AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Regular Examinations, April, 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 simply supported beam is loaded as shown in fig.1 Determine the point where **14M** maximum deflection occurs and. Take E = 30 GPa, and I = 1.90 x 10^6 mm^4 also find maximum deflection and deflection under the load in the beam AB shown below. Find slope at A.
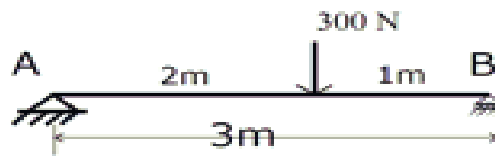
Fig. 1
(OR)

2. Determine the central deflection using moment of area method for the beam loaded **14 M** as shown in fig. 2.
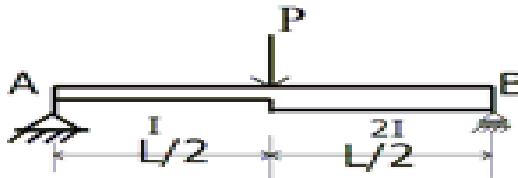
Fig. 2
UNIT-II

3. For the state of stress shown in Fig. 3, determine the principle stresses, maximum shear **14 M** stress clearly show the planes on which these stresses act.
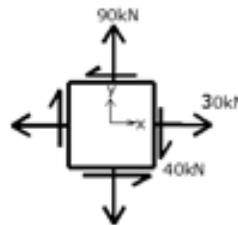
Fig. 3
(OR)

4. The state of stress at a point is $\sigma_x = 10$ N/ mm^2 (compressive), $\sigma_y=60$ N/mm^2 tensile are **14 M** normal stresses, $\tau_{xy} = 30$ N/mm^2 (shear). Determine the normal stress and shear stress on a plane 30^0 with σ_x direction and also, calculate principle stresses, maximum shear stress and their planes.

UNIT-III

5. a) A seam less pipe of 1.20m diameter is to carry fluid under a pressure of **7 M** 1.60N/mm^2. Taking permissible stress in the metal as 100N/mm^2, determine the thickness of the metal required.

b) A long steel tube, 80mm internal diameter and 1.50mm thick has closed ends and is subjected to an internal fluid pressure $2.50 N/mm^2$. Taking $E = 2 \times 10^5 \ N/mm^2$ and poission's ratio = 0.309, estimate the percentage in the internal volume of the tube. **7 M**

<p align="center">(OR)</p>

6. a) A thick metallic cylindrical shell of 150m internal diameter is required to withstand an internal pressure of $8 \ N/mm^2$. Find the necessary thickness of the shell if the permissible tensile stress in the section is $20N/mm^2$ **7 M**

b) A thick cylinder of 150mm out side radius and 100mm inside radius is subjected to and external pressure of 30 N/mm2and internal pressure of 60 N/mm2. Calculate the maximum shear stress in the material of the cylinder at the inner radius. **7 M**

UNIT-IV

7. a) Determine the buckling strengths of two columns one hollow and the other solid. Both are made of same material and same length, cross sectional area and end conditions. The internal diameter of hollow column is half of its external diameter. Also determine the ratio of buckling strengths of hollow and the other solid **7 M**

b) Find the shortest length 'L' for steel column with pinned ends having a cross section area of 80 mm x 120 mm for which the elastic Euler's formula applies. Take E = 210 GPa and proportional limit to be 250 MPa. **7M**

<p align="center">(OR)</p>

8. A built up column consisting og 15cm x 10 cm RSJ with 12cm wide plate riveted to each flange. Calculate the safe load, the column can carry , if it is 4m long having one end fixed and ther hinged with a factor of safety 3.50. Take the properties of the joist as A= $21.67 \ cm^2$, Ixx =$839.1 \ cm^4$, Iyy= $94.80 \ cm^4$. Assume crushing stress = $315N/mm^2$, Rankine's constant = 1/7500 **14 M**
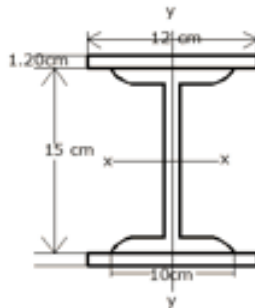
UNIT-V

