AR16

CODE: 16CE2009 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, April-2019

STRENGTH OF MATERIALS-II

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) A simply supported beam of 6m span carries a UDL of 20 kN/m on the whole span and in addition carries point loads of 40 kN and 50 kN at a distance 2m and 4m from left support. Calculate the slope at the ends and the maximum deflection of the beam. Take E = 200 GN/m^2 and I = 5000 cm^4.using Macaulay's method. **14 M**

(OR)

2. a) Derive the expressions for slope and deflection for a beam bent into a circular arc **6M**

   b) A cantilever beam 3m long carries two point loads of 60 kN each, at distance of 0.75 m and 1.75 m respectively from the fixed end. Determine the deflection at the free end using Moment area method. Take E= 200GN/m^2 and I = 12689400 cm^4. **8M**

UNIT-II

3. At a point in a stressed element, the normal stresses in two mutually perpendicular directions are 45 MPa and 25 MPa both tensile. The complimentary shear stress in these directions is 15 MPa. By using Mohr's circle method, determine the maximum and minimum principal stresses. **14M**

(OR)

4. a) Derive an expression for the stresses on an oblique section of a rectangular body, when it is subjected to direct stresses in two mutually perpendicular directions. **6M**

   b) At a point in a strained material, the principal stresses are 160 N/mm^2 (tensile) and 50 N/mm^2 (compressive). Determine the resultant stress in magnitude and direction on a plane inclined at 45^o to the axis of the major principal stress. What is the maximum intensity of shear stress in the material at the point? **8M**

UNIT-III

5. A cylindrical vessel 3m long and 500mm in diameter with 10mm thick plates is subjected to an internal pressure of 3MPa. Calculate the change in diameter, change in length and change in volume of the vessel. Take E=200GPa and Poisson's ratio=0.3 for the vessel material **14M**

(OR)

6. Internal and external diameters of a thick cylinder are 300mm and 500mm, respectively. It is subjected to an internal pressure of $6N/mm^2$.Find the Maximum and minimum Hoop stress across the section. Also Sketch the variation of hoop stress and radial stress across the thickness of the cylinder. **14M**

UNIT-IV

7. a) What are the assumptions made in the Euler's theory? **5M**
   b) Calculate safe compressive load on a hollow cast iron column with one end rigidly fixed and other end is hinged of 100 mm external diameter and 70 mm internal diameter and 8m in length. Use Euler's formula with a factor of safety 4. Take E= 95 kN/mm^2. **9M**

(OR)

8. Determine the maximum stress induced in a horizontal strut of length 4 m and of rectangular cross-section 60 mm wide and 120 mm deep when it carries an axial thrust 100kN and a vertical load of 6 kN/m length. The strut is having pin joints at its ends. Take E= 2×10^5 N/mm^2. **14M**

UNIT-V

9. A masonry retaining wall of trapezoidal section is 8 m high and retains earth which is level upto the top. The width at the top is 1.5 m and exposed face is vertical. Find the minimum width of the wall at the bottom in order the tension may not be induced at the base. Masonry and earth has densities 2300 kg/m^3 and 1600kg/m^3 respectively. The angle of repose of the soil is 30^o. **14M**

(OR)

10. A masonry trapezoidal dam 5m high, 1.2m wide at top and 3.5m wide at bottom retains water on its vertical face. Determine the maximum and minimum stresses at the base when the reservoir is full. Take weight of water as $10KN/m^3$ and that of masonry as $25KN/m^3$. **14M**

AR16

CODE: 16EE2013 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, April-2019

CONTROL SYSTEMS

(Electrical & Electronics Engineering)

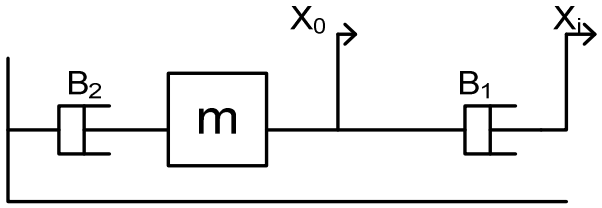
Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

