AR16

CODE: 16CE2009 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2018

STRENGTH OF MATERIALS-II

(Civil Engineering)

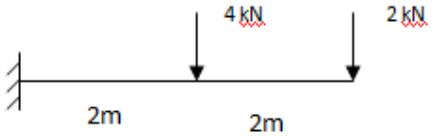
Time: 3 Hours **Max Marks: 70**

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) Derive the relation between slope and deflection and radius of curvature of deflected beam **7M**

   b) The cantilever beam shown in Fig.1 has a rectangular cross-section 50 mm wide by 200mm high. Determine the maximum deflection of the beam. using moment area method. Use E = 10 GPa. **7M**



(OR)

2. A steel girder of uniform section, 14 meters long, is simply supported at its ends. It carries concentrated loads of 120 kN and 80 kN at two points 3 meters and 4.5meters from the two ends respectively. (a) Calculate the deflection of the girder at the two points under the two loads.(b) The maximum deflection. Use Macaulay's Method. Take: $I = 16 \times 10^4$ m^4, and $E = 210 \times 10^6$ KN/m^2. **14M**

UNIT-II

3. a) Obtain an expression for the major and minor principal stresses on a plane, when the body is subjected to direct stresses in mutually perpendicular directions accompanied by a shear stress. **7M**

   b) A point in a strained material is subjected to a tensile stress of 120 MPa and a clock wise shear stress of 40 MPa. What are the values of normal and shear stresses on a plane inclined at 45^o with the normal to the tensile stress. **7M**

(OR)

4. An elemental cube is subjected to tensile stresses of $80N/mm^2$ and $30N/mm^2$ acting on two mutually perpendicular planes and a shear stress of $20N/mm^2$ on these planes. Draw the Mohr's circle of stresses and determine the magnitudes and directions of principal stresses and also the greatest shear stress. **14M**

UNIT-III

5. A cylindrical shell 3m long has 1m internal diameter and 15mm metal thickness. Calculate the circumferential and longitudinal stresses; if the shell is subjected to an internal pressure of 1.5MPa.Also calculate the changes in dimensions of the shell. Take E=200GPa and Poisson's ratio =0.3 **14M**

(OR)

6. A compound thick cylinder is formed by shrinking a tube of external diameter 300mm over another tube of internal diameter 200mm. After shrinking, the diameter at the junction of the tubes is found to be 250mm and radial pressure at the junction is $8N/mm^2$.Find the original difference in radii at the junction before shrinking. Take Youngs modulus E= $2 \times 10^5 N/mm^2$ **14M**

UNIT-IV

7. a) Derive an expression for the Euler's crippling load for a long column with both ends hinged. **6M**

   b) A hollow cylindrical cast iron column 6 m long with both ends fixed. Determine the minimum diameter of the column if it has to carries a safe load of 300 kN with a factor of safety of 4. Take the internal diameter as 0.7 times the external diameter. Take $\sigma_c = 550\ N/mm^2$ and α = 1/1600 in Rankine's formula. **8M**

(OR)

8. A horizontal strut 3 m long, having pin joints at its ends is of rectangular cross-section 4 cm x 6 cm. It carries an axial load of 10 kN in compression together with a concentrated load of 12 kN at the mid-span. Determine the maximum stress induced in the strut. E= 200 GPa. **14M**

UNIT-V

9. A trapezoidal masonry dam having 2.5 m top width 8 m bottom width and 15 m high, is retaining water up to a height of 12 m. The density of masonry is $2000\ kg/m^3$ and co-efficient of friction between the dam and soil is 0.6. The allowable stress is $39200\ N/m^2$. check the stability of the dam. **14M**

(OR)

10. A masonry trapezoidal dam 4m high, 1m wide at top and 3m 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 $24KN/m^3$. **14M**