9. In a rectangular section of dimensions 200mm x 100mm, a load of 80kN is applied 40mm and 20mm off the centroid parallel to the 200mm and 100mm sides respectively. Find the stress at four corners. What is the additional compressive load that can be placed at the centroid of the section to make the tensile stress zero? **14 M**

<p align="center">(OR)</p>

10. A concrete dam 25m high is trapezoidal in section and retains water to maximum height of 24m. If concrete weighs $24kN/m^3$ and water weighs $10kN/m^3$. Find the minimum width at the base for no tension at the base of the section. **14M**

<p align="center">2 of 2</p>
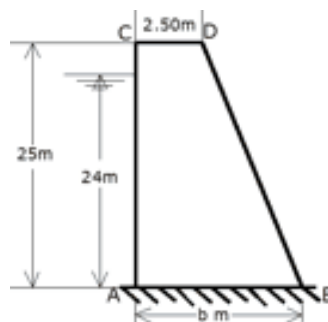
AR16

CODE: 16EE2013   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Regular Examinations, April, 2018
CONTROL SYSTEMS
(Electrical & Electronics Engineering)

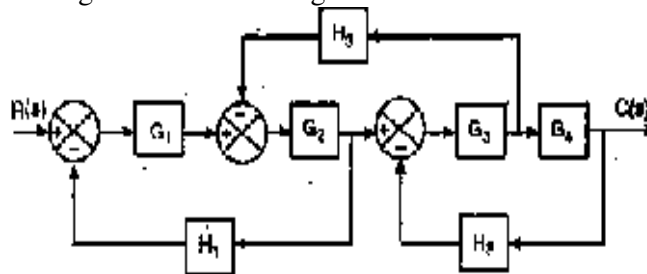**Time: 3 Hours**   **Max Marks: 70**

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) Using block diagram reduction technique find closed loop transfer function of the system whose block diagram is shown in figure   **9M**

    b) Define Open loop system and explain one of the real time application using block diagram   **5M**

(OR)

2. a) Discusss the necessity of feed back in control system and how it effects the sensitivity of a system   **6M**
    b) Determine the overall gain X6/X1 for the figure shown below using Signal Flow graph approach   **8M**
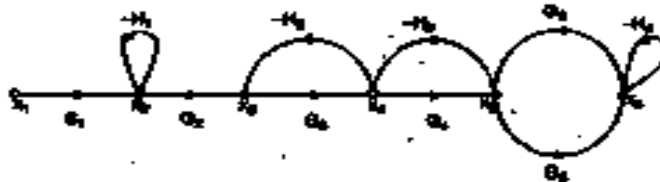
UNIT-II

3. a) A unity feedback system is characterized by the open-loop transfer function   **6M**

$$G(S) = \frac{1}{s(5s+1)(.25+1)}$$

Determine the steady-state errors for unit-step, unit-ramp and unit-acceleration input

also determine the damping ratio and natural frequency of the dominant roots.

    b) Derive an expression for the transfer function of an armature controlled DC servo motor   **8M**

(OR)

4. a) Derive the expressions for i) Peak time ii) Peak over shoot   **8M**
    b) Derive expressions for the steady state errors of type – 0, type – 1 and type – 2 systems excited by a unit – parabolic input   **6M**

UNIT-III

5. a) Explain the Routh's criteria with an example.   7M

    b) A system has $G(s)H(s) = \dfrac{K}{s(s+2)(s+4)(s+3)}$ Where K is positive. Determine the range   7M
of K for stability.

(OR)

6. A unity feedback system has an open-loop transfer function   14 M

$$G(S) = \frac{K(S+1)}{S(S-1)}$$

(i) Sketch the root locus plot with K as a variable parameter and show that the loci of complex roots are part of a circle with (-1, 0) as centre and radius = $\sqrt{2}$.