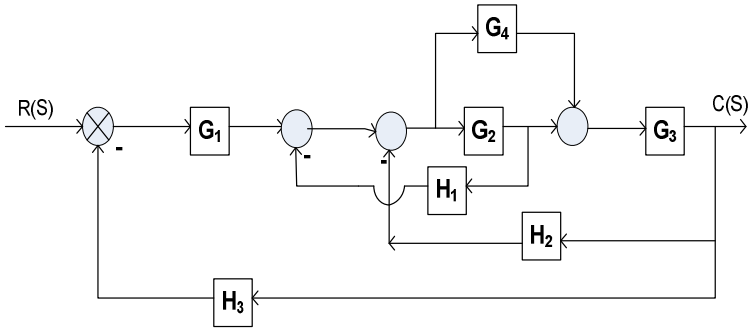
1. a) Briefly explain the effect of feedback in control systems and explain the feedback characteristics 6M

   b) For the mechanical system with mass and friction components, shown in figure find transfer function $X_o(s)/X_i(s)$ 8M



(OR)

2. For the given block diagram find the transfer function C(s)/R(s) by using block diagram reduction rules. 14M



UNIT-II

3. a) Derive the transfer function of armature controlled dc servo motor. 8M

   b) Measurement conducted on a servo mechanism shows the system response to be $c(t)=1+0.2e^{-60t}-1.2e^{-10t}$, when subjected to a unit step input. Obtain the expression for closed loop t.f, find the damping ratio and un-damped natural frequency of oscillations 6M

(OR)

4. a) Derive the transfer function of field controlled dc servo motor. 8M

   b) The response h(t) of a linear time invariant system to an impulse input under initially relaxed condition is $h(t)= e^{-t}+e^{-2t}$ .find the response of a system for unit step input at t=0. 6M

UNIT-III

5. a) The characteristic polynomial of a feedback control system is given by $R(s)=S^5+2S^4+2S^3+4S^2+11S+10$ for this system find the number of roots lie in the left hand and right hand s-plane. 4M

   b) For the unity feedback system has shown $G(s)=\frac{K}{S(S+2)(S+3)}$ sketch the root-locus plot by determining necessary points 10M

(OR)

6 For the unity feedback system has shown $G(s)=\frac{K}{S(S^2+2S+2)}$ sketch the root-locus plot by determining necessary points 14M

UNIT-IV

7. The unity negative feedback system with G(S) $= \frac{200}{S(S+2)(S+10)}$ determine the gain margin and phase margin using Bode plot. 14M

(OR)

8. The open loop transfer function of negative feedback system is given by $G(s)H(s) = \frac{1}{S(S+2)(S+10)}$ using nyquist stability criteria find the stability of the system 14M

UNIT-V

9. What is a lag compensator, obtain the transfer function of lag compensator and draw pole-zero plot, and list out the effects and limitations. 14M

(OR)

10. The state equation of a linear system is given by $\dot{X}(t) = \begin{bmatrix} -1 & -2 \\ 0 & -4 \end{bmatrix} X(t) + \begin{bmatrix} 1 \\ 0 \end{bmatrix} U(t)$; $Y(t) = [2 \quad 4]\, X(t)$ and for the given system 14M

a) Obtain the state transition matrix.

b) Obtain the solution of a system for unit step input and $X(0) = \begin{bmatrix} -1 \\ 3 \end{bmatrix}$

