oil for this application.

7.a) Why are connecting rods made of I section?
  b) What are the functions of pistons ribs?
  c) What are the differences between centre and overhung crankshafts? [5+5+5]

8. Design a cast iron piston for a single acting four-stroke diesel engine with the following data: [15]

Cylinder bore   : 200 mm
Length of stroke   : 250 mm
Speed   : 600 rpm
Break mean effective pressure   : 0.60 MPa
Maximum gas pressure   : 4 MPa
Fuel consumption   : 0.25 kg per BP per h

(l/d) ratio for bush in small end of connecting rod: 1.5

Assume suitable data if required and state the assumptions you make.

---ooOoo---

Code No: 225AD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL TECHNOLOGY – I

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A   (25 Marks)

1.a) Define polymorphism and write it's importance in preformulation studies.   [2]
  b) Explain about use of X- ray to establish batch-to-batch reproducibility of a crystalline forms in preformulation studies.   [3]
  c) Write about various factors affecting the skin penetration of drugs through skin.   [2]
  d) Write about hydrocarbons used in semisolid preparations.   [3]
  e) Write the importance of dry syrups.   [2]
  f) List out various propellants used in Aerosols.   [3]
  g) Write about hair conditioners.   [2]
  h) List out various ingredients used in Tooth pastes.   [3]
  i) Write about official tests done on glass containers.   [2]
  j) Write about different packaging components.   [3]

PART-B   (50 Marks)

2. Write about pKa determination of a new drug during preformulation studies and it's importance.   [10]

OR

3. Write about solid state stability studies during preformulation studies.   [10]

4.a) Write about clear gel semisolid preparations.
  b) Write about general preparation method of a semisolid dosage form.   [5+5]

OR

5. Write in detail about different semisolid bases used in ointments.   [10]

6. Explain about foam system for Aerosol preparations.   [10]

OR

7. Write about Aerosol evaluation tests.   [10]

8. Write about formulation and preparation of lipsticks.   [10]

OR

9. Explain about formulation and evaluation of cold creams.   [10]

10. Write about different types of plastic materials used for packaging of drug products.   [10]

OR

11. Explain about collapsible tubes for packaging of Pharmaceutical products.   [10]

--ooOoo--

Code No: 215AD

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL TECHNOLOGY – I

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A   **(25 Marks)**

1.a) Define polymorphism and write it's importance in preformulation studies.   [2]
 b) Explain about use of X- ray to establish batch-to-batch reproducibility of a crystalline forms in preformulation studies.   [3]
 c) Write about various factors affecting the skin penetration of drugs through skin. [2]
 d) Write about hydrocarbons used in semisolid preparations.   [3]
 e) Write the importance of dry syrups.   [2]
 f) List out various propellants used in Aerosols.   [3]
 g) Write about hair conditioners.   [2]
 h) List out various ingredients used in Tooth pastes.   [3]
 i) Write about official tests done on glass containers.   [2]
 j) Write about different packaging components.   [3]

PART-B   **(50 Marks)**

2. Write about pKa determination of a new drug during preformulation studies and it's importance.   [10]

OR

3. Write about solid state stability studies during preformulation studies.   [10]

4.a) Write about clear gel semisolid preparations.
 b) Write about general preparation method of a semisolid dosage form.   [5+5]

OR

5. Write in detail about different semisolid bases used in ointments.   [10]

6. Explain about foam system for Aerosol preparations.   [10]

OR

7. Write about Aerosol evaluation tests.   [10]

8. Write about formulation and preparation of lipsticks.   [10]

OR

9. Explain about formulation and evaluation of cold creams.   [10]

10. Write about different types of plastic materials used for packaging of drug products.   [10]

OR

11. Explain about collapsible tubes for packaging of Pharmaceutical products.   [10]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACOGNOSY - II

Time: 3hours   Max.Marks:75

Answer any five questions
All questions carry equal marks
- - -

1. Mention different types of classification of glycosides with suitable examples and their uses.   [15]

2.a) Give the general methods of extraction of alkaloids
  b) Write the chemical constituents with their uses for vinca, ephedra, nux vomica, aswagandha and rauwolfia.   [15]

3. Discuss the Pharmacognostic study of Myrobalan and Arjuna.   [15]

4. Define resins. Mention the identification test for resins. Write the chemical constituents and uses of Asafoetida and balsum of tolu.   [15]

5. Define enzymes and write the pharmacognostic study of pepsin and pancreatin.
                                                                                              [15]

6. Discuss the biosynthesis of cholesterol.   [15]

7. Write the pharmacognostic study of saffron and turmeric.   [15]

8. Define mineral drugs and classify them based on their origin. Write the biological source and uses of bentonite and kaolin.   [15]

--ooOoo--

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
POWER SYSTEMS-II
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	Define GMD.	[2]
b)	What are bundled conductors? Explain.	[3]
c)	How transmission lines are classified?	[2]
d)	Write A, B, C and D constants of a short transmission line.	[3]
e)	Distinguish between reflected and refracted waves?	[2]
f)	How skin effect influences the performance of transmission line.	[3]
g)	What is sag template?	[2]
h)	List the methods of improving string efficiency in insulators.	[3]
i)	State the limitations of solid cables.	[2]
j)	Write the expression for most economical conductor size in cables.	[3]

PART - B
(50 Marks)

2.a) What factors must be taken into account while calculating the resistance of overhead line conductors. How are these factors account for?

b) In a 3-phase transmission line the three conductors are placed at the corners of a triangle of sides 1.5m, 3m, and 2.6m respectively. If the diameter of each conductor is 1.4 cm and the conductors are regularly transposed, calculate the inductance/phase/km length of the line.   [5+5]

OR

3.a) What is method of images? Derive an expression for the capacitance per unit length of a 3-phase transposed line. What is the effect of earth on the capacitance of the line?

b) A 3-phase, 50 Hz, 66 kV overhead transmission line has its conductors arranged at the corners of an equilateral triangle of 3m sides and the diameter of each conductor is 1.5 cm. Determine the capacitance per phase, if the length of line is 100 km. And also calculate the charging current.   [6+4]

4.a) Explain the influence of power factor on the performance of a transmission line.

b) An overhead 1-phase transmission line delivers a load of 1.5kW at 33kV at 0.9 p.f. lagging. The total resistance and inductance of the overhead transmission line is 8 Ohm and 15 Ohm respectively. Determine the following:
i) Percentage of voltage regulation
ii) Sending end power factor
iii) Transmission efficiency.   [4+6]

5.a) Derive the ABCD parameters of a nominal T represented medium length transmission line with neat phasor diagram.

b) A 3-phase, 50 Hz, 150 Km long line has a resistance, inductive reactance and shunt capacitive admittance of 0.1 Ohm, 0.5 Ohm, and 3×10^{-6} Mho/ Km/ phase. If the line delivers 50 MW at 110 KV and 0.8 pf lagging. Determine the sending end voltage and current. Assume nominal Pi model for the line. [5+5]

6.a) Derive the expressions for reflected voltage and current waves, when the transmission line is terminated by the capacitive load.

b) Define Voltage regulation of a transmission line and explain clearly the Ferranti effect with a phasor diagram. [5+5]

OR

7.a) Deduce expression for velocity of propagation of travelling waves.

b) A cable with surge impedance of 100 Ohms is terminated in two parallel connected open wires having surge impedances of 600 Ohms, and 1000 Ohms respectively. If a steep fronted voltage wave of 2 kV travels along the cable, find the voltage and current in the cable and the open-wire lines immediately after the travelling wave has reached the transition point. Assume voltage wave to be infinite length. [5+5]

8.a) What is guard ring which is being used in the suspension string type insulator? Deduce the relation for determining the capacitance formed by the ring.

b) A string of suspension insulators consists of 5 units each having capacitance C. The capacitance between each unit and earth is 1/8 of C. Determine the voltage distribution across each insulator in the string as a percentage of voltage of conductor to earth. If the insulators in the string are designed to withstand 36 kV maximum, calculate the operating voltage of the line where 5 suspension insulator strings can be used. [5+5]

OR

9.a) What is a stringing chart? Explain clearly the procedure adopted for stringing the power conductors on the supports.

b) Determine the maximum sag of an overhead line conductor having a diameter of 19.5 mm weighs 0.85 kg/m. The span length is 275 meters, wind pressure is 40 kg/m^2 of projected area with ice coating of 13 mm. The ultimate strength of the conductor is 8000 kg, the factor of safety is 2 and ice weighs 910kg/m^3. [5+5]

10.a) What is meant by grading of cables? Explain why and how the grading of cables is done?

b) A single core cable has an inner diameter of 5cms and a core diameter of 1.5cm. Its paper dielectric has a working maximum dielectric stress of 60kV/cm. Calculate the maximum permissible line voltage when such cables are used on a 3-phase power system. [6+4]

OR

11.a) Derive an expression for insulation resistance of a single-core cable.

b) A 3-phase 66kV single-core lead sheathed cable has a conductor of 2cm diameter and two layers of different materials each 1cm thick. The relative permittivity are 5(inner) and 3(outer). Calculate the maximum stress in the two dielectrics. [4+6]

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PART - A

(25 Marks)

1. Write notes on the following briefly:
    a) Demand forecasting   [2]
    b) Managerial economics   [3]
    c) Isocosts and their characteristics   [2]
    d) Law of returns   [3]
    e) Limitations of sole proprietorship   [2]
    f) Monopolistic competition   [3]
    g) Various kinds of debentures   [2]
    h) Working capital cycle and its components   [3]
    i) DuPont Chart   [2]
    j) Leverage ratios   [3]

PART - B

(50 Marks)

2.a) Discuss the nature and scope of managerial economics.
  b) Explain the influencing factors of the elasticity of demand.   [5+5]

OR

3.a) Narrate the law of demand and its exceptions.
  b) Elucidate the scope of managerial economics.   [5+5]

4.a) Explain the importance of Cobb-Douglas production function.
  b) From the following information, calculate the break-even point in units and sale values;
      Output 3000 units   [5+5]
      Selling price per unit Rs.30
      Variable cost per unit Rs.20
      Total fixed cost Rs.20, 000

OR

5.a) Sale of product amounts to 200 units per month at Rs.10 per unit. Fixed overhead cost is Rs. 400 per month and variable cost Rs.6 per unit. There is a proposal to reduce prices by 10 per cent. Calculate present P/V ratio. How many units must be sold to earn the present total profits?
  b) What are the managerial uses of Breakeven Analysis?   [5+5]

6.a) Describe the features of perfect competition.

b) What are the differences between monopoly and perfect competition?   [5+5]

OR

7.a) Elucidate the pros and cons of Joint Stock Company.

b) Explain the objectives of the pricing.   [5+5]

8.a) Outline the significance of capital budgeting.

b) Determine the average rate of return for a period for a project which requires
Cash- outlay of Rs.10,000 and generates cash inflows of Rs.2,000, Rs.4,000,
Rs.3,000and Rs.2, 000 in the first, second, third, and fourth year respectively.   [5+5]

OR

9.a) What are the sources of raising capital? Explain.

b) The initial cash outlay of a project is Rs.50, 000 and it generates cash inflows of
Rs.20, 000, Rs.15, 000, Rs. 25, 000 and Rs.10, 000 in four years. Using profitability
index method, appraise profitability of the proposed investment assuming 10% rate of
discount.   [5+5]

10.a) Describe the advantages and disadvantages of double entry book keeping.

b) Mr. Normal has the following transactions in the month of April. Write Journal Entries
for the transactions.   [5+5]

        10th April : Commenced business with a capital of Rs.1,00,000

        11th April : Purchased goods from Veeru for Rs.20,000

        13th April : Purchased Goods for Cash Rs. 15,000

        14th April : Purchased Goods from Abhiram for cash Rs.9,000

        16th April : Bought Goods from Shyam on credit Rs.12,000

        17th April : Sold goods worth Rs.15,000 to Tarun

        19th April : Sold goods for cash Rs.20,000

        20th April : Sold goods to Utsav for cash Rs.6,000

        21st April : Sold goods to Pranav on credit Rs.17,000

        22nd April : Returned goods to Veeru Rs. 3,000

OR

11. From the following Trial Balance of Gurdeep Singh as at 31st December, 2007, prepare Trading and Profit and Loss Account and Balance Sheet: [10]

Dr. Balances	Rs.	Cr. Balances	Rs.
Opening Stock	15,500	Capital	60,000
Land and Building	35,000	Loan from Mrs. Gurdeep Singh @9%	30,000
Machinery	50,000	Sundry Creditors	9,600
Furniture & Fixtures	5,000	Purchase Returns	2,100
Purchases	1,06,000	Sales	2,07,300
Salaries	11,000	Discount	1,200
General Expenses	2,500		
Rent	3,000		
Postage and	1,400		
Telegrams	1,300		
Stationery	26,000		
Wages	2,800		
Freight on Purchases	4,000		
Carriage on Sales	4,500		
Repairs	30,000		
Sundry Debtors	600		
Bad Debts	100		
Cash in Hand	6,400		
Cash at Bank	5,100		
Sales Returns			
	3,10,200		3,10,200

The following further information was given:
a) Wages for December, 2007 amounting to Rs. 2,100 have not yet been paid.
b) Included in General Expenses is Insurance Premium Rs. 600, paid for the year ending 31st march, 2008.
c) Provision for doubtful debts @5% on debtors is necessary.
d) Depreciation is to be charged as follows: Land and Building 2%, Machinery 10% and Furniture and Fixtures 15%.
e) The loan from Mrs. Gurdeep Singh was taken on 1st July, 2007. Interest has not been paid yet.
f) The value of stock on hand on 31st Dec, 2007 was Rs. 14,900.