Note: 1 Mpa = $1\ N/mm^2$ 1 Gpa = $1000\ N/mm^2$

AR16

CODE: 16EE2013 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2018

CONTROL SYSTEMS

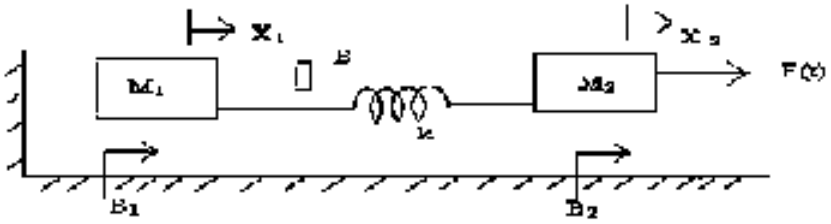
(Electrical & Electronics Engineering)

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

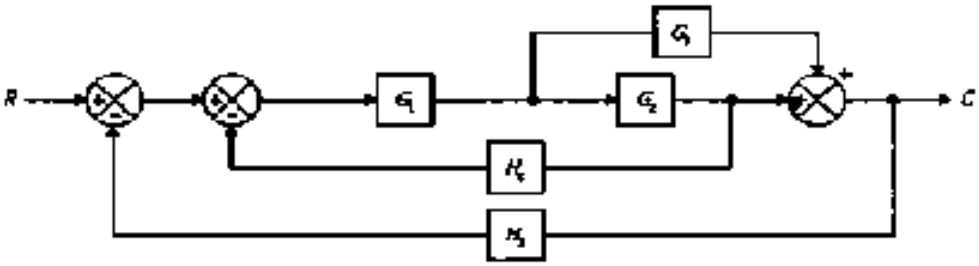
UNIT-I

1. a) What is control system? Explain about Open Loop and Closed Loop Systems **6**
   b) Write the differential equations governing the Mechanical system shown in fig. and determine the transfer function **8**



(OR)

2. a) What is the basis for framing the rules of block diagram reduction technique? explain **6**
   b) Obtain the transfer function C/R for the block diagram shown in the fig **8**



UNIT-II

3. a) Draw the response of second order system for critically damp case and when input is unit step. **6**
   b) A unity feedback control system has an open loop transfer function G(S) = 10/S(S+2). Find the rise time, percentage over shoot, peak time and settling time. **8**

(OR)

4. a) Derive the transfer function for Field controlled DC servo motor **8**
   b) What is integral control action? What is the advantage and disadvantage in integral controller? **6**

UNIT-III

5. a) Explain necessary condition for Routh's Stability **4**
   b) Sketch the root locus for the open loop transfer function of unity feedback control system given below: G(S) H(S)=K/S(S+2)(S+4). **10**

(OR)

6. a) What is the necessary and sufficient condition for stability? **5**
   b) Explain about root locus with constructional steps **9**

UNIT-IV

7. The open loop transfer function of a unity feedback system is G(S) = 1/ S (1+S) (1+2S) Sketch the Bode plot and determine the Gain margin and Phase margin **14**

(OR)

8. Construct Nyquist plot for a feedback control system whose open loop transfer function is given by G(S)H(S) =5/ S(1-S) **14**

UNIT-V

9. Explain the procedure for lead compensation and lag compensation. **14**

(OR)

10. Explain sampling theorem and Sample & Hold operation briefly **14**

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AR16

CODE: 16ME2011 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2018

MACHINE DRAWING

(Mechanical Engineering)