AR16

CODE: 16ME2011 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, April-2019

MACHINE DRAWING

(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

Note: Answer any two questions from section A and Section B is compulsory

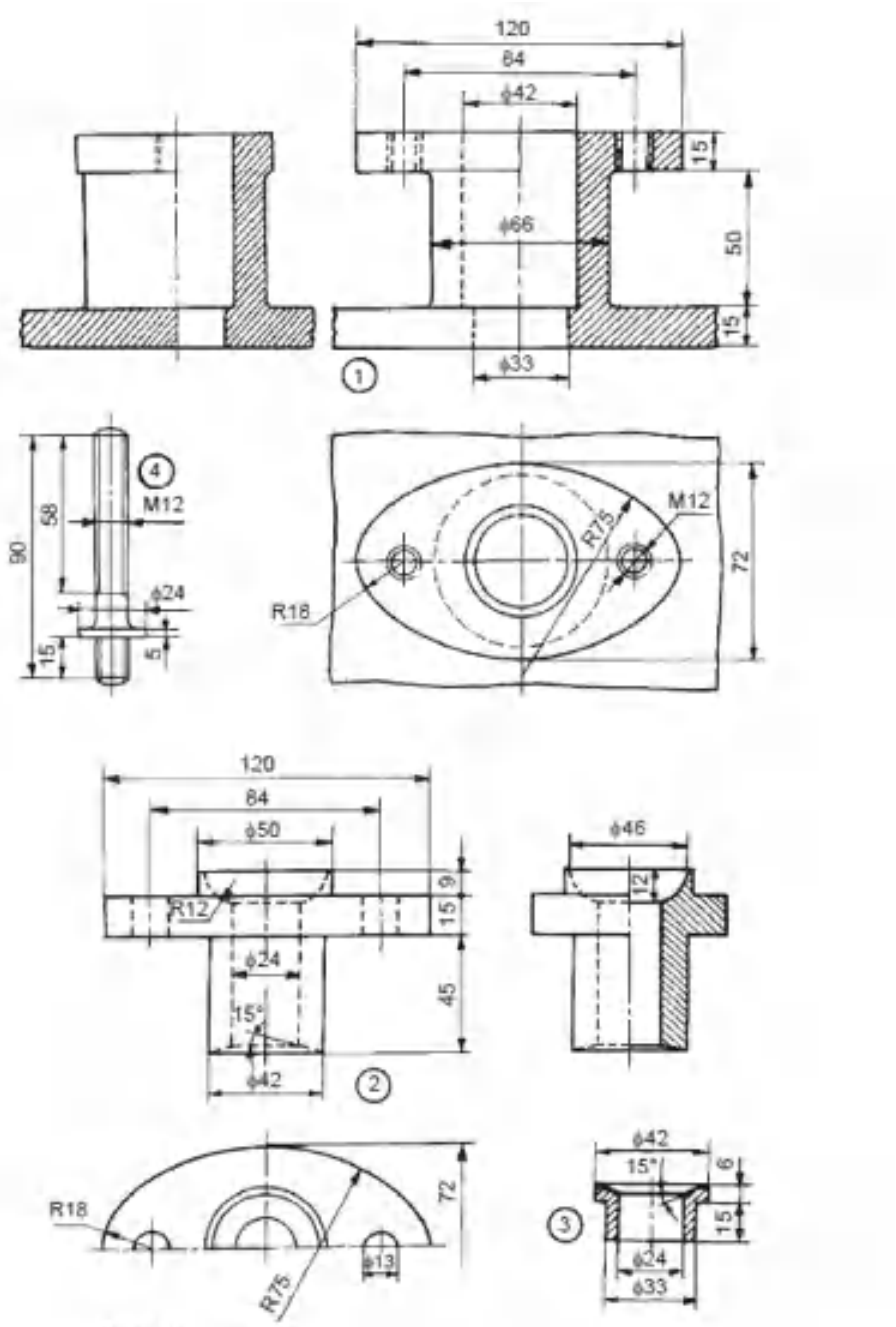
(2x15=30 Marks)

SECTION -A

1. Sketch the following forms of nuts, with proportions marked:
   a) flanged nut
   b) cap nut
   c) dome nut
2. Two square rods of side 50 mm each are connected by a cotter joint with a gib. Sketch the following views of the assembly:
   a) Half sectional view from the front
   b) view from the side.
3. Draw the sectional front view and top view of double riveted, double strap Zig Zig butt joint to join two plates of thickness 10 mm each.

SECTION-B

4. Details of a stuffing box are given in the figure below. Draw the following views of the stuffing box with all parts assembled together and showing the piston rod in position: (i) Sectional front view (ii) Top view (iii) Side view (40 M)



Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Gland	Brass	1
3	Bush	Brass	1
4	Stud	MS	2
5	Nut, M12	MS	2

Fig. 18.1 Stuffing box

AR16

CODE: 16EC2010 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(An Autonomous Institution)

II B.Tech II Semester Regular & Supplementary Examinations, April-2019

DIGITAL ELECTRONICS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 70M**

Answer one question from each unit

All questions carry equal marks

All parts of the question must be answered at one place

UNIT - I

1.a Convert the following (i) 11011.101_2 to decimal (ii) 378.93_{10} to octal. 8M

b Convert the gray number 10110010 into (i) Hexa decimal (ii) octal (iii) decimal. 6M

(OR)

2.a Encode the data bits 1101 into the 7-bit even parity hamming code 6M

b Subtract the following numbers using 9's complement method (i) 745.81-436.62 (ii) 436.62-745.81 8M

UNIT-II

3.a Draw the logic symbols , construct the truth tables, and with the help of circuit diagrams explain the working of following gates (i) NAND (ii) NOR (iii) EX-OR (iV) EX-NOR 8M

b Reduce the following functions using K-map (i) F= $\sum m(0,1,2,3,6,7,13,15)$ (ii) F=$\sum m(2,3,6,7,10,11,12)$ 6M

(OR)

4.a What are the steps followed in the reduction of Boolean expressions? 4M

b Implement AB+AB+AB with AND – OR gate 5M

c Implement AB+BC+CA with NAND – NOR gate 5M

UNIT-III

5.a Realize a full subtractor using (i) only NAND gates (ii) Only NOR gates. 8M

b Design a logic circuit with 4-inputs A, B, C, D that will produce output "1" only whenever two adjacent input variables are 1's. A and D are also to be treated as adjacent. Implement it using universal logic. 6M