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART – A

(25 Marks)

1.a)	What are the basic elements of a generalized measurement system?	[2]
b)	What are the sources of errors in D.C voltage measurement?	[3]
c)	Write applications of spectrum analyzer.	[2]
d)	Give the functions of an attenuator in a signal generator.	[3]
e)	What are the two modes of operation in dual trace oscilloscope?	[2]
f)	What are Lissajous figures? On what factor shape of the figures depends?	[3]
g)	What is mean by digital temperature sensing system?	[2]
h)	Give the applications, advantages of Thermocouples.	[3]
i)	Write the two conditions to be satisfied to make an a.c bridge balance.	[2]
j)	Write about pressure sensors.	[3]

PART - B

(50 Marks)

2.a) A voltmeter having a sensitivity of 15 kΩ/V reads 80V in its 100 V scale when
connected across an unknown resistance Rx. The current through the resistor is
1.8 mA. Determine the % error due to loading effect.
   b) Explain working of True RMS voltmeter.   [5+5]
OR
3.a) Discuss the different types of errors found in a measurement.
   b) Describe the working of series type ohmmeter.   [5+5]

4.a) Draw the block diagram of fundamental suppressions harmonic distortion analyzer and
explain its principle of operation.
   b) Describe the operation of power analyzer.   [5+5]
OR
5.a) Explain the sweep frequency generator.
   b) Differentiate wave analyzer and harmonic distortion analyzer.   [5+5]

6.a) How to measure time, period and frequency using oscilloscope?
   b) Write about different types of CRO probes.   [5+5]
OR
7.a) Discuss the working of the Dual beam oscilloscope.
   b) Illustrate with neat sketch about horizontal amplifier.   [5+5]

8.a) Illustrate and explain the working of LVDT.
 b) Describe the hotwire anemometer and explain. [5+5]

OR

9.a) Explain the principle of working of synchros.
 b) Describe the magneto strictive transducers. [5+5]

10.a) A Maxwell bridge is used to measure an inductive impedance. The bridge constants at balance are C1 = 0.01 μF, R1 = 470 KΩ, R2 = 5.1 KΩ and R3 = 100 Ω. Find the series equivalent of the unknown impedance.
 b) Discuss the measurement of Moisture. [5+5]

OR

11.a) Describe any one bridge circuit for the measurement of inductance.
 b) Explain a method of measurement of liquid level. [5+5]

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Code No: 125AN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year I Semester Examinations, November/December - 2017
PRINCIPLES OF PROGRAMMING LANGUAGES
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) List the principal phases of compilation. [2]
   b) Explain the features of denotational semantics. [3]
   c) Explain about guarded commands. [2]
   d) Differentiate between user defined and primitive data types with an example. [3]
   e) Explain about the local referencing environments. [2]
   f) Explain the design issues for functions. [3]
   g) Explain the parts of smalltalk class. [2]
   h) Distinguish between Competitive Synchronization and Cooperation synchronization. [3]
   i) What is the type inferencing used in ML. [2]
   j) What are the applications of functional programming languages. [3]

PART - B

(50 Marks)

2.a) Distinguish between ambiguous grammer and attribute grammar with an example.
   b) Construct the parse tree for the simple statement. [5+5]
   $$A := B * (A + C)$$
   OR
3.a) Explain about the preconditions and postconditions of a given statement mean in axiomatic semantics.
   b) Describe the important factors influencing the writability of a language. [5+5]

4.a) Describe about the pointers in FORTRAN 90, Ada, pascal with an example.
   b) Write the syntax and semantic rule of an attribute grammer for simple assignment statements. [5+5]
   OR
5.a) Explain about the control structures with an example.
   b) Explain the different types of Union with an example. [5+5]

6. Explain the different parameter passing methods with an example. [10]
   OR
7.a) What is an overloaded subprogram explain with an example.
   b) What are the characteristics of co-routine feature? List the languages which allow coroutines. [5+5]

8.a) What is semaphore. Explain the different types of semaphores.
 b) Explain the design issues of an exception handling system. [5+5]

OR

9.a) Explain about the data abstraction for SIMULA 67.
 b) Explain how to handle the exceptions in C++. [5+5]

10.a) Write a function that computes the sum of numbers using vectors in LISP.
 b) Explain the different types of data types used in Python. [5+5]

OR

11.a) Explain how to handle exceptions in Java with an example.
 b) Explain about the fundamentals of functional programming languages. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year I Semester Examinations, November/December - 2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to AME, EIE, IT, MSNT, ME, MCT, MIE)
Time: 3 hours   Max. Marks: 75

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(25 Marks)

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PART - B

(50 Marks)

2.a) Discuss the nature and scope of managerial economics.
   b) Explain the influencing factors of the elasticity of demand.   [5+5]

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   Output 3000 units   [5+5]
   Selling price per unit Rs.30
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OR

5.a) Sale of product amounts to 200 units per month at Rs.10 per unit. Fixed overhead cost is Rs. 400 per month and variable cost Rs.6 per unit. There is a proposal to reduce prices by 10 per cent. Calculate present P/V ratio. How many units must be sold to earn the present total profits?
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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
REINFORCED CONCRETE STRUCTURES DESIGN AND DRAWING
(Civil Engineering)

Time: 3 hours   Max. Marks: 75

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10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) What is meant by modular ratio? Why it is considered to be an unreliable quantity?
[2]

b) Why do continuous T beams at supports have to be designed as rectangular beams?
[3]

c) Why is limitation of deflection in a structure called a serviceability condition? Name another serviceability condition commonly used in limit state design. [2]

d) Explain the terms development length, lap length and anchorage lengths. [3]

e) What is the function of providing distribution steel in a slab? [2]

f) Explain clearly the difference in the behaviour of one way slab and two way slabs.
[3]

g) What is meant by slenderness ratio of a compression member and what are its implications? [2]

h) Why does code specify limits to the minimum and maximum reinforcement in columns? [3]

i) What are the situations in which combined footings are preferred to isolated footings? [2]

j) Why is it desirable to eliminate eccentricity in loading on a footing, wherever possible, by means of proper proportioning? [3]

PART - B
(50 Marks)

2. Determine the moment of resistance of T beam section with the details given below:
b_w = 200 mm, d = 600 mm, b_f = 1500 mm, D_f = 120 mm, A_{st} = 2415 mm^2, f_{ck} = 25 MPa, f_y=500 MPa. [10]

OR

3. A rectangular beam width 350mm and effective depth 550mm has a factored shear of 400 kN at a section near the support. The steel at the tension side of the section consists of 4 - 32mm diameter bars which are continued into the support. Assume f_{ck}= 20MPa and f_y=415 MPa. Design vertical stirrups for the section. [10]

4. A simply supported reinforced concrete beam of effective span 5.2 m has cross section 300 mm × 450 mm overall depth is reinforced with 3 bars of 20 mm diameter in tension and 2 bars of 12mm diameter in compression. The beam is subjected to a superimposed working load of 25 kN/m. Determine the short term deflection and long term deflection. Adopt M20 grade of concrete and Fe 415 HYSD steel. [10]

OR

5.a) Give the step by step procedure of calculating the crack width of a RC beam according to IS 456 – 2000

b) Under what situations do the following modes of cracking occur in reinforced concrete beams: (i) flexural cracks, (ii) diagonal tension cracks, (iii) flexural-shear cracks and (iv) splitting cracks? [5+5]

6. A one-way slab has been designed for a simply supported effective span of 4.6 m with an overall depth of 160 mm and clear cover of 20 mm, M25 concrete and Fe 500 steel. The dead loads are taken as 4.0 kN/m^2 and the live loads as 2.0 kN/m^2. The longitudinal bars are designed as 12 mm dia @ 150 c/c. Verify the adequacy of the thickness provided, a) Applying the limiting span/effective depth ratio; b) Actual calculation of total deflections. [10]

OR

7. Design a continuous RC slab for a hall 5.0 m × 12.5 m. The slab is supported on RCC beams, each 240 mm wide which are monolithic. The ends of the slab are supported on walls, 300 mm wide. Design the slab for a live load of 2 kN/m^2. Assume the weight of floor finishing equal to 1.5 kN/m^2. Adopt M20 concrete and Fe415 grade steel. Use Limit state method. [10]

8. Design a rectangular concrete column to carry an axial load of 1000kN. The actual length of column is 5.80m. The column is restrained at position and direction at its both ends. M20 grade of concrete and Fe 415 HYSD steel bars are to be used. Adopt the permissible stresses in direct compression for concrete and steel as specified in IS:456-2000. [10]

OR

9. Design a bi-axially eccentrically loaded braced rectangular reinforced concrete column deformed in single curvature for the following data:
Ultimate axial load P_{cu}=1000 kN
Ultimate moment in longer direction at bottom M_{cux1}=110 kN-m and at top
M_{cux2}= 80 kN-m
Ultimate moment in shorter direction at bottom M_{cuy1}=40 kN-m and at top
M_{cuy2}= 30 kN-m
Size of the column (bxD) = 300 mm × 480 mm
Unsupported length of column l_u=5.80m
Effective length in the long direction l_{ex}=5.40 m
Effective length in the short direction l_{ey}=4.20 m
M20 grade of concrete and Fe 415 HYSD steel bars shall be used [10]

10. A column 450 × 450 mm in size with 8 steel bars of 18mm diameter transfer a dead load of 620kN and a live load of 860 kN to the footing. The bearing capacity of soil is 120 kN/m^2. M20 grade of concrete and Fe 415 HYSD steel bars shall be used. Design a square footing to support the column. [10]

OR

11. The stair with an open well consists of two flights and a span partly crossing at right angles. There are ten steps of rise 160mm and tread 250mm in each flight and six such steps in cross span. The width of the landings and stairs is 1200mm. The landings are supported on the walls at the ends. Design the stair slab. Provide M20 grade of concrete and Fe 415 HYSD steel bars. [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year I Semester Examinations, November/December - 2017
PRINCIPLES OF PROGRAMMING LANGUAGES
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) List the principal phases of compilation.   [2]
  b) Explain the features of denotational semantics.   [3]
  c) Explain about guarded commands.   [2]
  d) Differentiate between user defined and primitive data types with an example. [3]
  e) Explain about the local referencing environments.   [2]
  f) Explain the design issues for functions.   [3]
  g) Explain the parts of smalltalk class.   [2]
  h) Distinguish between Competitive Synchronization and Cooperation synchronization.
                                                                                  [3]
  i) What is the type inferencing used in ML.   [2]
  j) What are the applications of functional programming languages.   [3]

PART - B

(50 Marks)

2.a) Distinguish between ambiguous grammer and attribute grammar with an example.
  b) Construct the parse tree for the simple statement.   [5+5]
      $$A := B * (A + C)$$
OR
3.a) Explain about the preconditions and postconditions of a given statement mean in axiomatic semantics.
  b) Describe the important factors influencing the writability of a language.   [5+5]

4.a) Describe about the pointers in FORTRAN 90, Ada, pascal with an example.
  b) Write the syntax and semantic rule of an attribute grammer for simple assignment statements.   [5+5]
OR
5.a) Explain about the control structures with an example.
  b) Explain the different types of Union with an example.   [5+5]

6.   Explain the different parameter passing methods with an example.   [10]
OR
7.a) What is an overloaded subprogram explain with an example.
  b) What are the characteristics of co-routine feature? List the languages which allow coroutines.   [5+5]

8.a) What is semaphore. Explain the different types of semaphores.
  b) Explain the design issues of an exception handling system.   [5+5]

OR

9.a) Explain about the data abstraction for SIMULA 67.
  b) Explain how to handle the exceptions in C++.   [5+5]

10.a) Write a function that computes the sum of numbers using vectors in LISP.
  b) Explain the different types of data types used in Python.   [5+5]

OR

11.a) Explain how to handle exceptions in Java with an example.
  b) Explain about the fundamentals of functional programming languages.   [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRONIC MEASUREMENTS AND INSTRUMENTATION
(Electronics and Communication Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART – A

(25 Marks)

1.a) What are the basic elements of a generalized measurement system? [2]
 b) What are the sources of errors in D.C voltage measurement? [3]
 c) Write applications of spectrum analyzer. [2]
 d) Give the functions of an attenuator in a signal generator. [3]
 e) What are the two modes of operation in dual trace oscilloscope? [2]
 f) What are Lissajous figures? On what factor shape of the figures depends? [3]
 g) What is mean by digital temperature sensing system? [2]
 h) Give the applications, advantages of Thermocouples. [3]
 i) Write the two conditions to be satisfied to make an a.c bridge balance. [2]
 j) Write about pressure sensors. [3]

PART - B

(50 Marks)

2.a) A voltmeter having a sensitivity of 15 kΩ/V reads 80V in its 100 V scale when connected across an unknown resistance Rx. The current through the resistor is 1.8 mA. Determine the % error due to loading effect.
 b) Explain working of True RMS voltmeter. [5+5]
OR
3.a) Discuss the different types of errors found in a measurement.
 b) Describe the working of series type ohmmeter. [5+5]

4.a) Draw the block diagram of fundamental suppressions harmonic distortion analyzer and explain its principle of operation.
 b) Describe the operation of power analyzer. [5+5]
OR
5.a) Explain the sweep frequency generator.
 b) Differentiate wave analyzer and harmonic distortion analyzer. [5+5]

6.a) How to measure time, period and frequency using oscilloscope?
 b) Write about different types of CRO probes. [5+5]
OR
7.a) Discuss the working of the Dual beam oscilloscope.
 b) Illustrate with neat sketch about horizontal amplifier. [5+5]

8.a) Illustrate and explain the working of LVDT.
  b) Describe the hotwire anemometer and explain.   [5+5]

OR

9.a) Explain the principle of working of synchros.
  b) Describe the magneto strictive transducers.   [5+5]

10.a) A Maxwell bridge is used to measure an inductive impedance. The bridge constants at balance are C1 = 0.01 μF, R1 = 470 KΩ, R2 = 5.1 KΩ and R3 = 100 Ω. Find the series equivalent of the unknown impedance.
  b) Discuss the measurement of Moisture.   [5+5]

OR

11.a) Describe any one bridge circuit for the measurement of inductance.
  b) Explain a method of measurement of liquid level.   [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ELECTRICAL MACHINES-III
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain, with the help of neat sketches, the constructional details of cylindrical and salient pole type synchronous machines.
 b) Derive the emf equation of synchronous generator from the basic principles. Explain the factor effecting it. [7+8]

2.a) Explain armature reaction in three phase synchronous machines.
 b) Distinguish between leakage reactance and synchronous reactance. Give the procedure to determine synchronous reactance experimentally. [7+8]