TIME: 3 HOURS **MAX. MARKS: 70**

NOTE: ANSWER ANY TWO QUESTIONS FROM PART A AND PART B IS COMPULSORY

PART A **15X2=30M**

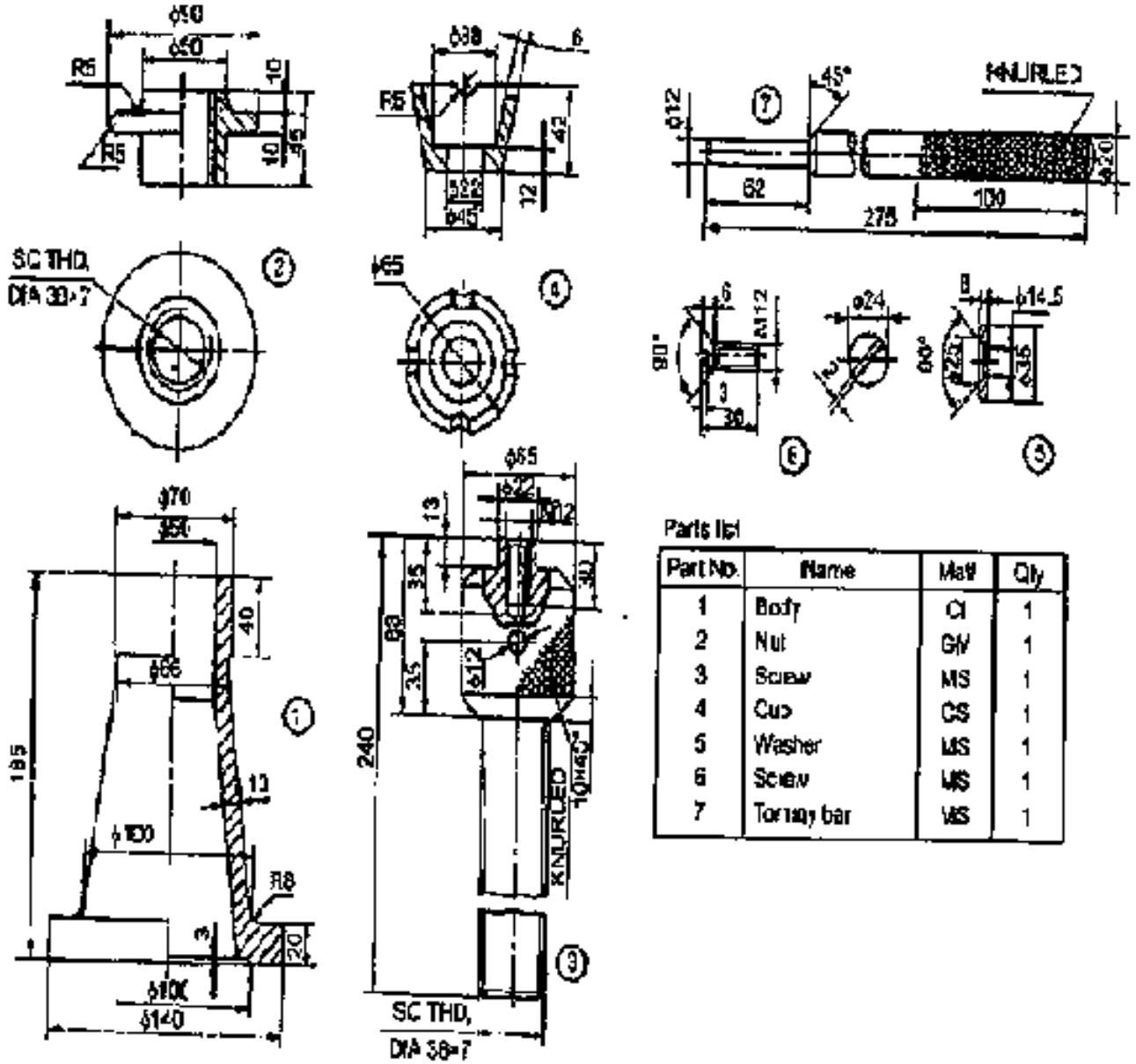
1. a) Sketch the following thread profiles for a nominal diameter of 20 mm and pitch 2 mm i) Worm thread ii) ACME thread
   b) Sketch neatly, giving proportionate dimensions, the eye foundation bolt of diameter 25 mm?

2. Draw two views of a Single strap butt joint of two rows zig – zag to connect two plates of 9 mm thick?

3. Draw a proportionate diagram of Journal bearing for a shaft of φ 40mm.

PART B **40X1=40M**

1. Figure gives the detailed drawings of a screw jack. Assemble all the parts and draw the following assembled views. a) Sectional front view b) Top view



Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Nut	GM	1
3	Screw	MS	1
4	Cup	CS	1
5	Washer	MS	1
6	Screw	MS	1
7	Tommy bar	MS	1

Screw jack

AR16

CODE: 16EC2010 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2018

DIGITAL ELECTRONICS

(Electronics and Communication 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) Convert the following numbers with the given radix to decimal. **6M**
   i) $(334)_5$ ii) $(12345)_7$ iii) $(768)_9$
   b) If A = -78 and B = +45, then represent A and B in 8-bit 2's complement. **8M**
   Find (i) A + B (ii) A - B using 2's complement method.