(OR)

6.a	Compare Half adder, Half subtractor, Full adder, Full subtractor.	8M
b.	Explain the logic diagram of Excess-3 adder with an example.	6M

UNIT-IV

7.a	Design a 4-bit gray to binary code converter and explain its conversion table with an example.	8M
b	Implement the following logic function using an 8:1 multiplexer F(A, B, C, D)= $\sum m(1, 3, 4, 11, 12, 13, 14, 15)$.	6M

(OR)

8.a	With the help of logic diagram and function table explain (i) 4-input multiplexer (ii) 1-line to 8-line demultiplexer.	8M
b	Design a octal to binary encoder (8-line to 3-line) and explain its conversion table with an example.	6M

UNIT-V

9.a	Define the following terms with relation to flip flop (i) Set-up time (ii) Hold time (iii) Propagation delay time.	6M
b	Draw the circuit diagram of a master slave JK flip flop and explain its operation with the help of a truth table.	8M

(OR)

10.	a.Convert JK flip flop into (i) T flip flop (ii) D flip flop.	8M
b	Draw and explain the logic diagram of 4-bit bidirectional shift register.	6M

AR16

CODE: 16CS2009 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, April-2019

OPERATING SYSTEMS

(Common to CSE & IT)

Time: 3 Hours **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Explain in detail about different types of operating systems with a neat diagram. **7M**
   b) Discuss in detail about multithread programming models with a neat sketch. **7M**

(OR)

2. a) Explain in detail about various types of operations performed on processes. **7M**
   b) Consider the following set of processes p1,p2,p3,p4 with their arrival and burst times given in below table: **7M**

PROCESS	ARRIVAL TIME	BURST TIME
P1	0	9
P2	1	7
P3	2	2
P4	3	6

i) Draw the Gantt chart and calculate the average waiting time and average turnaround time using SJF algorithm.
ii) Draw the Gantt chart and calculate the average waiting time and average turnaround time using Round robin algorithm (TQ=2ms)

UNIT-II

3. a) Discuss in detail about deadlock avoidance using banker's algorithm with suitable example. **8M**
   b) Explain in detail about deadlock detection algorithm for several instances of a resource type. **6M**

(OR)

4. a) Define semaphore. List and explain about types of semaphores and its implementation with suitable examples. **8M**
   b) Discuss about dining- philosophers problem and its solution with a neat sketch. **6M**

UNIT-III

5. a) Explain in detail about the most common techniques for structuring the page table. **7M**
   b) Consider the reference string: 4,7,6,1,7,6,1,2,7,2 for a memory with three frames. Explain i) FIFO ii) Optimal page replacement algorithms for the given problem. **7M**

(OR)

6. a) Define Segmentation. Discuss in detail about segmentation hardware with example. **7M**
   b) Define Thrashing. What is the cause of Thrashing? Explain in detail about different types of mechanisms to prevent Thrashing with examples. **7M**

UNIT-IV

7. a) Explain in detail about various types of file access methods with examples. **8M**
   b) Discuss in detail about free space management with a neat sketch. **6M**

(OR)

8. a) Explain in detail about various types of directory structures with a neat diagram. **7M**
   b) Compare contiguous allocation of disk space with linked allocation of disk space. **7M**

UNIT-V

9. a) Explain in detail about the following disk scheduling algorithms with examples. **8M**
      i) FCFS Scheduling ii) SSTF Scheduling
      iii) SCAN Scheduling
   b) Discuss in detail about disk formatting in disk management. **6M**

(OR)

10. a) Explain in detail about the following: **8M**
      i) Magnetic disks ii) Solid-State disks
   b) Distinguish between Host attached storage and Network attached storage with a neat diagram. **6M**

AR13

CODE: 13CE2006 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, April-2019

STRENGTH OF MATERIALS-II

(Civil Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Distinguish between thin cylinder and thick cylinder?
   b) Define hoop and longitudinal stress.
   c) Write equations for hoops stress as per Lame's theory
   d) Define shrinkage allowance.
   e) State the Limitations of Maximum principal stress theory
   f) Define maximum shear stress theory
   g) Write the equation for power transmitted by a shaft.
   h) Define Torsional moment of resistance
   i) Define beam columns.
   j) What is the effect of lateral load on the bucking of columns?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Derive circumferential strain and longitudinal strain for a thin cylindrical shell subjected to internal pressure — 6m
   b) Find the circumferential stress at the inner and outer radius respectively in the case of a pipe with a 100mm internal diameter and which is 40mm thick when subjected to an internal pressure of 7.2N/mm^2 — 6m