3.a) Explain load characteristics and define the regulation of an alternator. Deduce the relation for regulation from the phasor diagram.
 b) Give the procedure to determine the regulation using zero power factor method. [8+7]

4.a) Explain the effects of governor control and field excitation control on the alternator performance. Draw the relevant phasor diagrams.
 b) The generator G_1 has a no-load frequency of 61.5 Hz and a slope s_{P1} of 1MW/Hz. G_2 has a no-load frequency of 61Hz and a slope s_{P2} of 1MW/Hz. The two generators are supplying a real load totalling 2.5 MW at 0.8 PF lagging. Determine
 i) At what frequency is this system operating, and how much power is supplied by each of the two generators?
 ii) Suppose an additional 1-MW load were attached to this power system. What would the new system frequency be, and how much power would G_1 and G_2 supply now? [7+8]

5.a) Explain the principle of operation of synchronous motor.
 b) With the help of phasor diagrams explain the effects of variation of current and power factor with the variation of excitation in synchronous motor. Draw the corresponding phasor diagrams. [7+8]

6.a) Explain the various methods of starting synchronous motor.
 b) Why hunting takes place in synchronous machines? Explain the methods to mitigate harmonics. [7+8]

7.a) Give the constructional details of single phase induction motor.
 b) Explain the concept of double field revolving theory of single phase induction motor. [7+8]

8. Write short note on:
 a) Working principle of A.C. series motor
 b) Constructional details of Universal motor. [7+8]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
GEOTECHNICAL ENGINEERING-I
(Civil Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain briefly about soil formation and its types.
 b) Derive the relation between porosity and void ratio.   [7+8]

2.a) Explain about consistency limits and their importance in classification of soils.
 b) The dry unit weight of a sand sample in the loosest state is 15kN/m^3 and in the densest state, it is 22kN/m^3. Determine the relative density of sand. Take e=0.52 and G=2.7.
                                                                              [7+8]

3.a) Explain laboratory determination of coefficient of permeability by using constant head method.
 b) Determine the coefficient of permeability if the discharge of water collected from a constant head permeameter in a time of 9minutes is 280ml. The internal diameter of the permeameter is 5cm and the length of the sample prepared is 12cm. Head between two gauging points is 40 cm.   [7+8]

4.a) Discuss about principle of effective stress and quick sand condition.
 b) Determine the effective stress at a depth of 6m below the ground surface. Take G=2.7, e= 0.72. Assume water table is at a depth of 2m below the ground. Moisture content above the water table is 15%.   [7+8]

5.a) Discuss about Newmark's influence chart for irregular areas with a neat sketch.
 b) Calculate vertical stress increment at points directly beneath the load up to a depth of 4m when a concentrated load of 200kN acts on the surface of a soil and draw a plot.
                                                                              [7+8]

6.a) Explain factors affecting compaction.
 b) Explain about field compaction equipment and their suitability with respect to type of soil.   [7+8]

7.a) Discuss about normally consolidated soil, over consolidated soil and under consolidated soil.
 b) A 20mm thick oedometer clay sample reaches 40% consolidation in 12minutes with drainage at top and bottom. The clay layer from which this sample was obtained had one-way drainage with 8m thick. How long would it take the clay layer to reach 90% consolidation?   [8+7]

8.a) Explain critical void ratio and liquefaction in soils.
 b) Explain briefly about shear strength of sands.   [7+8]

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R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DESIGN OF MACHINE MEMBERS-I
(Mechanical Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks

- - -

Assume suitable data if necessary:

1.a) Define the factor of safety. Discuss the general guidelines to select the factor of safety in static and dynamic loading conditions.
  b) A short steel pipe of yield strength S_y = 280 MPa is to support an axial compressive load P = 1.2 MN with factor of safety of n = 2.2 against yielding. Determine the minimum required inside radius assuming the thickness of the pipe to be one-fourth of its inside radius.   [7+8]

2.a) Write briefly about the endurance limit reduction factors.
  b) A thin-walled cylindrical pressure vessel of diameter 1.5 m is subjected to an internal pressure varying continuously from 0.8 MPa to 4 MPa. Determine the thickness t of the pressure vessel. The yield strength, ultimate strength, endurance strength of the material are given by 300 MPa, 400 MPa and 150 MPa respectively. Assume suitable factor of safety and fatigue correction factors.   [7+8]

3. Determine the value of the load P for the riveted joint shown in Figure 1. The allowable rivet stress in shear is 100 MPa. d = 90 mm.   [15]
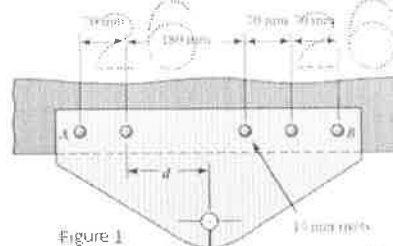

Figure 1

4.a) Bolts less than M 16 should normally be used in pre loaded joints. Comment
  b) The bolted connection shown in Figure 2 uses M14 × 2 course pitch thread bolts having yield strength of 640 MPa and Yield strength in shear of 370 MPa. A tensile load P = 20 kN is applied to the connection. The dimensions are in millimeters. Determine the factor of safety for all possible modes of failure.   [7+8]
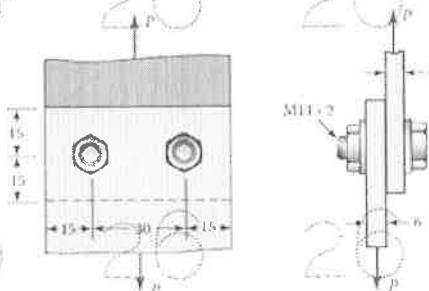

Figure 2

5.a) Design the rectangular key for a shaft of 50 mm diameter. The shearing and crushing stresses for the key material are 42 MPa and 70 MPa.

   b) Design a cotter joint to connect two mild steel rods for a pull of 30 kN. The maximum permissible stresses are 50 MPa in tension; 40 MPa in shear and 90 MPa in crushing. Draw a neat sketch of the joint designed.   [7+8]

6.a) Differentiate between torsional rigidity and lateral rigidity of a shaft.

   b) A line shaft is to transmit 30 kW at 150 rpm. It is driven by a motor placed directly under it by means of a belt running on a 1 m diameter pulley keyed to the end of the shaft. The tension in the tight side of the belt is 2 times that in the slack side and the centre of the pulley over-hangs 150 mm beyond the centre line of the end bearing. Determine the diameter of the shaft, if the allowable shear stress is 50 MPa and the pulley weighs 1000 N.   [7+8]

7.   Design a bushed-pin type of flexible coupling to connect a pump shaft to a motor shaft transmitting 30 kW at 1000 rpm. The overall torque is 20 percent more than mean torque. The material properties are as follows:

   The allowable shear and crushing stress for shaft and key material is 40 MPa and 80 MPa respectively. The allowable shear stress for cast iron is 15 MPa. The allowable bearing pressure for rubber bush is 0.8 N/mm^2. Draw neat sketch of the coupling.   [15]

8.a) Differentiate between active and inactive turns in case of closely coiled helical springs.

   b) A railway wagon weighing 50 kN and moving with a speed of 8 km per hour has to be stopped by four buffer springs in which the maximum compression allowed is 220 mm. Find the number of turns in each spring of mean diameter 150 mm. The diameter of spring wire is 25 mm. Take G = 84 GPa.   [7+8]

---ooOoo---

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ANTENNAS AND WAVE PROPAGATION
(Electronics and Communication Engineering)
Time: 3 hours   Max. Marks: 75
Answer any five questions
All questions carry equal marks
- - -

1.a) Define effective length. Prove that the effective length of the transmitting and receiving antennas are equal.

b) If the transmitting power from an isotropic antenna is 10KW, find the power density at distances of 10km and 50km.   [8+7]

2. Prove that the radiation resistance of an half-wave dipole is 73Ω.   [15]

3.a) Derive the expression for total far field pattern of linear array with 'n' isotropic point sources of equal amplitude and spacing.

b) Explain about uniform linear array.   [8+7]

4.a) Derive the expression for input impedance of driven and parasitic elements of Yagi-uda antenna.

b) With the help of neat diagram explain the functioning of helical antenna.   [8+7]

5.a) What are microstrip patch antennas? List the advantages and limitations of it.

b) With the help of neat diagram explain parabolic reflector.   [8+7]

6.a) With the help of block diagram explain the Gain measurement by absolute method.

b) Explain the operation of E-plane metallic plate lens antenna.   [8+7]

7.a) Derive the relationship between MUF and critical frequency.

b) What is the density of free electrons in the ionospheric layer at critical frequency of 1.3 MHz?   [8+7]

8.a) Explain in brief the different types of fading.

b) A broad cast transmitter supplies 80KW to an antenna that radiates 75% of this power. The antenna has directional characteristic 1.28. Find the field strength of the ground wave at 10km at 500KHz. Relative permittivity is 9 and conductivity is 10^{-4} mho/cm.
                                                                                    [6+9]

---ooOoo---

Code No: 225AE

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACOLOGY – I

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A   (25 Marks)

1.a)	Define adverse drug reactions.	[2]
b)	Explain drug dependence.	[3]
c)	Enlist the uses of sympathomimetic drug.	[2]
d)	Explain cholinesterase agents.	[3]
e)	Enlist the uses of banodiazepines.	[2]
f)	Define sedative and hypnotic.	[3]
g)	What are antipyretics and analgesics?	[2]
h)	Define local anaesthetics with two examples.	[3]
i)	Describe mania and depression.	[2]
j)	Classify antidepressants with suitable examples.	[3]

PART- B   (50 Marks)

2.a)	Write the advantages and disadvantages of oral and intravenous route of administration.	
b)	Describe nuclear and enzymatic receptor mediated action	[6+4]

OR

3.a)	Discuss principles of drug discovery.	
b)	Explain various phases of drug development.	[6+4]

4.a)	Discuss neurohumaral transmission in sympathetic nervous system.	
b)	Write the pharmacology of D-tubacurarine.	[7+3]

OR

5.a)	Explain the pharmacological actions of acetylcholine.	
b)	Write the pharmacological actions and uses of β-blockers.	[5+5]

6.a)	Describe various stages of anaesthesia.	
b)	Write the pharmacological actions of barbiturates.	[6+4]

OR

7.a)	Write the pharmacological actions of alcohol.	
b)	Explain the mechanism of action of barbiturates.	[6+4]

8.a)	Write the mechanism of action and adverse effects of Narcotic Analgesics.	
b)	Explain various mechanisms of local anaesthesics.	[5+5]

OR

9.a) Write the pharmacological actions and uses of aspirin.

b) Explain tolerance and dependence. [7+3]

10.a) Classify anti-epileptic drugs with suitable examples. Write the pharmacology of phenytoin.

b) Write the pharmacology of Anti epileptic drugs. [6+4]

OR

11.a) Classify antiparkinsonian drugs with suitable examples and write the benefits of levodopa and peripheral decarboxylase inhibitor combination.

b) Write the pharmacology of Anti manic drugs. [6+4]

---ooOoo---

R09

Answer any five questions
All questions carry equal marks
- - -

1.a) Write about stability testing protocol for tablets as per ICH guidelines.
 b) Write the objectives and importance of preformulation studies.   [10+5]

2.a) Describe the formulation and evaluation of dry syrups.
 b) Write a note on colors and flavors used in liquid orals.   [10+5]

3.a) Explain the formulation of a deflocculated suspension.
 b) Discuss how stability of an emulsion is assessed.   [8+7]

4.a) Describe various filling techniques for aerosols.
 b) Write a note on propellants and their nomenclature.   [9+6]

5.a) Explain the formulation and preparation of ophthalmic solutions.
 b) Discuss any two tests for evaluation of ophthalmic solutions.   [9+6]

6.a) Write a note on natural hair dyes.
 b) Write the formulation and preparation of compact face powders.   [6+9]

7.a) Write the formulation and preparation of lipsticks.
 b) Write a brief note on eye lashes.   [9+6]

8. Write brief notes on the following:
    a) Displacement value and its importance
    b) Water miscible bases.
    c) Any one method of manufacturing of suppositories.   [4+4+7]

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R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
POWER ELECTRONICS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Sketch static V-I characteristics of IGBT and mark the region in which the device is operated as a switch. [2]

b) Define the ratings of SCR (i) Average ON state current (ii) Forward breakover voltage. [3]

c) What is the effect of connecting free wheeling diode across R-L load in controlled rectifiers? [2]

d) Write down general expression for average voltage of p- pulse fully controlled rectifier. [3]

e) Draw the output voltage waveform of single phase AC chopper. [2]

f) A Class B turn-off circuit commutates an SCR. The load current is constant at 10Amps. Dimension the commutating components L and C. The supply voltage is 100V dc. Turn off time spec of SCR is 20 micro sec. [3]

g) Draw the equivalent circuit of a cyclo-conveter. [2]

h) What are advantages and disadvatages of cyclo-converter as compared to ac voltage controllers. [3]

i) What type of commutation is used in basic series inverter? How frequency of output can be controlled in series inverter ? [2]

j) How can a PWM control signal be obtained using a carrier wave and reference wave with the help of diagram. [3]

PART - B

(50 Marks)

2.a) Draw dynamic characteristics of SCR during turn off. Explain how turn off process can be carried out?

b) Explain the two-transistor analogy of SCR. [5+5]

OR

3.a) What are problems encountered when SCRs are operated in (i) series (ii) parallel. Derive an expression to find the value of resistance to be connected across each thyristor for voltage balancing.

b) Design RC firing circuit with following specifications: [5+5]
AC input voltage: 115 V
Thyistor ratings: V_g(min) : 2.5 V , V_g(max) : 5V
I_g(min) : 1 mA , I_g(max) : 5 mA
Load: 15 ohms resistance

4.a) Explain the operation of single phase half controlled bridge rectifier with R-L-E load. Derive the expression for (i) Average output voltage (ii) RMS value of output voltage

b) A fully controlled rectifier is used to charge a 115 V battery. The battery is already charged to 60 V. The source voltage of bridge is 230 V at 50 Hz. Find the range of firing angle possible. [5+5]