(OR)

2. a) Write the equivalent $(743)_{10}$ in BCD, 2421 and 6421 **6M**
   b) Generate Hamming code for the given 11 bit message 10001110101 and rewrite the entire message with Hamming code. **8M**

UNIT-II

3. a) Simplify the Boolean expression AB'+ABD+ABD'+A'C'D'+A'BC' and implement them in i) Two level NAND gate circuit ii)Two level NOR gate circuit **8M**
   b) Simplify the Boolean expression using K-map, F(A,B,C) = AB+AB'+AB'C' **6M**

(OR)

4. Obtain the minimal expression for $\Sigma m(2,3,5,7,9,11,12,13,14,15)$ using tabular method and implement it in NOR gates. **14M**

UNIT-III

5. a) Implement the following using NOR gates **8M**
   i) Full adder ii) Full Subtractor
   b) Explain briefly 4-bit BCD adder with the help of a neat diagram **6M**

(OR)

6. Discuss 4-bit carry look ahead adder with the following **14M**
   a) Block diagram b) Expressions for carry out signals
   c) Advantage over 4-bit binary adder

UNIT-IV

7. Realize the logic expression $f(a,b,c,d) = \sum m(0,1,3,5,8,11,12,14,15)$ using a **14M**
   a) 8:1 MUX b) 16:1 MUX

(OR)

8. a) Explain the working of 8:3 priority encoder with the help of truth table **6M**
   b) Implement the following 2:1 multiplexer **8M**
   i) AND gate ii) OR gate c) NOT gate d) EX-OR gate

UNIT-V

9. a) Convert D flip-flop to SR flip-flop. **6M**
   b) Design a mod 6 asynchronous counter using T flip-flops. **8M**

(OR)

10. a) Design a synchronous counter that goes through states 2, 4, 5, 7, 2, 4, 5, 7, 2.... using JK flipflops **8M**
    b) Describe briefly 4-bit buffer register with the help of a neat diagram **6M**

AR16

CODE: 16CS2009 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, July-2018

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) List and explain the functions of operating systems. **7M**
   b) With a neat Sketch explain the Structure of an Operating system. **7M**

(OR)

2. a) Consider the following information **9M**

Processs	Arrival Time (ms)	Burst Time (ms)
P1	0	8
P2	4	4
P3	1	1

   I. Calculate the average waiting and turnaround time for the above processes using FCFS algorithm.
   II. Calculate the average waiting and turnaround time for these processes using SJF (non preemptive) algorithm.
   III. Calculate the average waiting and turnaround time for these processes using SJF (preemptive) algorithm.

   b) Compare and contrast short term, medium term and long term scheduling. **5M**

UNIT-II

3. Consider 4 resources A, B, C, D. A has 6 instances, B has 3 instances, C has 4 instances and D has 2 instances. **8M**

Process	Allocation ABCD	Max ABCD
P1	3011	4111
P2	0100	0212
P3	1110	4210
P4	1101	1101
P5	0000	2110

i) Is the current state safe?
ii) If P5 requests for (1,0,1,0), can this be granted?

b) Explain methods used for ensuring at least one of the necessary conditions cannot hold. **6M**

(OR)

4. a) Briefly explain Peterson's solution. **7M**
   b) Explain Dining philosophers' problem. **7M**

UNIT-III

5. a) Describe the dynamic storage allocation problem? Address this problem with different strategies with an example? **7M**
   b) With a neat diagram explain how segmentation works? **7M**

(OR)

6. Make use of the virtual page reference string **14M**
   1, 2, 3, 2, 4, 1, 3, 2, 4, 1
   On a demand paged virtual memory system running on a computer system that main memory size of 3 pages frames which are initially empty. Determine the number of page faults using LRU, FIFO and OPTIMAL page replacements policies.