(OR)

3. a) Derive volumetric strain for a thin cylindrical shell subjected to internal pressure — 6m
   b) A cylindrical steel vessel with hemispherical ends is 60cm long over all, the outside diameter is 10cm and the thickness 5mm throughout. Calculate the change in internal volume of the vessel when it is subjected to an internal pressure of 15MPa. E=200GPa and μ= 0.28 — 6m

UNIT-II

4. a) Derive the hoop stress developed in thick cylindrical vessel subjected to internal fluid pressure alone. — 6m
   b) A thick cylinder of steel having an internal diameter of 100mm and an external diameter of 200mm is subjected to an internal pressure of 56 N/mm^2 and an external pressure of 7 N/mm^2. Find the maximum hoop stress. — 6m

(OR)

5. a) What do you mean by thick compound cylinders? How will you determine the hoop stresses in a thick compound cylinder? 6m

   b) A thick cylindrical pipe of outside diameter 300mm and thickness of metal 60mm is subjected to an internal fluid pressure of 40N/mm^2 and an external pressure of 4N/mm^2. Calculate the maximum and minimum intensities of circumferential and radial stresses in the pipe section. 6m

UNIT-III

6. In a steel member, at a point the major principal stress is 180 MN/m^2 and the minor principal stresses is compressive. If the tensile yield point of the steel is 225 MN/m^2, find the value of the minor principal stress at which yielding will commence, according to each of the following criteria of failure. 12m
   i. Maximum shearing stress
   ii. Maximum total strain energy
   iii. Maximum shear strain energy
   Take Poisson's ratio = 0.26

(OR)

7. In a material the principal stresses are 50 N/mm^2, 40 N/mm^{2}and - 30N/mm^2, Calculate: 12m
   i. Total strain energy
   ii. Volumetric strain energy
   iii. Shear strain energy and
   iv. Factor of safety on the total strain energy criterion if the material yield at 100 N/mm^2.
   Take e = 200 x 10^3 N/mm^{2}and Poisson ratio = 0 .8

UNIT-IV

8. a) Derive expression for strain energy for a solid circular shaft 6m

   b) Determine the diameter of a solid steel shaft which will transmit 112.5kW at 200rpm. Also determine the length of the shaft if the twist must not exceed1.5^0 over the entire length. The maximum shear stress is limited to 55 N/mm^2. Take G = 8x10^4 N/mm^2 6m

(OR)

9. A propeller shaft 280mm in diameter transmits 2.5mW at 250rpm. The propeller weighs 50kN and overhangs its support by 400mm. If the propeller thrust is of 123kN weights. Calculate the maximum principal stress induced in the cross-section and indicates its position. C=80MPa 12m

UNIT-V

10. a) Explain the limitations of Euler's theory 6m

    b) A tabular steel strut is 8cm external diameter and 5cm internal diameter, 3m long and has hinged ends. This is subjected to eccentric lad. Find the maximum eccentricity for crippling load of 60% of the Euler's load. The yield stress being 300MPa and E=200GPa. 6m

(OR)

11. A steel strut of circular cross-section 1.25m long is hinged at both ends. Find the necessary diameter in order that if a thrust of 50kN deviates at the end by 1/10th of the diameter from the axis of the strut, the greatest compressive stress shall not exceed 35MPa. If the yield stress of steel 300MPa, find the crippling load. E = 200GPa 12m

CODE: 13EE2009

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, APRIL, 2019

CONTROL SYSTEMS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Find the transfer function of given differential equation x(t)=input; y(t)=output; $\frac{d^2y(t)}{dt} + 2\frac{dy(t)}{dt} + y(t)$=x(t).

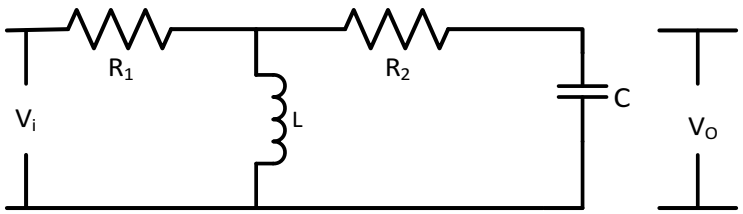
   b) Write the fundamental elements of rotational system.
   c) List out the advantages of PD controller.
   d) Find the ratio of settling time for 2% tolerance band to 5%tolerance band
   e) Find the peak over-shoot for a critically damped system
   f) Write the limitations of RH criteria
   g) What is meant by resonant peak? write the formulae.
   h) Define gain margin and phase margin.
   i) What is meant by compensator?
   j) Find the no.of state variables defined for RLC series circuit.