OR

5.a) Draw the output voltage waveform of 3-phase fully controlled rectifier for a firing angle of 60 degrees. Indicate firing sequence. Also derive expression for output voltage.

b) A 3 phase fully controlled bridge rectifier is operating from a 400V, 50 Hz supply. The load is highly inductive and current constant and continuous. Find the load voltage at firing angle of 45 deg. [5+5]

6.a) Draw the circuit of class-B commutation circuit. Explain how thyristor is commutated in class-B chopper. What are disadvantages of this commutation circuit?

b) A class-A chopper circuit has a load resistance of 100 ohms, capacitance of 10 micro farads and inductance of 10 mH. Find the time for which thyristor will remain in ON state. What will be the turn ON time if the load resistance is decreased to 25 ohms. [5+5]

OR

7.a) Derive expressions for minimum and maximum values of load current in a step down chopper with R-L-E load.

b) A step-up chopper has a source of 250 V (dc) in series with inductance of 0.1 H. If the semiconductor switch is operated with different values of duty ratio, plot output voltage vs duty ratio. [6+4]

8.a) Distinguish between an ac voltage controller and a cyclo-conveter with respect to operation and control aspects.

b) Derive an expression for rms value of output voltage of single phase bridge type ac voltage controller. [5+5]

OR

9. Draw the circuit of single phase voltage controller with antiparallel connection of two thyristors and an R-L load. Explain its working. Sketch load voltage and load current waveforms. Derive an expression for output voltage. [10]

10.a) Explain the operation of single phase bridge inverter with the help of load voltage and load current waveforms for R-L Load.

b) A 3-phase bridge inverter is fed from a dc source of 200 V. If the load is star connected of 10 ohms / phase, determine rms value of load current and required current rating of thyrstors. [6+4]

OR

11. Discuss various voltage control techniques employed in inverter circuits. [10]

---ooOoo---

Code No: 125ER

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
THERMAL ENGINEERING – II
(Common to AME, ME)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) State the essential differences between Carnot and Rankine cycles. [2]
  b) Define the terms lean mixture, rich mixture and stochiometric mixture. [3]
  c) What is the function of fusible plug? [2]
  d) Differentiate the super heater and economizer. [3]
  e) Define isentropic efficiency of a compressor. Explain with the help of T-s diagram. [2]
  f) Compare the merits and demerits of surface condenser over jet condenser. [3]
  g) What is meant by positive displacement and non positive displacement compressor? [2]
  h) Atmospheric air at 1.0 bar and 27 ^{0}C enters a compressor with a velocity of 100 m/s. Determine (i) the stagnation temperature and ii) the stagnation pressure. [3]
  i) Define the terms thrust power and propulsion efficiency. [2]
  j) What is meant by thrust augmentation? When is it necessary? [3]

PART - B
(50 Marks)

2.a) A power generating plant uses steam as working fluid and operates at boiler pressure of 50 bar, dry saturated and condenser pressure of 0.5 bar. Calculate for these limits i) the cycle efficiency and ii) the work ratio and iii) specific steam consumption for Carnot cycle and Rankine cycle.
  b) Enumerate the characteristics of good fuel. What is meant by dry and wet analysis of the products of combustion? [7+3]

OR

3.a) Show that the thermal efficiency of a regenerative cycle is always greater than that of a simple Rankine cycle regardless of where steam is tapped off.
  b) Discuss the effects of following parameters in a Rankine cycle.
  i) steam pressure at inlet to turbine and ii) steam temperature at inlet to turbine. [7+3]

4.a) Sketch and describe the operation of Babcock and Wilcox boiler.
  b) Why boiler accessories are installed. Explain the operation of economiser with the help of simple diagram. [5+5]

OR

5.a) A convergent-divergent nozzle is required to discharge 2 kg of steam per second. The nozzle is supplied with steam of 10 bar and 200 ^{0}C and discharge takes place against a back pressure of 0.34 bar. Estimate the throat and exit areas. Assume isentropic flow and take the index n = 1.3. If the nozzle efficiency is assumed to be 85%, determine the exit area.
  b) Derive the value of critical velocity in terms of sonic velocity at inlet conditions and index of expansion. [6+4]

6.a) Why compounding is necessary in the steam turbines? What are the types and explain any one type of compounding with neat sketch.
  b) Sketch the velocity diagram of a single stage impulse turbine and determine the expression for the force, work done, diagram efficiency and axial thrust. [5+5]

OR

7.a) Sketch and describe the operation of down flow surface condenser.
  b) Explain the working of single stage reaction turbine. Sketch pressure and velocity variations along the axis of the turbine. Show the expansion on *h-s* chart. [5+5]

8.a) Write notes on the requirements of gas turbine combustion chamber.
  b) Derive an expression for the efficiency as a function of temperature ratio and pressure ratio of the cycle for an ideal gas turbine cycle with reheat and heat exchange. [5+5]

OR

9. The following details refer to a gas turbine power plant with a single stage compressor and two stage gas turbine. The compressor is driven by the H.P. stage of the two-stage turbine and compresses 5 kg of air per second from 1 bar to 5 bar with an isentropic efficiency of 85%. The H.P. stage turbine has an isentropic efficiency of 87% and its inlet temperature is 675 ^{0}C. The L.P. stage turbine, which is mechanically independent, has an isentropic efficiency of 82%. The expansion pressure ratios of the two turbines are not equal and there is no reheating between the stages. The exhaust gases from the L.P. stage pass to a heat exchanger which transfers 70% of the heat available in cooling the exhaust to raise the compressor temperature at delivery. Assuming the working fluid to be air throughout, of constant specific heat, and neglecting pressure losses, estimate the intermediate pressure and temperature between the two turbine stages, the power output of the L.P. stage and the overall plant efficiency. Assume inlet pressure of 1 bar and temperature of 15 ^{0}C. [10]

10.a) With a neat sketch and T-s diagram, explain the working of a turboprop engine.
   b) What is meant by thrust? Derive the thrust equation for a general propulsion system. [4+6]

OR

11.a) The effective jet exit velocity from a jet engine is 2700 m/s. The forward flight velocity is 1350 m/s and the air flow rate is 78.6 kg/s. Calculate: i) thrust ii) thrust power and iii) propulsive efficiency.
   b) Explain clearly the various factors affecting the performance of a propulsion device. [5+5]

---ooOoo---

Code No: 125EB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
LINEAR AND DIGITAL IC APPLICATIONS
(Common to ECE, ETM)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define input offset voltage.	[2]
b)	List features of 741 op-amp.	[3]
c)	Discuss about all pass filters.	[2]
d)	List the application of 565 PLL.	[3]
e)	List different ADC and DACs.	[2]
f)	List specifications of DAC.	[3]
g)	Which of the parameters decide the fan out and how?	[2]
h)	Explain noise margin and propagation delay with respect to CMOS logic.	[3]
i)	What is race around condition? How is it avoided?	[2]
j)	Explain one application of SR latch.	[3]

PART - B

(50 Marks)

2.   Draw the circuit diagram of a two input non-inverting type summing amplifier and derive the expression for the output voltage.   [10]

OR

3.   Explain the working of instrumentation amplifier with suitable diagram.   [10]

4.   Draw the block diagram of 565 PLL and explain about each block. Make circuit connections to track the input signal and explain its operation.   [10]

OR

5.   Design a wide band pass filter with f_L=500 Hz and f_H = 2KHz, and a pass band again = 5 for both sections of filter. Also determine the value of Q for the filter.   [10]

6.   Which is the fastest ADC? Explain the operation and discuss its merits and de-merits.
                                                                                                                      [10]

OR

7.   With a neat diagram explain the working principle of R-2R ladder type DAC.   [10]

8. With neat circuit diagram explain the working of a 4-bit odd parity generator. [10]

OR

9. Design 16×1 multiplexer using 4×1 multiplexer. [10]

10. Design a modulo 12 ripple counter using 74×74. [10]

OR

11. How many address and data lines are required to access all the locations of dynamic RAM cell arrays specified below? [10]
   a) 4M × 4   b) 1M × 1   c) 1M × 4   d) 4M × 1

---ooOoo---

R15

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DISASTER MANAGEMENT
(Common to CSE, CE, CEE)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Define Environmental stress. [2]
 b) Define Vulnerability? [3]
 c) What are the characteristics of earth's environments? [2]
 d) List various types of environmental hazards. [3]
 e) How are volcanos and earthquakes distributed? [2]
 f) Discuss possible way to mitigate the impact of Earthquakes. [3]
 g) What is a Cyclone and list its general characteristics? [2]
 h) Explain the four different types of drought. [3]
 i) What is disaster preparedness mean? [2]
 j) Explain the action involved in post disaster phase. [3]

PART - B

(50 Marks)

2.a) What are the stressors of the environment?
 b) What is meant by human ecology and how is it related to disasters? [5+5]
  OR
3.a) Discuss in brief about landscape, ecosystem and perception approaches in relation with human ecology.
 b) Prepare a list of significant causes of different man-made disaster. [5+5]

4.a) Discuss in brief the types of environmental hazards and disasters.
 b) List natural disasters occurring in your area explain two of them. [5+5]
  OR
5.a) Discuss how exogenous and endogenous hazards impact legal, political, health and other societal systems.
 b) Write brief note on planetary and extra-planetary hazards. [5+5]

6.a) What are landslides? List out five major causes of landslides in India.
 b) What are the effects of the volcanoes on the environment? [5+5]
  OR
7.a) What are the harmful effects of earthquakes on the environment?
 b) Suggest risk reduction measures for landslide mitigation. [5+5]

8.a) Explain in detail the conditions necessary for the development of a cyclone.
   b) Identify the elements that are at risk in areas that are prone to drought and identify five risk reduction measures to combat drought. [5+5]

OR

9.a) Identify risk reduction measures for cyclones.
   b) List out some of the causes and adverse effects of floods. [5+5]

10.a) Briefly discuss the Disaster Management Cycle with suitable examples.
    b) Discuss the present and emerging approaches in Disaster management. [5+5]

OR

11.a) Write in detail the emergency stage of a disaster management.
    b) Explain in brief the rehabilitation, reconstruction and recovery of post disaster stage. [5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
HUMAN VALUES AND PROFESSIONAL ETHICS
(Common to CE, CSE)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define happiness.	[2]
b)	How does prosperity differ from possession of wealth?	[3]
c)	What do you mean by sukh and suvidha?	[2]
d)	Distinguish between the needs of the self and the needs of the body.	[3]
e)	List down the values in human relationship.	[2]
f)	What do you mean by differentiation in relationship?	[3]
g)	Mention the four orders in nature.	[2]
h)	Give a brief note on harmony in nature.	[3]
i)	What do you mean by ethics?	[2]
j)	Write the Natural acceptance of human values.	[3]

PART - B

(50 Marks)

2.a)   What is your present vision of a happy and prosperous life? Explain.
  b)   Explain about understanding and living in harmony at various levels.   [5+5]

OR

3.a)   Illustrate the purpose of self-exploration.
  b)   Self-exploration is a process of dialogue between "what you are and what you really want to be" Explain.   [5+5]

4.   Explain the activities of realization and understanding. How do they lead to harmony in the activities of "I". Illustrate with an example.   [10]

OR

5.a)   "Human being is co-existence of the self and the body" elaborate this statement.
  b)   How are Sanyam and Swasthya related? Explain.   [5+5]

6.   What are the foundational values of relationships? How can they be used to ensure strong and mutually relationship?   [10]

OR

7.   How can the comprehensive human goals of right understanding, prosperity, fearlessness and existence Crete harmony in society? Discuss.   [10]

8. Discus the Interconnectedness and mutual fulfillment among the four orders of nature.
[10]

OR

9. Briefly explain the recyclability and self-regulation in nature. [10]

10. Explain in terms of values, polices and character with appropriate examples. [10]

OR

11. What do you mean by competence in professional ethics? Elaborate with example. [10]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DISASTER MANAGEMENT
(Common to CSE, CE)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Define Environmental stress.	[2]
b)	Define Vulnerability?	[3]
c)	What are the characteristics of earth's environments?	[2]
d)	List various types of environmental hazards.	[3]
e)	How are volcanos and earthquakes distributed?	[2]
f)	Discuss possible way to mitigate the impact of Earthquakes.	[3]
g)	What is a Cyclone and list its general characteristics?	[2]
h)	Explain the four different types of drought.	[3]
i)	What is disaster preparedness mean?	[2]
j)	Explain the action involved in post disaster phase.	[3]

PART - B

(50 Marks)

2.a)	What are the stressors of the environment?	
b)	What is meant by human ecology and how is it related to disasters?	[5+5]

OR

3.a)	Discuss in brief about landscape, ecosystem and perception approaches in relation with human ecology.	
b)	Prepare a list of significant causes of different man-made disaster.	[5+5]

4.a)	Discuss in brief the types of environmental hazards and disasters.	
b)	List natural disasters occurring in your area explain two of them.	[5+5]

OR

5.a)	Discuss how exogenous and endogenous hazards impact legal, political, health and other societal systems.	
b)	Write brief note on planetary and extra-planetary hazards.	[5+5]

6.a)	What are landslides? List out five major causes of landslides in India.	
b)	What are the effects of the volcanoes on the environment?	[5+5]

OR

7.a)	What are the harmful effects of earthquakes on the environment?	
b)	Suggest risk reduction measures for landslide mitigation.	[5+5]

8.a) Explain in detail the conditions necessary for the development of a cyclone.
   b) Identify the elements that are at risk in areas that are prone to drought and identify five
      risk reduction measures to combat drought.   [5+5]

OR

9.a) Identify risk reduction measures for cyclones.
   b) List out some of the causes and adverse effects of floods.   [5+5]

10.a) Briefly discuss the Disaster Management Cycle with suitable examples.
   b) Discuss the present and emerging approaches in Disaster management.   [5+5]