UNIT-IV

7. a) Define File and List the files attributes, types and its operations? **7M**
   b) Illustrate file access methods. **7M**

(OR)

8. a) Describe file system structure. **7M**
   b) Outline of the file protection. **7M**

UNIT-V

9. a) With a neat sketch explain the overview of mass storage structure. **9M**
   b) Explain disk attachment. **5M**

(OR)

10. a) Differentiate SCAN, C-SCAN and LOOK, C-LOOK disk scheduling algorithms with an example. **8M**
    b) What is sector sparing? Explain how it is useful in identifying bad blocks in mass storage. **6M**

Code: 13CE2006

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2018

STRENGTH OF MATERIALS-II
(Civil Engineering)

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

PART-A
Answer all questions **[1 X 10 = 10M]**

1. a) Give the formula for volumetric strain in case of thin spherical shell when subjected to an internal pressure (p).
   b) Write the expression for maximum shear stress in a thin cylindrical shell, when subjected to an internal pressure (p).
   c) Write the lame's equation for radial pressure in thick cylindrical shell.
   d) How to calculate hoop stress in a compound thick cylindrical shell.
   e) Define principal plane.
   f) Write the expression for stress normal to the plane inclined Ø to vertical, when subjected to direct tensile stress σx and σy on two perpendicular planes and shear stress τ_{xy}.
   g) Define pure torsion.
   h) Write the expressions for torsional rigidity.
   i) Write the expressions for crippling load on column both ends fixed
   j) Differentiate between column and strut.

PART-B
Answer one question from each unit **[5 X 12=60M]**

UNIT-I
2. a) Derive expression for hoop and longitudinal stresses in a cylinder subjected to an internal pressure 'P'.
   b) A cylindrical shell is 500 mm internal diameter and 10 mm thick and 1 m long. Find the change in the internal diameter and the length, when the cylinder is charged with an internal pressure of 10 N/mm^2.Take young's modulus of elasticity, $E=2 \times 10^5$ N/mm^2 and Poisson's ratio, v=0.3.

(OR)

3. A cylindrical shell 1 meter long, 180 mm internal diameter, thickness of metal 8 mm is filled with a fluid at atmospheric pressure. If an additional 20,000 mm^3 of the fluid is pumped into the cylinder find the pressure exerted by the fluid on the wall of the cylinder. Find also the hoop stress induced.
   Take $E=2x10^5 N/mm^2$ and v =0.3

UNIT-II
4. The internal and external diameters of a thick cylinder are 300 mm and 500 mm respectively. It is subjected to an external pressure of 4 N/mm^2. Find the internal pressure that can be applied if the permissible stress in cylinder is limited to 13 N/mm^2. Sketch the variation of hoop stress and radial stress across the thickness of the cylinder.

CODE: 13CE2006

(OR)

5. A compound cylinder is made by shrinking a cylinder of external diameter 300 mm and internal diameter 250 mm over another cylinder of external diameter 250 mm and internal diameter 200 mm . The radial pressure at the junction after shrinking is 8 N/mm^2. Find the final stresses setup across the section, when the compound cylinder is subjected to an internal fluid pressure of 84.5N/mm^2.

UNIT-III

6. At a point in material under stress, the intensity of the resultant stress on a certain plane is 60 Mpa (Tensile) inclined 30^0 to the normal of the plane. The stress on a plane at right angles to this has a normal tensile component of intensity 40 Mpa (Tensile). Find:
   (i) The Principal planes and Principal stresses
   (ii) The planes of maximum Shear and its magnitude.
   (iii) Resultant Stress on the plane on which 40 Mpa stress is acting.

(OR)

7. An element cube is subjected to tensile stresses of 30 N/mm^2 and 10 N/mm^2 acting on two mutually perpendicular planes and a shear stress of 10 N/mm^2 on these planes. Draw the Mohr's circle of stresses and hence or otherwise determine the magnitudes and directions of principal stresses and also the greatest shear stress.