PART-B

Answer one question from each unit **[5x12=60M]**

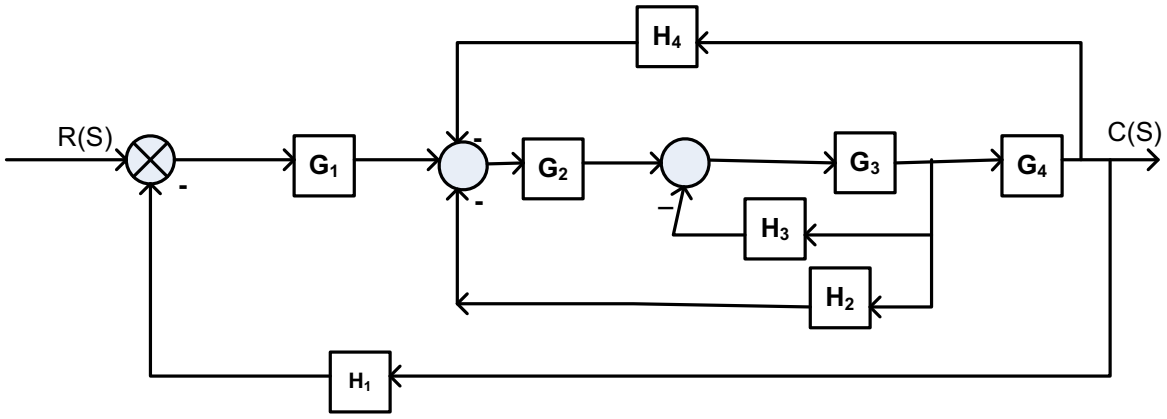
UNIT-I

2. a) What is feedback? Explain the effect of feedback on sensitivity of the system. **[5M]**
   b) Determine the transfer function $\frac{V_O(S)}{V_I(S)}$for the given electrical circuit. **[7M]**



(OR)

3. Convert the given block diagram into signal flow graph and obtain the transfer function C(s)/R(s) **[12M]**



UNIT-II

4. a) Derive the transfer function of armature controlled dc servo motor. **[6M]**
   b) A unity feedback system is characterized by an open-loop transfer function G(s)=$\frac{K}{S(S+10)}$. Determine the gain 'K' so that system will have damping ratio of 0.5. For this value of K, determine time –domain specifications. **[6M]**

(OR)

5. a) A system has following T.F $\frac{C(S)}{R(S)} = \frac{20}{S+10}$. Determine its unit impulse, step and ramp responses. **[6M]**
   b) Find out error constants K_P, K_V, K_a for the system having G(S)H(S)=10/{S(S+1)(S+2)} **[6M]**

UNIT-III

6. For a unity feedback system $G(s) = \frac{K}{S(1+S)(5+S)}$ find the marginal value of 'K' and frequency of sustained oscillations. **[12M]**

(OR)

7. For the unity feedback system has shown below $G(s) = \frac{K}{S(S+1)(S+3)}$ sketch the root-locus by calculating the all necessary conditions. **[12M]**

UNIT-IV

8. The open loop transfer function of a negative feedback system is given by $G(s) = \frac{100}{S(0.5S+1)(0.1S+1)}$. Find out gain margin , phase margin using bode plot **[12M]**

(OR)

9. The open loop transfer function of negative feedback system is given by $G(s)H(s) = \frac{1}{S(S+1)(2S+1)}$ using nyquist stability criteria find the stability of the system **[12M]**

UNIT-V

10. What is a lag compensator, obtain the transfer function of lag compensator and draw pole-zero plot, and list out the effects and limitations. **[12M]**

(OR)

11. **a)** State and explain properties of state transition matrix **[6M]**

b) The state equation of a linear system is given by $\dot{X} = \begin{bmatrix} -1 & -2 \\ 0 & -4 \end{bmatrix} X + \begin{bmatrix} 1 \\ 0 \end{bmatrix} U$ obtain the state transition matrix **[6M]**

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AR13

CODE: 13ME2012 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April-2019

MACHINE DRAWING
(Mechanical Engineering)

Time: 3 Hours **Max Marks: 70**

ANSWER ANY TWO QUESTIONS FROM PARTA AND PART B IS COMPULSORY

[2X 15=30Marks]