OR

11.a) Write in detail the emergency stage of a disaster management.
   b) Explain in brief the rehabilitation, reconstruction and recovery of post disaster stage.
                                                                                     [5+5]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
POWER ELECTRONICS
(Electrical and Electronics Engineering)
Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Sketch static V-I characteristics of IGBT and mark the region in which the device is operated as a switch. [2]

b) Define the ratings of SCR (i) Average ON state current (ii) Forward breakover voltage. [3]

c) What is the effect of connecting free wheeling diode across R-L load in controlled rectifiers? [2]

d) Write down general expression for average voltage of p- pulse fully controlled rectifier. [3]

e) Draw the output voltage waveform of single phase AC chopper. [2]

f) A Class B turn-off circuit commutates an SCR. The load current is constant at 10Amps. Dimension the commutating components L and C. The supply voltage is 100V dc. Turn off time spec of SCR is 20 micro sec. [3]

g) Draw the equivalent circuit of a cyclo-conveter. [2]

h) What are advantages and disadvatages of cyclo-converter as compared to ac voltage controllers. [3]

i) What type of commutation is used in basic series inverter? How frequency of output can be controlled in series inverter ? [2]

j) How can a PWM control signal be obtained using a carrier wave and reference wave with the help of diagram. [3]

PART - B

(50 Marks)

2.a) Draw dynamic characteristics of SCR during turn off. Explain how turn off process can be carried out?

b) Explain the two-transistor analogy of SCR. [5+5]

OR

3.a) What are problems encountered when SCRs are operated in (i) series (ii) parallel. Derive an expression to find the value of resistance to be connected across each thyristor for voltage balancing.

b) Design RC firing circuit with following specifications: [5+5]
AC input voltage: 115 V
Thyristor ratings: V_g(min) : 2.5 V , V_g(max) : 5V
I_g(min) : 1 mA , I_g(max) : 5 mA
Load: 15 ohms resistance

4.a) Explain the operation of single phase half controlled bridge rectifier with R-L-E load. Derive the expression for (i) Average output voltage (ii) RMS value of output voltage

  b) A fully controlled rectifier is used to charge a 115 V battery. The battery is already charged to 60 V. The source voltage of bridge is 230 V at 50 Hz. Find the range of firing angle possible. [5+5]

OR

5.a) Draw the output voltage waveform of 3-phase fully controlled rectifier for a firing angle of 60 degrees. Indicate firing sequence. Also derive expression for output voltage.

  b) A 3 phase fully controlled bridge rectifier is operating from a 400V, 50 Hz supply. The load is highly inductive and current constant and continuous. Find the load voltage at firing angle of 45 deg. [5+5]

6.a) Draw the circuit of class-B commutation circuit. Explain how thyristor is commutated in class-B chopper. What are disadvantages of this commutation circuit?

  b) A class-A chopper circuit has a load resistance of 100 ohms, capacitance of 10 micro farads and inductance of 10 mH. Find the time for which thyristor will remain in ON state. What will be the turn ON time if the load resistance is decreased to 25 ohms. [5+5]

OR

7.a) Derive expressions for minimum and maximum values of load current in a step down chopper with R-L-E load.

  b) A step-up chopper has a source of 250 V (dc) in series with inductance of 0.1 H. If the semiconductor switch is operated with different values of duty ratio, plot output voltage vs duty ratio. [6+4]

8.a) Distinguish between an ac voltage controller and a cyclo-conveter with respect to operation and control aspects.

  b) Derive an expression for rms value of output voltage of single phase bridge type ac voltage controller. [5+5]

OR

9. Draw the circuit of single phase voltage controller with antiparallel connection of two thyristors and an R-L load. Explain its working. Sketch load voltage and load current waveforms. Derive an expression for output voltage. [10]

10.a) Explain the operation of single phase bridge inverter with the help of load voltage and load current waveforms for R-L Load.

  b) A 3-phase bridge inverter is fed from a dc source of 200 V. If the load is star connected of 10 ohms / phase, determine rms value of load current and required current rating of thyrstors. [6+4]

OR

11. Discuss various voltage control techniques employed in inverter circuits. [10]

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R13

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) State the essential differences between Carnot and Rankine cycles.   [2]
  b) Define the terms lean mixture, rich mixture and stochiometric mixture.   [3]
  c) What is the function of fusible plug?   [2]
  d) Differentiate the super heater and economizer.   [3]
  e) Define isentropic efficiency of a compressor. Explain with the help of T-s diagram.
                                                                                  [2]
  f) Compare the merits and demerits of surface condenser over jet condenser.   [3]
  g) What is meant by positive displacement and non positive displacement compressor?
                                                                                  [2]
  h) Atmospheric air at 1.0 bar and 27 ^{0}C enters a compressor with a velocity of 100 m/s.
      Determine (i) the stagnation temperature and ii) the stagnation pressure.   [3]
  i) Define the terms thrust power and propulsion efficiency.   [2]
  j) What is meant by thrust augmentation? When is it necessary?   [3]

PART - B

(50 Marks)

2.a) A power generating plant uses steam as working fluid and operates at boiler pressure of 50 bar, dry saturated and condenser pressure of 0.5 bar. Calculate for these limits i) the cycle efficiency and ii) the work ratio and iii) specific steam consumption for Carnot cycle and Rankine cycle.
  b) Enumerate the characteristics of good fuel. What is meant by dry and wet analysis of the products of combustion?   [7+3]

OR

3.a) Show that the thermal efficiency of a regenerative cycle is always greater than that of a simple Rankine cycle regardless of where steam is tapped off.
  b) Discuss the effects of following parameters in a Rankine cycle.
      i) steam pressure at inlet to turbine and ii) steam temperature at inlet to turbine. [7+3]

4.a) Sketch and describe the operation of Babcock and Wilcox boiler.
 b) Why boiler accessories are installed. Explain the operation of economiser with the help of simple diagram. [5+5]

OR

5.a) A convergent-divergent nozzle is required to discharge 2 kg of steam per second. The nozzle is supplied with steam of 10 bar and 200 ^{0}C and discharge takes place against a back pressure of 0.34 bar. Estimate the throat and exit areas. Assume isentropic flow and take the index n = 1.3. If the nozzle efficiency is assumed to be 85%, determine the exit area.
 b) Derive the value of critical velocity in terms of sonic velocity at inlet conditions and index of expansion. [6+4]

6.a) Why compounding is necessary in the steam turbines? What are the types and explain any one type of compounding with neat sketch.
 b) Sketch the velocity diagram of a single stage impulse turbine and determine the expression for the force, work done, diagram efficiency and axial thrust. [5+5]

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7.a) Sketch and describe the operation of down flow surface condenser.
 b) Explain the working of single stage reaction turbine. Sketch pressure and velocity variations along the axis of the turbine. Show the expansion on *h-s* chart. [5+5]

8.a) Write notes on the requirements of gas turbine combustion chamber.
 b) Derive an expression for the efficiency as a function of temperature ratio and pressure ratio of the cycle for an ideal gas turbine cycle with reheat and heat exchange. [5+5]

OR

9. The following details refer to a gas turbine power plant with a single stage compressor and two stage gas turbine. The compressor is driven by the H.P. stage of the two-stage turbine and compresses 5 kg of air per second from 1 bar to 5 bar with an isentropic efficiency of 85%. The H.P. stage turbine has an isentropic efficiency of 87% and its inlet temperature is 675 ^{0}C. The L.P. stage turbine, which is mechanically independent, has an isentropic efficiency of 82%. The expansion pressure ratios of the two turbines are not equal and there is no reheating between the stages. The exhaust gases from the L.P. stage pass to a heat exchanger which transfers 70% of the heat available in cooling the exhaust to raise the compressor temperature at delivery. Assuming the working fluid to be air throughout, of constant specific heat, and neglecting pressure losses, estimate the intermediate pressure and temperature between the two turbine stages, the power output of the L.P. stage and the overall plant efficiency. Assume inlet pressure of 1 bar and temperature of 15 ^{0}C. [10]

10.a) With a neat sketch and T-s diagram, explain the working of a turboprop engine.
 b) What is meant by thrust? Derive the thrust equation for a general propulsion system. [4+6]

OR

11.a) The effective jet exit velocity from a jet engine is 2700 m/s. The forward flight velocity is 1350 m/s and the air flow rate is 78.6 kg/s. Calculate: i) thrust ii) thrust power and iii) propulsive efficiency.
 b) Explain clearly the various factors affecting the performance of a propulsion device. [5+5]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
LINEAR AND DIGITAL IC APPLICATIONS
(Common to ECE, ETM)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a) Define input offset voltage.   [2]
  b) List features of 741 op-amp.   [3]
  c) Discuss about all pass filters.   [2]
  d) List the application of 565 PLL.   [3]
  e) List different ADC and DACs.   [2]
  f) List specifications of DAC.   [3]
  g) Which of the parameters decide the fan out and how?   [2]
  h) Explain noise margin and propagation delay with respect to CMOS logic.   [3]
  i) What is race around condition? How is it avoided?   [2]
  j) Explain one application of SR latch.   [3]

PART - B

(50 Marks)

2. Draw the circuit diagram of a two input non-inverting type summing amplifier and
   derive the expression for the output voltage.   [10]

OR

3. Explain the working of instrumentation amplifier with suitable diagram.   [10]

4. Draw the block diagram of 565 PLL and explain about each block. Make circuit
   connections to track the input signal and explain its operation.   [10]

OR

5. Design a wide band pass filter with f_L=500 Hz and f_H = 2KHz, and a pass band again
   = 5 for both sections of filter. Also determine the value of Q for the filter.   [10]

6. Which is the fastest ADC? Explain the operation and discuss its merits and de-merits. [10]

OR

7. With a neat diagram explain the working principle of R-2R ladder type DAC.   [10]

8. With neat circuit diagram explain the working of a 4-bit odd parity generator. [10]

OR

9. Design 16×1 multiplexer using 4×1 multiplexer. [10]

10. Design a modulo 12 ripple counter using 74×74. [10]

OR

11. How many address and data lines are required to access all the locations of dynamic RAM cell arrays specified below? [10]

a) 4M × 4 b) 1M × 1 c) 1M × 4 d) 4M × 1

---ooOoo---

R13

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Write the salient feature of Madrid Treaty on IPR.	[2]
b)	What is the name of the nodal agency in India looking after IPR?	[3]
c)	Who can apply for a trademark?	[2]
d)	Name any four different types of trademarks.	[3]
e)	What are the two salient features of copyright Act (1957).	[2]
f)	Differentiate between invention and imitation.	[3]
g)	Define trade secrets.	[2]
h)	What is the main difference between trade secrets and patent?	[3]
i)	What is "WIPO". Where it is located?	[2]
j)	What do you mean by injunction of patent?	[3]

PART - B

(50 Marks)

2.	Why there is a need to create intellectual property in business? Explain in detail.	[10]
	OR	
3.	Explain the rights of IP owner and its enforcement on infringement.	[10]
4.	Write down the criteria for registering a trademark under the trade mark act.	[10]
	OR	
5.a)	Who are all can be benefited from a trademark?	
b)	What are the economical benefits of registering a trademark?	[5+5]
6.	"A" was a book publisher. He started to reproduce or publish any judgment or order given by a city Court. Whether it could be considered an infringement? Cite the reason.	[10]
	OR	
7.	Explain in detail about patent searching process in India.	[10]

8. **"XYZ"** was a famous comedy reality show which was broadcasted in "A+ TV" since 2010. In 2017 another channel namely "B+ TV" based on the same concept started a new reality comedy show titled, **"JFK".** Whether, A+ TV can sue B+ TV for copyright infringement. Explain. [10]

OR

9. a) How Do You Create a Trade Secret?
   b) Can You Give Some Real-Life Examples of Trade Secrets?
   c) What Cannot Be a Trade Secret?
   d) Whether it is possible to register a trade secrete with government? [3+3+2+2]

10. What are the objectives of TRIPS (Trade Related Intellectual Property Rights)? [10]

OR

11. Explain length and breadth of patents. [10]

---ooOoo---

R09

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a)   What is transposition of transmission lines? Give the advantages of it.
  b)   Derive an expression for the capacitance per unit length of a 3-phase transposed line. What is the effect of earth on the capacitance of the line?   [6+9]

2.a)   Define regulation and efficiency of transmission line. Derive the expression for regulation of a medium transmission line.
  b)   A three phase 50 Hz transmission line is 100km long and delivers 25MW at0.85 power factor lagging and at 110kV. The resistance and reactance of the line per conductor per km are 0.3Ω and 0.9Ω respectively. The line charging admittance is 0.3×10^{-6} mho per km per phase. Compute by applying the nominal Π method the voltage regulation and transmission efficiency.   [6+9]

3.a)   What is Surge impedance of the line? Derive the expression for it in terms of line parameters.
  b)   Derive the equivalent Π model for the long transmission line.   [8+7]

4.a)   From fundamentals obtain the expressions for reflection and transmission coefficient on a line terminated with load impedance equal to the surge impedance of the line.
  b)   A line of surge impedance of 400Ω is charged from a battery of constant voltage of 135volts. The line is 300 metre long and is terminated in a resistance of 200Ω. Plot reflection lattice and the voltage across the terminating resistance.   [8+7]

5.a)   Explain Ferranti effect with a phasor diagram.
  b)   Consider a three-phase transmission line having stranded copper conductors 12 mm in diameter and spaced 4 m apart in equilateral configuration. The barometric pressure is 78 cm Hg at an air temperature of 29^0C. Assume that the irregularity factors are 0.90, 0.72, and 0.82 for the disruptive critical voltage, local visual corona, and general visual corona, respectively. Determine the following:
       i) Disruptive critical rms line voltage
       ii) The rms line voltage for local visual corona
       iii) The rms line voltage for general visual corona.   [6+9]

6.a)   Explain about static shielding of insulating string.
  b)   A string of eight suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the capacitance of the top unit is 10times the capacitance to ground of each unit, determine the capacitance of the remaining seven units.   [6+9]

7. An overhead line has a conductor of cross section 2.5 cm^2 hard drawn copper and a span length of 150m. Determine the sag which must be allowed if the tension is not to exceed one fifth of the ultimate strength of 4175 kg/cm^2
a) In still air, and
b) With a wind pressure of 1.3kg/m and an ice coating of 1.25cm.
Determine also the vertical sag in the latter case. [15]