UNIT-IV

8. a) What are the assumptions made in the theory of pure torsion?
   b) Derive the relation $\frac{t}{i_p} = \frac{f_s}{R} = \frac{C\theta}{l}$

(OR)

9. a) A solid circular shaft is to transmit 300 KW at 100 rpm. If the shear stress is not to exceed 80 N/mm^2, find the diameter of the shaft. What percentage in saving would be obtained, If this shaft is replaced by a hallow one, whose internal diameter is 0.8 times the external diameter, the length, the material and the allowable maximum shear stress being the same.

   b) Calculate the maximum intensity of shear stress induced and the angle of twist produced in a solid shaft of 150 mm diameter, 12 m long transmitting 150 kW at 170 rpm. Take G = 85kN/mm$^{2.}$

UNIT-V

10. A hollow cylindrical cast iron column of 150 mm external diameter and 15 mm thickness, 3.6 m length is hinged at one end and fixed at the other. Find: (i) The ratio of Euler's and Rankine's loads (ii) The length for which the critical load by Euler's and Rankine's formula will be equal. E = 8.4x10^4 N/mm^2, f_c = 525 N/mm^2 and α = 1/1600.

(OR)

11. A column with one end hinged and the other end fixed has a length of 5 m and a hollow cylinder cross section of outer diameter 100 mm and wall thickness 10 mm. If E = 1.60 x 10^5 N/mm^2 and crushing strength σc = 350 N/mm^2, find the load that the column may carry with a factor of Safety of 2.5 according to Euler theory and Rankine-Gordon theory. If the Column is hinged on both ends, find the safe load according to the two Theories.

Note: 1 Mpa = 1 N/mm^2 1 Gpa = 1000 N/mm^2

AR13

CODE: 13EE2009 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2018

CONTROL SYSTEMS
(Electrical and Electronics Engineering)

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

PART-A

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

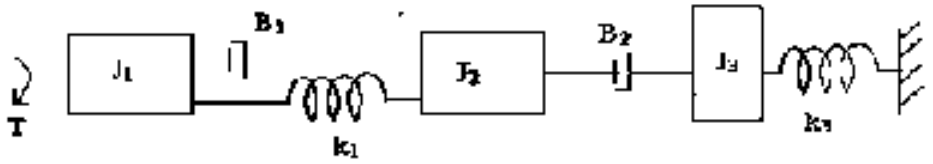
1. a) What is meant by an open loop control system? Give example.
   b) What are the advantages of closed loop system over open loop system
   c) What is the difference between AC servo motor and DC servo motor?
   d) How do you reverse the direction of rotation in AC servomotor
   e) Define the term conditional stability.
   f) What are the disadvantages of Routh Criterion?
   g) What are the different frequency domain specifications?
   h) What is the need for frequency response analysis?
   i) Draw the electrical equivalent circuits of a lag-lead compensator
   j) What is meant by compensation

PART-B

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

UNIT-I

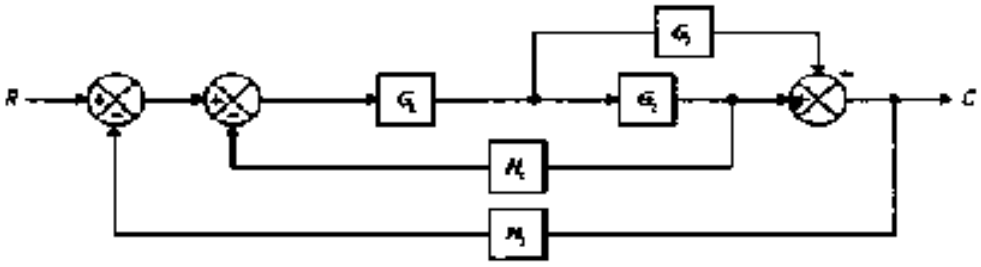
2. a) Write the differential equations governing the Mechanical rotational system shown in fig. Draw the Torque-voltage and Torque-current electrical analogous circuits. 4M



   b) What is control system? Explain about Open Loop and Closed Loop Systems 8M

(OR)

3. a) What is a signal flow graph? Explain about basic elements in signal flow graphs 6M
   b) Obtain the transfer function C/R for the block diagram shown in the fig 6M