PART-A

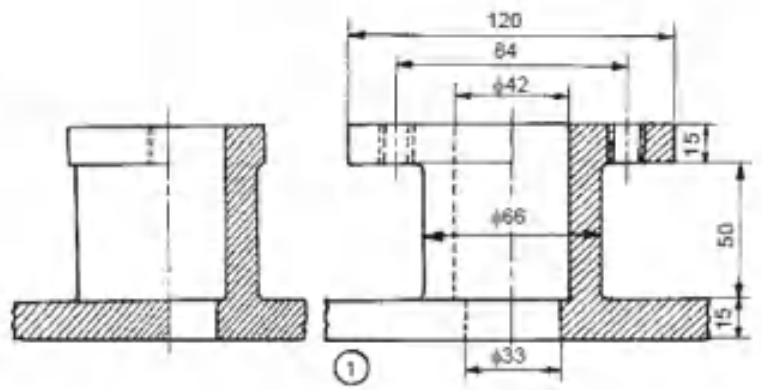
1 Sketch neatly the two views of a foot-step bearing for supporting a 50 mm diameter vertical shaft. Give important dimensions.

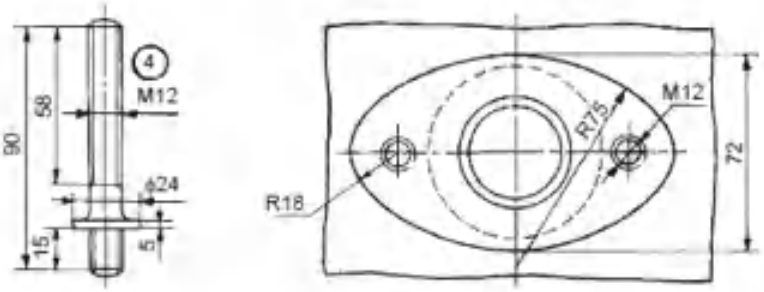
2 (a) Draw the two views of the double-riveted butt joint. Take t=10 mm d=20 mm.
(b) Sketch the three views of a hexagonal nut for a 24 mm diameter bolt,

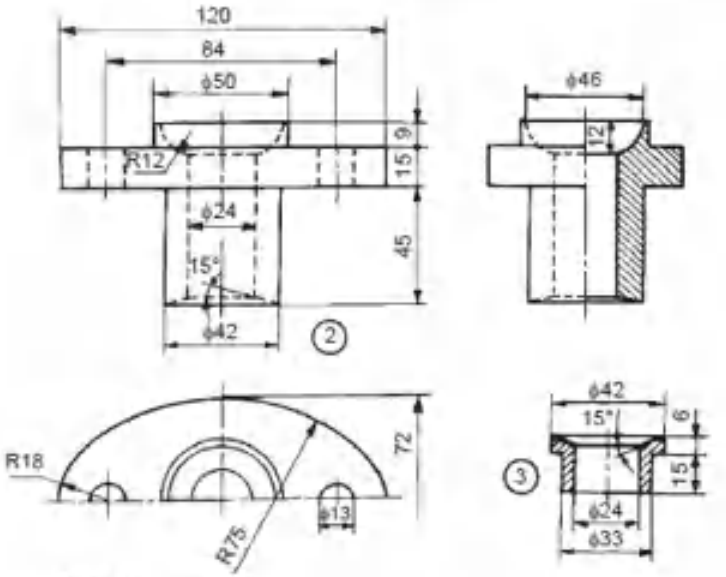
3 Prepare a dimensioned sketch, in two views, of a cotter-joint for two 40 mm diameter rods.

PART-B

4. Details of a stuffing box are given in the figure below. Draw the following views of the stuffing box with all parts assembled together and showing the piston rod in position: (i) Sectional front view (ii) Top view (iii) Side view **[1x40=40M]**







Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Gland	Brass	1
3	Bush	Brass	1
4	Stud	MS	2
5	Nut, M12	MS	2

Fig. 18.1 Stuffing box

AR13

CODE: 13EC2010 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, APRIL, 2019

PULSE AND DIGITAL CIRCUITS
(Electronics and Communication Engineering)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Write the expression for the rise time of a low pass circuit.
   b) When does low pass circuit act as integrator?
   c) What is meant by biased clamping?
   d) What do you mean by clipping?
   e) Define diode reverse recovery time?
   f) What are commutating capacitors?
   g) Define stable state of the binary?
   h) What do you mean by triggering?
   i) Which blocking oscillator requires no triggering?
   j) Give the expression for transmission error e_t?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain in detail about the Response of low pass filter with waveforms for pulse input. 6
   b) Derive the expression of percentage tilt when symmetrical square wave input is given to High pass filter. 6