8.a) Discuss about various insulating materials used in cables.
  b) Determine the operating voltage of a single core cable of diameter 2cm and having three insulating material of permittivities 5, 4, 3. The overall diameter of the cable is 5cm and the maximum working stress is 40kV/cm. Compare the operating voltage with the voltage if the cable were not graded and the material with same working stress was used. [6+9]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
APPLIED THERMODYNAMICS-II
(Common to ME, AME)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Classify and explain the classification of fuels.
 b) A simple Rankine cycle works between pressures 28 bar and 0.06 bar. The initial condition of steam is dry saturated. Calculate cycle efficiency, work ratio and specific steam consumption. [7+8]

2.a) What is the basic difference between boiler mountings and accessories? Draw a neat labeled sketch of a 'dead weight' or a 'spring loaded' safety valve, fusible plug and explain its working in brief.
 b) Derive the expression for the natural draught required for disposing the flue gases through a chimney of height H, in N/m^2. [7+8]

3.a) Explain the function of steam nozzles, and their types. Derive the expression for the calculation of steam velocity at the exit of nozzle with the help of steady flow energy equation.
 b) Steam enters a nozzle in a dry saturated condition and expands from a pressure of 2 bar to a pressure of 1 bar. It is observed that super-saturated flow is taking place and the steam flow reverts to a normal flow at 1 bar. What is the degree of under-cooling, increase of entropy and the loss in the available heat drop due to irreversibility? Indicate the process on h-s diagram. [7+8]

4.a) What are different methods of compounding of steam turbine stages? List advantages and limitations of velocity compounding.
 b) An impulse steam turbine of 180 kW has steam flowing at rate of 165 kg/min and leaving axially. Steam turbine blade speed is 175 m/s and it leaves nozzle at 400 m/s. For the blade velocity coefficient of 0.9, find nozzle angle, blade angles at inlet and exit, axial thrust and diagram efficiency. [7+8]

5.a) Define degree of reaction and prove that Parsons reaction turbine is a 50% reaction turbine.
 b) In a reaction turbine, the fixed and moving blades are of same shape but reversed in direction. The angles of the receiving tips are 35^0 and of discharging tips are 20^0. Find the power developed in KW per pair of a blade for a steam consumption of 2 kg/sec, when the blade speed is 52 m/sec, if the enthalpy drop in the pair is 10 kJ/kg. Find the efficiency of the pair. [7+8]

6.a) What are different types of condensers and their working? How the air leakage into a condenser affects its working? What are different methods to detect the air leakage into the condenser?

b) Steam enters the condenser at 30^0C and the barometer reading 760 mm, if the vacuum of 695 mm is produced, find the vacuum efficiency. [7+8]

7.a) Give a brief note about compressors, combustion chambers and turbines of Gas Turbine Plant.

b) In an open cycle gas turbine plant, air enters the compressor at 1 bar and 27^0C. The pressure after compression is 4 bar. The isentropic efficiencies of the turbine and compressor are 85% and 80% respectively. Air fuel ratio is 80:1. Calorific value of fuel used is 42000 kJ/kg. Mass flow rate of air is 2.5 kg/s. Determine the power output from the plant and the cycle efficiency. Assume Cp and γ to be same for both air and products of combustion. [7+8]

8.a) Write the Classification of jet propulsive engines and their working principles with schematic diagrams and representation on T-S diagram.

b) In a Jet propulsion unit, the total pressure and temperature at intake to compressor are 0.6 bar and 0^0C the speed of the propulsion unit is 190 m/sec. The total temperature and total pressure of gases after the combustion entering the turbine 750^0C and 3.1 bar. The speed of the propulsion unit is 190 m/sec. The isentropic efficiencies of compressor and turbine are 85% and 80% respectively. The static back pressure of the propulsion nozzle is 0.52 bar and the efficiency if the nozzle based on the total pressure drop available is 90%. Determine (i) Power consumed by the compressor per kg of air (ii) The air-fuel ratio if the calorific value of the fuel is 41480 kJ/kg of fuel (iii) Total pressure of the gas leaving the turbine. [7+8]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
ANALOG COMMUNICATIONS
(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain AM detection using envelope detector. How is the RC time constant chosen for envelope detection?
  b) Obtain expression for sideband power in an AM signal for single tone modulation.
  [8+7]

2.a) Explain how a ring modulator is used for generation of DSB-SC waves.
  b) Draw the block diagram of an AM transmitter and explain the need and functioning of each of its blocks. [7+8]

3.a) What are the demerits of filter method of SSB generation? Explain how they are overcome in phase discriminator method.
  b) Compare AM, DSB-SC, SSB and VSB modulation schemes. [8+7]

4.a) For the modulated signal given below, determine
  i) Carrier frequency in radians/sec
  ii) Modulating frequency in radians/sec
  iii) Modulation index
  iv) Peak frequency deviation
  Angle modulated signal is given as
  $V(t) = 20\sin(3.28 \times 10^6 t + 10\sin 3.28 \times 10^3 t)$.
  b) Show that the power delivered by an FM signal into a one ohm is constant. [8+7]

5.a) Explain FM detection using Foster-Seeley discriminator method.
  b) Draw the block diagram of FM transmitter and explain the need and function of each of its blocks. [7+8]

6.a) Explain the need and principle of pre-emphasis and de-emphasis.
  b) Derive an expression for SNR in AM systems. [8+7]

7.a) Define the terms for a receiver; selectivity, fidelity and image frequency.
  b) Draw the block diagram of a TRF receiver and explain its operation. [8+7]

8. Explain the following in brief:
  a) Generation and demodulation of PPM signals
  b) Sampling theorem. [8+7]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DATA COMMUNICATION AND COMPUTER NETWORKS
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) What is the purpose of layering system while design a network model?
 b) With a neat block diagram, explain layers and its services in ISO OSI Network architecture model.   [7+8]

2.a) Explain the guided and unguided media used in networks.
 b) Enumerate the differences between circuit-switched networks and datagram networks.
                                                                                                 [7+8]

3.a) Explain error detection and error correction in Data Link layer.
 b) What is CRC? Using CRC, consider the 4-bit generator polynomial G = 1001 and message M= 10101010. What is the final message transmitted to the other end. (i.e., Find the remainder)?   [7+8]

4.   Write short notes on:
      a) Sonet Architecture
      b) Virtual-circuit networks.   [7+8]

5.a) Explain the different types of addresses used in networking operation? Describe the classful addressing scheme.
 b) With an example explain the distance vector routing algorithm.   [8+7]

6.a) Explain transmission control protocol (TCP).
 b) Describe QoS in switched networks.   [7+8]

7.a) Explain the concepts of resource records and name servers in Domain Name System (DNS).
 b) Describe the Simple Mail Transfer Protocol (SMTP).   [8+7]

8.a) Give a short note on audio and video compression techniques.
 b) Explain RTCP.   [7+8]

---ooOoo---

Code No: R9502

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year II Semester Examinations, December-2017
PHARMACEUTICAL TECHNOLOGY - II

Time: 3hours   Max.Marks:75

Answer any five questions
All questions carry equal marks
- - -

1. Explain about different granulation technologies with merits and demerits.   [15]

2.a) Describe about film coating along with film formers and its selections.
  b) Write about the equipment and process of pan coating.   [8+7]

3.a) Elaborate the procedure for production of hard gelatin capsules and their filling
  b) Name the quality control tests for capsules and write the procedure for weight variation test.   [8+7]

4.a) Discuss about coacervation and phase separation technique with examples.
  b) How do you evaluate the micro capsules?   [9+6]

5.a) What is water for injection and methods of its preparation.
  b) What is isotonicity? How do you adjust the isotonicity of an IV injection containing 15ml. of 1.2% drug solution (freezing point depression (^{0}C) of drug= 0.122: blood =0.52: 1% NaCl= 0.576).   [9+6]

6.a) What are the qualities of an aseptic area? Write the steps to maintain aseptic conditions.
  b) Give a note on design of laminar flow bench.   [8+7]

7.a) Explain different types of packages used to store solid dosage forms.
  b) Enumerate the factors influence the choice of container to store different dosage forms.   [8+7]

8.a) Discuss the method of packaging of semisolid dosage forms.
  b) Write a note on stability aspects of packaging materials.   [8+7]

--ooOoo--

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPUTER ORGANIZATION AND OPERATING SYSTEMS
(Common to ECE, ETM)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
                                                                (25 Marks)

1.a)	With a neat diagram explain the basic operational concepts of computer.	[2]
b)	What is Stack Organization?	[3]
c)	Define Cache Memory.	[2]
d)	What is a Micro Program?	[3]
e)	What is an Interrupt?	[2]
f)	What is an IO Processor?	[3]
g)	Define Trashing.	[2]
h)	How to describe the deadlock? Give an example.	[3]
i)	List any four file operations.	[2]
j)	Mention the objectives of File management System.	[3]

PART - B
                                                                (50 Marks)

2.   Explain the instruction cycle with a neat flow chart.   [10]
OR
3.   Give explanation about the fixed point and floating point representations in detail. [10]

4.   What is Virtual Memory? Explain in detail.   [10]
OR
5.   With neat diagram, explain address selection for control memory.   [10]

6.   Explain about different modes of transfer.   [10]
OR
7.   Discuss about interrupt priorities.   [10]

8.   What are the goals of memory management? Explain the Contiguous Memory
Allocation techniques.   [10]
OR
9.a)   What are the differences between paging and segmentation?
b)   Explain the Deadlock Prevention Technique.   [5+5]

10.   Explain the different file allocation methods.   [10]
OR
11.   Write short notes on file sharing and file protection.   [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DESIGN OF MACHINE MEMBERS - I
(Common to AME, ME)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.
Assume Suitable Data if Necessary:

PART - A
(25 Marks)

1.a) Illustrate how the stress concentration in a component can be reduced.   [2]
  b) What is meant by stress concentration? How do you take it into consideration in case of
      a component subjected to dynamic loading?   [3]
  c) Classify the rivet heads according to Indian standard specification.   [2]
  d) Sketch and discuss the various types of welded joints used in pressure vessels. [3]
  e) How are the keys classified?   [2]
  f) Distinguish between cotter joint and knuckle joint.   [3]
  g) What type of stresses are induced in shafts?   [2]
  h) Why a hollow shaft has greater strength and stiffness than solid shaft of equal weight?
                                                                                       [3]
  i) Classify springs according to their shapes.   [2]
  j) What is the function of a spring? In which type of spring the behavior is non-linear?
                                                                                       [3]

PART - B
(50 Marks)

2.   A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2000 Nm
     and a torque T. If the yield point of the steel in tension is 200 MPa, find the maximum
     value of this torque without causing yielding of the shaft according to   [10]
     a) The maximum principal stress
     b) The maximum shear stress and
     c) The maximum distortion strain energy theory of yielding.

OR

3.   A cantilever beam made of cold drawn carbon steel of circular cross-section as shown
     in Figure 1, is subjected to a load which varies from − F to 3 F. Determine the
     maximum load that this member can withstand for an infinite life using a factor of
     safety as 2. The theoretical stress concentration factor is 1.42 and the notch sensitivity
     is 0.9. Assume the following values: [10]
     Ultimate stress = 550 MPa
     Yield stress = 470 MPa
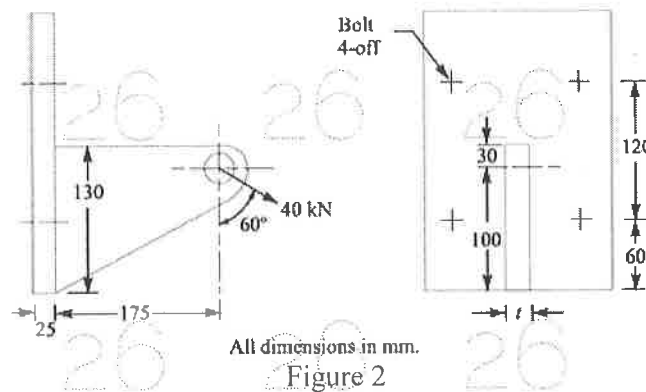   Endurance limit = 275 MPa

Figure 1

4. Two lengths of mild steel tie rod having width 200 mm and thickness 12.5 mm are to be connected by means of a butt joint with double cover plates. Design the joint if the permissible stresses are 80 MPa in tension, 65 MPa in shear and 160 MPa in crushing. Make a sketch of the joint. [10]

OR

5. Determine the size of the bolts and the thickness of the arm for the bracket as shown in Figure 2, if it carries a load of 40 kN at an angle of 60^0 to the vertical. The material of the bracket and the bolts is same for which the safe stresses can be assumed as 70, 50 and 105 MPa in tension, shear and compression respectively. [10]

All dimensions in mm.
Figure 2

6. Design and draw a sleeve and cotter joint to resist a tensile load of 60 kN. All parts of the joint are made of the same material with the following allowable stresses: [10]
$\sigma t = 60$ MPa ; $\tau = 70$ MPa ; and $\sigma c = 125$ MPa.