UNIT-II

4. a) Obtain the time response of a first order system for a unit step input and plot its response 6M

   b) Explain the construction and principle of operation synchro transmitter 6M

(OR)

5. a) Derive the transfer function and develop the block diagram of Armature controlled DC servo motor 6M

   b) Define the following 6M

      i) Peak Time ii) Delay Time iii) Peak Overshoot

UNIT-III

6. Sketch the root locus plot of unity feedback system with an open loop transfer function $G(s)=\frac{K}{s(s+1)(s+5)}$. Find the range of K for the system to have damped oscillatory response. Determine the value of K so that the dominant pair of complex poles of the system has a damping ratio of 0.6. Corresponding to this value of K. Determine the closed loop transfer function in the factored form. 12M

(OR)

7. Using Routh criterion determine the stability of the system whose characteristics equation is S4+8S3+18S2+16S+5 =0 12M

UNIT-IV

8. Construct Nyquist plot for a feedback control system whose open loop transfer function is given by G(S)H(S) =5/ S(1-S) 12M

(OR)

9. Sketch the Bode plot and hence find Gain margin and Phase margin. G(S) = K / S(1+0.1S) (1+0.01S) 12M

UNIT-V

10. a) What is compensation? Why it is needed for control system? Explain the types of compensation 12M

(OR)

11. a) Explain how block diagrams can used to derive state models. 6M

    b) Given the state equation $\dot{X} = AX$ .Determine the state transition matrix. where A is 6M

$$A=\begin{bmatrix}-3 & 1 & 0\\ 0 & -3 & 1\\ 0 & 0 & -2\end{bmatrix}.$$

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AR13

CODE: 13ME2012 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2018

MACHINE DRAWING

(Mechanical Engineering)

TIME: 3 HOURS **MAX. MARKS: 70**

NOTE: ANSWER ANY TWO QUESTIONS FROM PART A AND PART B IS COMPULSORY

PART A **15X2=30M**

1. a) Sketch the following thread profiles for a nominal diameter of 20 mm and pitch 2 mm i) Worm thread ii) ACME thread
   b) Sketch neatly, giving proportionate dimensions, the eye foundation bolt of diameter 25 mm?

2. Draw two views of a Single strap butt joint of two rows zig – zag to connect two plates of 9 mm thick?

3. Draw a proportionate diagram of Journal bearing for a shaft of φ 40mm.

PART B **40X1=40M**

1. Figure gives the detailed drawings of a screw jack. Assemble all the parts and draw the following assembled views. a) Sectional front view b) Top view

Screw jack

Parts list

Part No	Name	Matl	Qty
1	Body	CI	1
2	Nut	GM	1
3	Screw	MS	1
4	Cup	CS	1
5	Washer	MS	1
6	Screw	MS	1
7	Tommy bar	MS	1

AR13

CODE: 13EC2010 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2018

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) What is non-linear wave shaping.
   b) The input to a High pass RC circuiti a pulse signal of voltage V. Write the expression for the output voltage
   c) What are the applications of voltage comparator.
   d) What is the figure of merit for diodes used in clipping circuits.
   e) Draw the Piecewise Linear Diode Characteristics.
   f) What are the reasons for existence of rise time and fall time?
   g) List the applications of monostable multivibrator.
   h) Write the Methods of Generating Time Base Waveform.
   i) What is blocking oscillator?
   j) What are the advantages of diode sampling gates?

PART-B

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

UNIT-I

2. a) Prove that an RC circuit behaves as a good integrator if RC > 15T, where T is the period of an input signal. 6
   b) Give the comparison between perfect compensation, under compensation and over compensation. 6

(OR)

3. a) Derive and explain the response of Low pass RC circuit to ramp input. 6
   b) A 10 kHz symmetrical square wave whose peak to peak amplitude is 2V is impressed upon a high pass circuit whose lower 3dB frequency is 5Hz. Calculate and sketch the output waveform in particular what is the peak to peak amplitude? 6

UNIT-II

4. a) Explain the analysis of diode clippers and transistor clippers. 6
   b) Design a diode clamper circuit to clamp the positive peaks of the input signal at zero level. The frequency of the input signal is 500 Hz. 6