(OR)

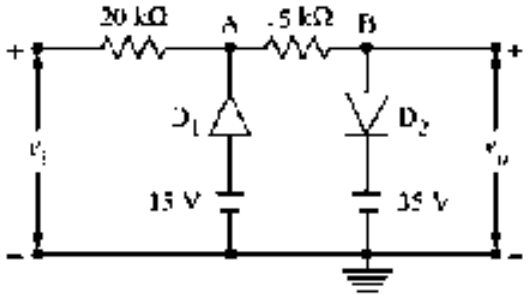
3. Explain in detail about current and voltage response of series RLC circuit to a step input. 12

UNIT-II

4. a) Draw the circuit diagram of transistor clipper and explain its working in detail. 8
   b) State and explain clamping circuit theorem. 4

(OR)

5. a) What are the applications of voltage comparators 4
   b) For the circuit shown, V_i is a sinusoidal signal with peak amplitude of 50v. Assuming the diodes are ideal, sketch one cycle of output waveforms and determine maximum diode currents. 8



UNIT-III

6. a) Explain about transistor switching times with waveforms. 6
   b) Explain the saturation parameters of transistor and their variation with temperature 6

(OR)

7. What is Schmitt trigger? With the help of a neat circuit diagram and waveforms, explain the working of Schmitt trigger? 12

UNIT-IV

8. Design a collector-coupled monostable multivibrator using an n-p-n silicon transistor with $h_{FE}(min) = 40$, V_{BE} (cut off)≈ 0 V and $I_B(sat) = 1.5I_B(min)$. Given that: $V_{CC} = 10$ V, $I_C(sat) = 5$ mA, $R_{C1} = R_{C2} = R_C$, $V_{CE}(sat) = 0.2$ Vand $V_{BE}(sat) = 0.7$ V. If the pulse width required is 1 ms, calculate the value of C. 12

(OR)

9. Explain the working of collector coupled astable multivibrator with waveforms and derive the expression for its frequency of oscillations 12

UNIT-V

10. Explain the working of RC controlled astable blocking oscillator with circuit diagram and waveforms. 12

(OR)

11. a) Explain about the circuit used for reduction of pedestal in sampling gates. 6
    b) Draw the circuit diagram for four diode sampling gate and explain. 6

AR13

CODE: 13CS2005 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April-2019

SOFTWARE ENGINEERING
(Common to CSE & IT)

Time: 3 Hours **Max Marks: 70**

PART-A

ANSWER ALL QUESTIONS [1 x 10 = 10 M]

1. a) Describe the Characteristics of Software.
   b) What are the challenges in software?
   c) What are the non-functional requirements of software?
   d) Write the distinct steps in requirements engineering process?
   e) Why testing is important with respect to software?
   f) What are the types of software maintenance?
   g) How effort is measured? Explain.
   h) Distinguish between bug and error.
   i) Distinguish between verification and validation
   j) Give the comparison of transaction mapping and transform mapping.

PART-B

Answer one question from each unit [5x12=60M]

UNIT-I

2. a) Explain Unified Process model with the help of a diagram 6M
   b) Describe 3 software myths you know 6M

(OR)

3. a) Demonstrate Evolutionary process models 6M
   b) With suitable illustration explain SPIRAL model . 6M

UNIT-II

4. a) Explain the steps in Requirement change management. 6M
   b) What is the difference between Functional and Non-functional requirements. 6M

(OR)

5. a) Explain Requirement Engineering process with the help of suitable diagrams. 6M
   b) Describe about Behavioural models 6M

UNIT-III

6. a) Describe generic task set for design 8M
   b) Explain the Architectural styles and patterns 4M

(OR)

7. a) List out various design issues while designing user interface with neat examples. 6M
   b) What are the characteristics of a good design. How design evaluation is performed? 6M

UNIT-IV

8. a) Explain the framework for product metrics. List out at least 5 metrics to be followed for web app design. 6M
   b) Explain black box testing methods and its advantages and disadvantages. 6M

(OR)

9. a) Discuss the concept of software maintenance process. 6M
   b) Explain in detail about COCOMO model. 6M

UNIT-V

10. a) Differentiate between Reactive vs. Proactive Risk strategies 6M
    b) Demonstrate Risk management 6M

(OR)

11. a) Write short notes on software reliability. Explain ISO 9000 quality standards 6M
    b) What is the necessity of quality assurance in software development? 6M

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