OR

7. Design and draw a knuckle joint to connect two mild steel bars under a tensile load of 25 kN. The allowable stresses are 65 MPa in tension, 50 MPa in shear and 83 MPa in crushing. [10]

8. A horizontal nickel steel shaft rests on two bearings, A at the left and B at the right end and carries two gears C and D located at distances of 250 mm and 400 mm respectively from the centre line of the left and right bearings. The pitch diameter of the gear C is 600 mm and that of gear D is 200 mm. The distance between the centre line of the bearings is 2400 mm. The shaft transmits 20 kW at 120 RPM. The power is delivered to the shaft at gear C and is taken out at gear D in such a manner that the tooth pressure FtC of the gear C and FtD of the gear D act vertically downwards. Find the diameter of the shaft, if the working stress is 100 MPa in tension and 56 MPa in shear. The gear C and D weighs 950 N and 350 N respectively. The combined shock and fatigue factors for bending and torsion may be taken as 1.5 and 1.2 respectively. [10]

OR

9. Design and draw a cast iron flange coupling for a mild steel shaft transmitting 90 kW at 250 rpm. The allowable shear stress in the shaft is 40 MPa and the angle of twist is not to exceed 1^0 in a length of 20 diameters. The allowable shear stress in the coupling bolts is 30 MPa. [10]

10. Design a close coiled helical compression spring for a service load ranging from 2250 N to 2750 N. The axial deflection of the spring for the load range is 6 mm. Assume a spring index of 5. The permissible shear intensity is 420 MPa and modulus of rigidity G = 84 kN/mm². Neglect the effect of stress concentration. Draw a fully dimensioned sketch, showing details of the finish of the end coils. **[10]**

OR

11. Design and draw a valve spring of a petrol engine for the following operating conditions:

Spring load when the valve is open = 400 N
Spring load when the valve is closed = 250 N
Maximum inside diameter of spring = 25 mm
Length of the spring when the valve is open = 40 mm
Length of the spring when the valve is closed = 50 mm
Maximum permissible shear stress = 400 MPa **[10]**

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	Why is negative feedback invariably preferred in a closed loop system?	[2]
b)	Distinguish between open loop and closed loop system.	[3]
c)	What are the applications of synchro?	[2]
d)	Write the importance of SFG in control systems.	[3]
e)	Define peak overshoot.	[2]
f)	What is the effect of P, PI controller on the system performance?	[3]
g)	How will you find root locus on real axis?	[2]
h)	Write the drawbacks of RH criteria.	[3]
i)	What are frequency domain specifications?	[2]
j)	Define Gain margin and Phase margin.	[3]

PART - B

(50 Marks)

2.a)   Find the transfer function of the network given figure 1.

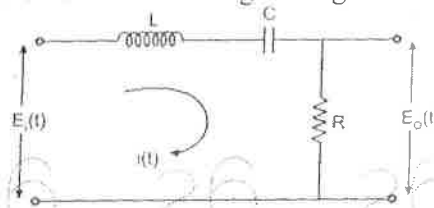Figure 1

b)   Explain translatory and rotary elements of mechanical systems.   [5+5]

OR

3.a)   What is feed back? Explain the effects of feedback.

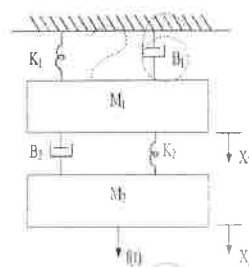b)   Obtain the transfer function $X_1(s)/F(s)$ for the mechanical system shown figure 2.   [5+5]

Figure 2

4.a) Explain the rules for block diagram reduction technique.
  b) Derive the transfer function for armature controlled DC Servomotor. [5+5]

OR

5.a) Reduce the given block diagram and hence obtain the transfer function (figure 3).
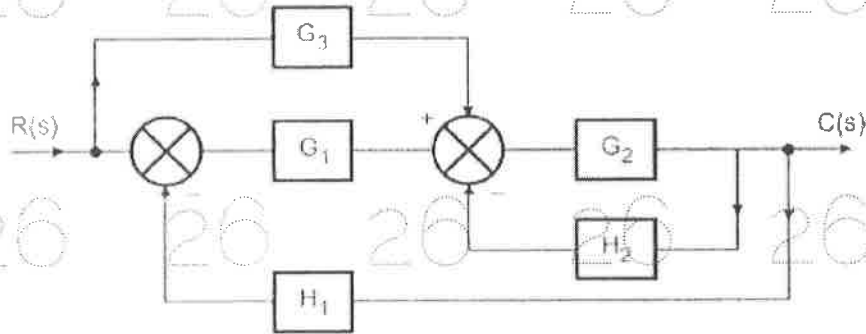

Figure 3

  b) Write the applications AC servomotor. [5+5]

6.a) Determine the error coefficients and static error for $G(s)=\dfrac{1}{s(s+1)(s+10)}$, $H(s)=s+2$
  b) Find out the output of the undamped second order system when the input applied to the system is unit step input. [5+5]

OR

7.a) The open-loop transfer function of a unity feedback system is given by $G(s)=\dfrac{500}{s(1+0.1s)}$ Find the peak overshoot and time peak overshoot. If peak overshoot is to be reduced by 20%, what is the change in the gain?
  b) Explain effects of proportional derivative and proportional integral controllers in system performance. [5+5]

8.a) How RH Stability criterion can be used to study the relative stability?
  b) Explain the effects of adding poles and zeros to G(s)H(s) on the root loci by considering one the example. [5+5]

OR

9. Sketch the root locus plot of a unity feedback system whose open loop T.F is
$G(s) = \dfrac{K(s^2-2s+2)}{(s+2)(s+3)(s+4)}$. [10]

10.a) Define
  i) Minimum phase transfer function
  ii) Non minimum phase transfer function.
  b) Enlist the steps for the construction of Bode plots. [5+5]

OR

11. Sketch the Bode plots for a system $G(s) = \dfrac{15(s+5)}{s(s^2+16s+100)}$ Hence determine the stability of the system. [10]

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the features of a Lexical analyser?	[2]
b)	Explain in brief about left most and right most derivations.	[3]
c)	Define Left recursive grammar.	[2]
d)	List out the rules for FIRST and Follow.	[3]
e)	What are the advantages of heap storage allocation?	[2]
f)	Define Type Equivalence.	[3]
g)	What is algebraic transformation?	[2]
h)	Write in brief about flow graphs.	[3]
i)	What are the forms of a target program?	[2]
j)	What is machine independent code optimization?	[3]

PART - B

(50 Marks)

2.a)   Define Regular Expression? Write about the identity rules for regular expressions.
  b)   Discuss in brief about left Recursion and Left Factoring with examples.   [5+5]

OR

3.a)   Define Compiler. Explain in brief about the LEX compiler.
  b)   Construct FIRST and FOLLOW for the Grammar: [5+5]
          E→E+T/T,   T→T*F/F, F→(E)/id ?

4.a)   Construct SLR parsing table for the following grammar.
          E → E+T/T   T → T*F/F   F →(E)/id
  b)   Discuss in brief about Yacc.   [5+5]

OR

5.a)   Construct CLR parsing table for the following grammar.
          E → E+T/T   T → T*F/F   F →(E)/id .
  b)   Discuss in brief about error recovery strategies in Parsing.   [5+5]

6.a) Explain in brief about Type checking and Type Conversion.
  b) Define Symbol table. Explain about the data structures used for Symbol table.   [5+5]

OR

7.a) Explain in brief about Stack Storage allocation strategy?
  b) Define activation record? Explain in brief about the fields in activation record.   [5+5]

8. What is DAG? Construct DAG for the following Basic block?   [10]
   D:= B*C;   E:= A+B;   B:=B+C;   A:=E-D;

OR

9. Explain how copy propagation can be done using data flow equation?   [10]

10. Define loop optimization? Describe in brief about the transformation on basic blocks.   [10]

OR

11.a) Explain reducible and non reducible flow graphs with examples.
   b) Discuss about Instruction Selection and Register allocation.   [5+5]

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R13

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a)	Why is negative feedback invariably preferred in a closed loop system?	[2]
b)	Distinguish between open loop and closed loop system.	[3]
c)	What are the applications of synchro?	[2]
d)	Write the importance of SFG in control systems.	[3]
e)	Define peak overshoot.	[2]
f)	What is the effect of P, PI controller on the system performance?	[3]
g)	How will you find root locus on real axis?	[2]
h)	Write the drawbacks of RH criteria.	[3]
i)	What are frequency domain specifications?	[2]
j)	Define Gain margin and Phase margin.	[3]

PART - B
(50 Marks)

2.a)   Find the transfer function of the network given figure 1.

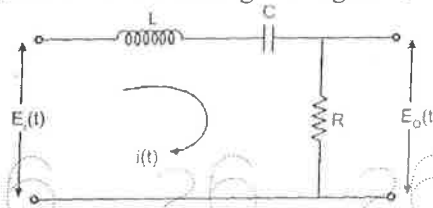Figure 1

b)   Explain translatory and rotary elements of mechanical systems.   [5+5]

OR

3.a)   What is feed back? Explain the effects of feedback.
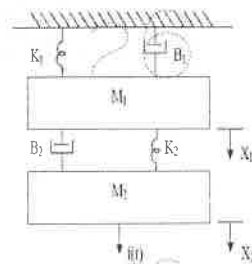b)   Obtain the transfer function $X_1(s)/F(s)$ for the mechanical system shown figure 2.   [5+5]

Figure 2

4.a) Explain the rules for block diagram reduction technique.
 b) Derive the transfer function for armature controlled DC Servomotor. [5+5]

OR

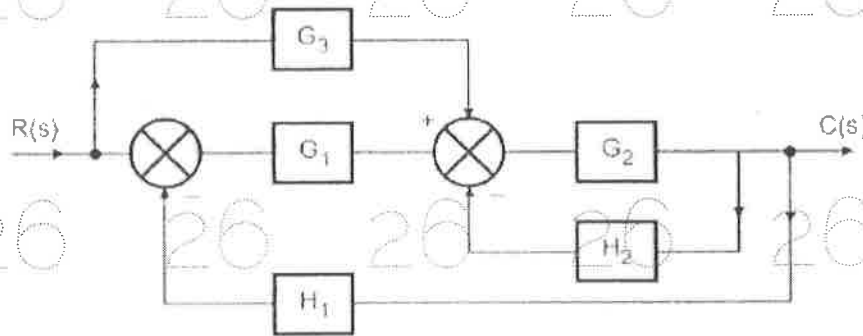5.a) Reduce the given block diagram and hence obtain the transfer function (figure 3).

Figure 3

 b) Write the applications AC servomotor. [5+5]

6.a) Determine the error coefficients and static error for $G(s) = \dfrac{1}{s(s+1)(s+10)}$; $H(s) = s + 2$
 b) Find out the output of the undamped second order system when the input applied to the system is unit step input. [5+5]

OR

7.a) The open-loop transfer function of a unity feedback system is given by $G(s) = \dfrac{500}{s(1+0.1s)}$ Find the peak overshoot and time peak overshoot. If peak overshoot is to be reduced by 20%, what is the change in the gain?
 b) Explain effects of proportional derivative and proportional integral controllers in system performance. [5+5]

8.a) How RH Stability criterion can be used to study the relative stability?
 b) Explain the effects of adding poles and zeros to G(s)H(s) on the root loci by considering one the example. [5+5]

OR

9. Sketch the root locus plot of a unity feedback system whose open loop T.F is
$G(s) = \dfrac{K(s^2 - 2s + 2)}{(s+2)(s+3)(s+4)}$. [10]

10.a) Define
 i) Minimum phase transfer function
 ii) Non minimum phase transfer function.
 b) Enlist the steps for the construction of Bode plots. [5+5]

OR

11. Sketch the Bode plots for a system $G(s) = \dfrac{15(s+5)}{s(s^2 + 16s + 100)}$ Hence determine the stability of the system. [10]

---oo0oo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
DESIGN OF MACHINE MEMBERS - I
(Common to AME, ME)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
        Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
        consists of 5 Units. Answer any one full question from each unit. Each question carries
        10 marks and may have a, b, c as sub questions.

Assume Suitable Data if Necessary:

PART - A

(25 Marks)

1.a)   Illustrate how the stress concentration in a component can be reduced.   [2]
  b)   What is meant by stress concentration? How do you take it into consideration in case of
       a component subjected to dynamic loading?   [3]
  c)   Classify the rivet heads according to Indian standard specification.   [2]
  d)   Sketch and discuss the various types of welded joints used in pressure vessels. [3]
  e)   How are the keys classified?   [2]
  f)   Distinguish between cotter joint and knuckle joint.   [3]
  g)   What type of stresses are induced in shafts?   [2]
  h)   Why a hollow shaft has greater strength and stiffness than solid shaft of equal weight?
                                                                                        [3]
  i)   Classify springs according to their shapes.   [2]
  j)   What is the function of a spring? In which type of spring the behavior is non-linear?
                                                                                        [3]
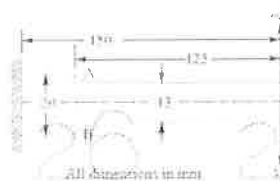
PART - B

(50 Marks)

2.   A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2000 Nm
      and a torque T. If the yield point of the steel in tension is 200 MPa. find the maximum
      value of this torque without causing yielding of the shaft according to   [10]
      a) The maximum principal stress
      b) The maximum shear stress and
      c) The maximum distortion strain energy theory of yielding.

OR

3.   A cantilever beam made of cold drawn carbon steel of circular cross-section as shown
      in Figure 1, is subjected to a load which varies from − F to 3 F. Determine the
      maximum load that this member can withstand for an infinite life using a factor of
      safety as 2. The theoretical stress concentration factor is 1.42 and the notch sensitivity
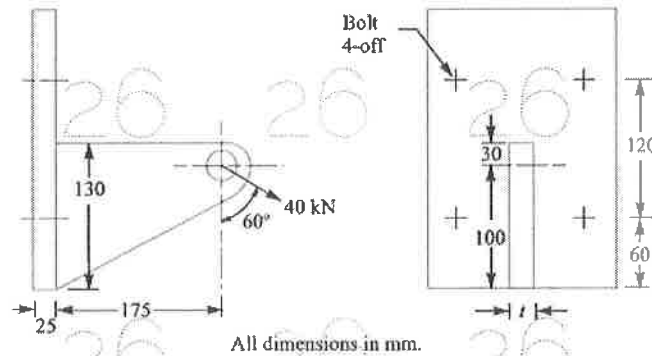   is 0.9. Assume the following values: [10]
      Ultimate stress = 550 MPa
      Yield stress = 470 MPa
      Endurance limit = 275 MPa

Figure 1

4. Two lengths of mild steel tie rod having width 200 mm and thickness 12.5 mm are to be connected by means of a butt joint with double cover plates. Design the joint if the permissible stresses are 80 MPa in tension, 65 MPa in shear and 160 MPa in crushing. Make a sketch of the joint. [10]

OR

5. Determine the size of the bolts and the thickness of the arm for the bracket as shown in Figure 2, if it carries a load of 40 kN at an angle of 60^0 to the vertical. The material of the bracket and the bolts is same for which the safe stresses can be assumed as 70, 50 and 105 MPa in tension, shear and compression respectively. [10]

All dimensions in mm.
Figure 2

6. Design and draw a sleeve and cotter joint to resist a tensile load of 60 kN. All parts of the joint are made of the same material with the following allowable stresses: [10]
   σt = 60 MPa ; τ = 70 MPa ; and σc = 125 MPa.