(OR)

5. a) Explain transfer characteristics of the emitter coupled clipper and derive the necessary equations. 6
   b) State and prove the clamping circuit theorem. 6

UNIT-III

6. a) Derive expressions for rise time and fall time in terms of the transistor parameters and operating currents 6
   b) Explain the significance of Commutating Capacitors? 6

(OR)

7. a) Explain the transistor as switch. 4
   b) Draw the circuit diagram of Schmitt trigger and explain its operation. What are its applications? Derive the expression for UTP and LTP 8

UNIT-IV

8. a) Explain the operation of collector coupled astable multivibrator using NPN silicon transistor. 6
   b) Define and derive the terms slope error, displacement error and transmission error. 6

(OR)

9. a) Design a collector coupled Mono-stable for the following specifications: I_{CBO} and voltage drops across saturated transistors are negligible. For the transistors $h_{FE\ (min)}$=20, and the base-emitter cut off voltage for the normally OFF transistor is –1V. The base drive to the transistor in saturation is 50% in excess of minimum required. Collector supply voltage is 6V and collector current=2mA the delay time is 3000 μsec. Choose R_1=R_2, Find R_C, R, R_1, C and V_{BB}. 8
   b) Why the time base generators are called sweep circuits? 4

UNIT-V

10. a) Explain the principle of operation of mono-stable blocking oscillator with base timing. 6
    b) What is a sampling gate? Explain the operation of Bi-directional sampling gates . 6

(OR)

11. a) Sketch the current waveforms and derive an expression for current pulse width for mono-stable blocking oscillator. 6
    b) Explain how to cancel the pedestal in a sampling gate with suitable circuit diagram. 6

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CODE: 13CS2005 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, July-2018

SOFTWARE ENGINEERING
(Common to CSE & IT)

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

PART-A

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

1. a) Define software engineering paradigm
   b) Distinguish between process and methods.
   c) Mention any two non-functional requirements on software to be developed
   d) Distinguish between expected requirements and excited requirements
   e) What do you mean by horizontal and vertical partitioning?
   f) What is transaction mapping? How it is used in software design?
   g) How regression and stress tests are are performed
   h) Write the types of system tests?
   i) Draw the structure of CASE REPOSITORY and explain.
   j) List out the importance of cost estimation in software development.

PART-B

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

UNIT-I

2. a) Which is more important-the product or process? Justify your answer. **4M**
   b) Identify the umbrella activities in software engineering process **4M**
   c) With suitable illustration explain SPIRAL model evolutionary software development **4M**

(OR)

3. a) Software can not exist without hardware, in this context How do you differentiate Hardware and Software and what is the dual role of software? **6M**
   b) Consider a software development company of your choice and describe the development life cycle model they use. **6M**

UNIT-II

4. a) Describe how software requirements are documented? State the importance of documentation. **6M**
   b) Explain the software requirement analysis and modelling. **6M**

(OR)

5. a) Explain the feasibility studies. What are the outcomes? Does it have either implicit or explicit effects on software requirement collection? **6M**
   b) What is the prototyping technique? How prototype models are prepared for a software process? Discuss **6M**

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UNIT-III

6.	a)	Explain about the various design concepts considered during design?	**8M**
	b)	Write short notes on user interface design process?	**4M**
		(OR)	
7.	a)	What are the various software architectures available for the developer according to you? Which is the best and why?	**6M**
	b)	What is data flow oriented design	**6M**

UNIT-IV

8.	a)	Justify the importance of testing process?	**4M**
	b)	Explain the integration testing process and system testing process and discuss their outcomes	**8M**
		(OR)	
9.	a)	Explain the testing procedures for boundary conditions	**6M**
	b)	What is black box testing? Is it necessary to perform this? Explain various test activities	**6M**

UNIT-V

10.	a)	Discuss briefly on software maintenance activities and how do you estimate the cost involved	**6M**
	b)	Justify the statement "Software maintenance is costlier".	**6M**
		(OR)	
11.	a)	Explain various cost estimation models and compare	**6M**
	b)	What is Halsted's software science metric? Define	**6M**

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