OR

7. Design and draw a knuckle joint to connect two mild steel bars under a tensile load of 25 kN. The allowable stresses are 65 MPa in tension, 50 MPa in shear and 83 MPa in crushing. [10]

8. A horizontal nickel steel shaft rests on two bearings, A at the left and B at the right end and carries two gears C and D located at distances of 250 mm and 400 mm respectively from the centre line of the left and right bearings. The pitch diameter of the gear C is 600 mm and that of gear D is 200 mm. The distance between the centre line of the bearings is 2400 mm. The shaft transmits 20 kW at 120 RPM. The power is delivered to the shaft at gear C and is taken out at gear D in such a manner that the tooth pressure FtC of the gear C and FtD of the gear D act vertically downwards. Find the diameter of the shaft, if the working stress is 100 MPa in tension and 56 MPa in shear. The gear C and D weighs 950 N and 350 N respectively. The combined shock and fatigue factors for bending and torsion may be taken as 1.5 and 1.2 respectively. [10]

OR

9. Design and draw a cast iron flange coupling for a mild steel shaft transmitting 90 kW at 250 rpm. The allowable shear stress in the shaft is 40 MPa and the angle of twist is not to exceed 1^0 in a length of 20 diameters. The allowable shear stress in the coupling bolts is 30 MPa. [10]

10. Design a close coiled helical compression spring for a service load ranging from 2250 N to 2750 N. The axial deflection of the spring for the load range is 6 mm. Assume a spring index of 5. The permissible shear intensity is 420 MPa and modulus of rigidity $G = 84$ kN/mm^2. Neglect the effect of stress concentration. Draw a fully dimensioned sketch, showing details of the finish of the end coils. [10]

OR

11. Design and draw a valve spring of a petrol engine for the following operating conditions:

Spring load when the valve is open = 400 N

Spring load when the valve is closed = 250 N

Maximum inside diameter of spring = 25 mm

Length of the spring when the valve is open = 40 mm

Length of the spring when the valve is closed = 50 mm

Maximum permissible shear stress = 400 MPa [10]

---ooOoo---

Code No: 115EN
JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPUTER ORGANIZATION AND OPERATING SYSTEMS
(Electronics and Communication Engineering)
Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
consists of 5 Units. Answer any one full question from each unit. Each question carries
10 marks and may have a, b, c as sub questions.

PART - A
(25 Marks)

1.a) With a neat diagram explain the basic operational concepts of computer. [2]
  b) What is Stack Organization? [3]
  c) Define Cache Memory. [2]
  d) What is a Micro Program? [3]
  e) What is an Interrupt? [2]
  f) What is an IO Processor? [3]
  g) Define Trashing. [2]
  h) How to describe the deadlock? Give an example. [3]
  i) List any four file operations. [2]
  j) Mention the objectives of File management System. [3]

PART - B
(50 Marks)

2. Explain the instruction cycle with a neat flow chart. [10]
OR
3. Give explanation about the fixed point and floating point representations in detail. [10]

4. What is Virtual Memory? Explain in detail. [10]
OR
5. With neat diagram, explain address selection for control memory. [10]

6. Explain about different modes of transfer. [10]
OR
7. Discuss about interrupt priorities. [10]

8. What are the goals of memory management? Explain the Contiguous Memory Allocation techniques. [10]
OR
9.a) What are the differences between paging and segmentation?
  b) Explain the Deadlock Prevention Technique. [5+5]

10. Explain the different file allocation methods. [10]
OR
11. Write short notes on file sharing and file protection. [10]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
COMPILER DESIGN
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

Note: This question paper contains two parts A and B.
       Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B
       consists of 5 Units. Answer any one full question from each unit. Each question carries
       10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

1.a)	What are the features of a Lexical analyser?	[2]
b)	Explain in brief about left most and right most derivations.	[3]
c)	Define Left recursive grammar.	[2]
d)	List out the rules for FIRST and Follow.	[3]
e)	What are the advantages of heap storage allocation?	[2]
f)	Define Type Equivalence.	[3]
g)	What is algebraic transformation?	[2]
h)	Write in brief about flow graphs.	[3]
i)	What are the forms of a target program?	[2]
j)	What is machine independent code optimization?	[3]

PART - B

(50 Marks)

2.a) Define Regular Expression? Write about the identity rules for regular expressions.
  b) Discuss in brief about left Recursion and Left Factoring with examples.   [5+5]
OR
3.a) Define Compiler. Explain in brief about the LEX compiler.
  b) Construct FIRST and FOLLOW for the Grammar: [5+5]
      $E \rightarrow E+T/T, \quad T \rightarrow T*F/F, \quad F \rightarrow (E)/id$?

4.a) Construct SLR parsing table for the following grammar.
      $E \rightarrow E+T/T \quad T \rightarrow T*F/F \quad F \rightarrow (E)/id$
  b) Discuss in brief about Yacc.   [5+5]
OR
5.a) Construct CLR parsing table for the following grammar.
      $E \rightarrow E+T/T \quad T \rightarrow T*F/F \quad F \rightarrow (E)/id$.
  b) Discuss in brief about error recovery strategies in Parsing.   [5+5]

6.a) Explain in brief about Type checking and Type Conversion.
   b) Define Symbol table. Explain about the data structures used for Symbol table.   [5+5]

OR

7.a) Explain in brief about Stack Storage allocation strategy?
   b) Define activation record? Explain in brief about the fields in activation record.   [5+5]

8. What is DAG? Construct DAG for the following Basic block?   [10]
      D:= B*C;   E:= A+B;   B:=B+C;   A:=E-D;

OR

9. Explain how copy propagation can be done using data flow equation?   [10]

10. Define loop optimization? Describe in brief about the transformation on basic blocks.   [10]

OR

11.a) Explain reducible and non reducible flow graphs with examples.
   b) Discuss about Instruction Selection and Register allocation.   [5+5]

---oo0oo---

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
PRINCIPLES OF PROGRAMMING LANGUAGES
(Computer Science and Engineering)

Time: 3 hours
Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Explain language evaluation criteria.
 b) Write about logic programming. [7+8]

2.a) Explain BNF form of for- loop.
 b) Write about axiomatic semantics. [7+8]

3.a) What is type checking?
 b) Explain various pointer and reference types. [6+9]

4.a) Explain short circuit evaluation.
 b) Explain various iterative statements with examples. [7+8]

5. Explain various parameter passing methods with example. [15]

6.a) Explain object oriented programming in small talk.
 b) What is semaphore? [10+5]

7.a) Explain Exception handling in JAVA.
 b) What are the basic elements in prolog? [7+8]

8.a) Compare functional and imperative language.
 b) Explain bindings and scope in Python. [7+8]

---ooOoo---

Code No: 55009

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
IC APPLICATIONS
(Common to ECE, EEE)

Time: 3 hours   Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) Differentiate between the ideal and practical characteristics of an op amp.
 b) Why the differential amplifier is used and explain the operation of it.   [7+8]

2.a) Discuss the operation of the op-amp as V to I converter.
 b) What is a voltage regulator and discuss the features of the 723 voltage regulator.
                                                                                    [8+7]

3.a) Draw the triangular wave generator circuit and explain its operation.
 b) Briefly explain the wide band reject filter and all pass filter.   [8+7]

4.a) With a functional diagram, explain the timing operation of the 555 timer.
 b) Explain the individual blocks of the 565.   [7+8]

5.a) Explain the parallel comparator type ADC and discuss its drawbacks.
 b) Compare the DAC techniques.   [8+7]

6.a) Draw a 3 input TTL NOR gate and explain its operation with the help of functional
     table.
 b) Explain the CMOS transmission gate and CMOS tri state outputs.   [8+7]

7.a) Explain the designing of the binary to gray code converters using 74XX series ICs.
 b) Discuss the multiplexers and their applications.   [8+7]

8.   Write a short note on
     a) Decade counter
     b) Conversion of D flip flop to JK flip flop.
     c) Types of shift registers.   [5+5+5]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, November/December - 2017
MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS
(Common to AME, BT, EIE, IT, ME, MIE)

Time: 3 hours
Max. Marks: 75

Answer any five questions
All questions carry equal marks
- - -

1.a) What do you understand by the determinants of demand? What are they?
 b) What are the disciplines of knowledge to which managerial economics has links? Explain each of them briefly. [8+7]

2.a) What is 'exponential smoothing method' of demand forecasting? Why is it considered an improvement over 'moving average method' of demand forecasting?
 b) Define cross elasticity of demand. How does cross elasticity of demand for substitute goods differ from cross elasticity for complementary goods? [8+7]

3.a) What are the characteristics of iso-cost curves?
 b) A manufacturer of calculators has the following cost data:
 Variable cost of Rs.35 per unit; fixed overhead costs of Rs.15,00,000 per year. If the price set by manufacturer is Rs.100 per calculator what is the break even quantity to be produced? [7+8]

4.a) What is the nature of oligopoly market? Is it a perfect market? What in your opinion, are products, which have oligopoly market in India?
 b) What is marginal cost pricing? Under which conditions, companies go for marginal cost pricing approach? [8+7]

5.a) Describe the various kinds of partners.
 b) What are the contents you propose in a partnership deed? [7+8]

6. A company is considering investing in a project that costs Rs. 50 lakhs. There is no salvage value of the asset at the end of the project. The cash flow at the end of each year is shown below:

year	cash flow in Rs. Lakhs
1	16.00
2	16.00
3.	15.00
4	15.00
5.	10.00

Determine a) Pay back period b) average rate of return. [7+8]

7. Correct the following Trial Balance as per the principles of double system of accounting: [15]

	Debit Rs.	Credit Rs.
opening stock	10,000	
purchases	50,000	
reserve fund	5,000	
carriage on goods purchased	1,000	
bank deposit		50,000
cash in hand	2,000	
purchase returns	1,500	
sales		92,600
sales returns	2,400	
capital		1,50,000
import duty	1,200	
export duty	1,050	
debtors	50,000	
creditors	22,500	
plant & machinery		62,500
salary	20,000	
wages	10,000	

8.a) The following are the values of the current assets of a company:
Inventories   Rs. 50,00,000
Sundry debtors   25,00,000
Cash   10,00,000
To maintain a current ratio of 2:1, how much the company can have in current liabilities? Also calculate its acid-test ratio.

b) What are the limitations of ratio analysis? [8+7]

---ooOoo---

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November - 2017
PHARMACEUTICAL ANALYSIS-I

Time: 3hours   Max.Marks:75

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART- A   (25 Marks)

1.a)	Explain about precision and accuracy?	[2]
b)	Write about Common ion effect?	[3]
c)	Add note on masking and demasking?	[2]
d)	Classify solvent used in non-aqueous titration?	[3]
e)	Write about titration curves in Potentiometric titrations?	[2]
f)	Explain applications of conductrometric titration?	[3]
g)	Add note on adsorption?	[2]
h)	Write about plate theory?	[3]
i)	Add note on Karl-Fisher method?	[2]
j)	Explain about flame photometry applications?	[3]

PART-B   (50 Marks)

2.a) Explain the basic principle of oxidation-reduction titration?
b) Write about various indicators used in redox titration.
c) Add a note on buffers?   [4+4+2]

OR

3.a) Explain about the acid base concept?
b) Write about the principle and application of Precipitation titration?
c) Write short note on pH?   [3+5+2]

4.a) Explain theory of Gravimetry?
b) Explain about principle and application of complexometric titration?
c) How will you prepare and standardization of 1N Perchloric acid?   [3+4+3]

OR

5.a) Write the principle and application of non-aqueous titration?
b) What is mean by co-precipitation?
c) Explain the procedure of 0.1N EDTA preparation?   [5+3+2]

6.a) Write advantages and disadvantages of conductometric titration?
b) Mention the application of potentiometry?
c) What are electrodes used in amperometric titations?   [3+3+4]

OR

7.a) Classify the conductrometric titration?
  b) Write about reference electrodes used in potentiometric titations?
  c) Write the principle of amperometry?   [2+4+4]

8.a) Write about different types of paper chromatography ?
  b) Write the basic principle involved in TLC?
  c) Give details about paper chromatography application?   [4+3+3]

OR

9.a) Write about flash column chromatography?
  b) Write about radial chromatography?
  c) What are detecting reagents used in paper chromatography?   [4+3+3]

10.a) Explain about principle involved in nephlometry ?
  b) Write about application of polarimetry?
  c) Add note on application of turbidimetry?   [3+3+4]

OR

11.a) Write a short note on instrument of flame photometry?
  b) Explain about different types of detectors used in nephlometry?
  c) Write short note on principle of refractometry?   [4+3+3]

--ooOoo--

R09

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Pharmacy III Year I Semester Examinations, November-2017
PHARMACEUTICAL MICROBIOLOGY

Time: 3hours   Max.Marks:75

Answer any five questions
All questions carry equal marks
- - -

1.a) What is the scope and relevance of microbiology in the field of Pharmacy?
  b) Describe the contributions of Louis pasture in medical microbiology.   [7+8]

2.a) Distinguish between archea and eubacteria .
  b) Describe the pharmaceutical significance of algae and fungi.   [5+10]

3.a) What is meant by nutrient media? Explain the different nutritional requirements for growth of microbes.
  b) Describe the various preservation methods of microorganisms.   [7+8]

4. What are the various factors affecting disinfection. Explain about mode of action and applications of disinfectants.   [15]

5.a) What are mutations ? Explain in detail about chemical mutagens with suitable examples.
  b) Explain the concept of Lac operon.   [8+7]

6. How microbial contamination in air plays on important role in pharmaceutical industries. Explain in detail about quantitative evaluation of microbial contamination in air.   [15]

7. What are Antibiotics? Explain the principle and microbiological assay methods of Pencillin.   [15]

8. Write about the following:
    a) Chemostat and Turbitdostat
    b) Drug resistance
    c) Sterility testing of pharmaceuticals   [5+5+5]

--ooOoo--