(ii) Is the system stable for all values of K? If not, determine the range of K for stable system operation. Find also the marginal value of K which causes sustained oscillations and the frequency of these oscillations.

(iii) From the root locus plot, determine the value of 'K' such that the resulting system has a settling time of 4 sec. What are the corresponding values of the roots?

UNIT-IV

7. A unity feedback system has a plant transfer function of   14M

$$G(s) = k\,s^2 / (1+0.2s)(1+0.02s)$$

Draw the Bode plots and find there from the phase margin and gain margin.

(OR)

8. a) List the advantages and limitations of Frequency response methods.   4M

    b) The open –loop transfer function of certain unity feedback system are given below.   10M
Sketch the Nyquist plot and determine the stability of the system

$$G(s) = \frac{K}{(s+1)(s+1.5)(s+2)}$$

UNIT-V

9. A unit feedback system has an open loop transfer function.   14M

$$G(S) = \frac{K}{S(S+2)(0.3S+1)}$$

Design a phase lag compensator to meet the following specifications:
Velocity error constant = 10 Phase margin $\geq 40°$

(OR)

10. a) Write the properties of the State Transition Matrix.   6M

    b) Given the state equation $\dot{X} = AX,$ $Where\ A = \begin{bmatrix} -3 & 1 & 0 \\ 0 & -3 & 1 \\ 0 & 0 & -2 \end{bmatrix}$. Determine the state   8M

transition matrix.

AR16

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Regular Examinations, April, 2018
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. Draw the two views of a square headed bolt of nominal diameter 25 mm and length 100mm; with a hexagonal nut and washer.

2. Sketch the following types of keys in two views, as fitted in position between a shaft and the mounting. Choose the shaft diameter as 30 mm and the hub diameter of the mounting as 60 mm:
   a) hollow saddle key
   b) taper sunk key

3. Draw the sectional view from the front, and view from the side of a cotter joint with sleeve used to connect two rods of 50 mm diameter each

SECTION-B
4. Assemble the parts of the lathe tail stock, shown in Fig. and draw,   (40Marks)
   a) sectional view from the front
   b) view from the left (side view)

Parts list

Part No.	Name	Matl	Qty
1	Body	CI	1
2	Barrel	MS	1
3	Spindle with washer & nut	MS	1
4	Centre	CS	1
5	Spindle bearing	CI	1
6	Hand wheel	CI	1
7	Clamping lever	MS	1
8	Stud	MS	1
9	Feather key	MS	1
10	Screw	MS	4

SO THD. DIA 21×3 LH

FEATHER WAY, 4×3

SO Thd Dia 21×3 LH

KEY WAY, 4×2

KEYWAY, 4×2

4 HOLES M6 DEEP 9, PCD 52

4 HOLES, DIA 6, PCD 52

M12×18

AR16

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 Express the following decimal numbers in binary form and then to octal (i) 25.5_{10} 8M
     (ii) 10.625_{10}

  b Represent $(-17)_{10}$ in (i) Sign magnitude (ii) One's complement (iii) Two's   6M
     complement

(OR)

2.a Perform the following additions in Excess-3 code (a) 37+28   (b) 247.6+359.4   6M

  b
     Convert the following into Gray number (a) $3A7_{16}$ (b) 652_{10} 8M

UNIT-II

3.a Show that both NAND gate and NOR gate are universal gates.   6M

  b Implement the following function using only NOR gates F = a(b+cd)+bc' .   8M

(OR)

4.a Realize the X-OR function using NAND and NOR gates.   6M

  b Reduce the given expression using K-mapping and implement the real minimal   8M
     expression using NOR gates f= π M(2, 8, 9, 10, 11, 12, 14).

UNIT-III

5.a Realize a half subtractor using only NOR gates and explain its operation with the help   8M
     of truth table.

b   Design a combinational circuit that accept a 3-bit BCD number and generates an output binary equal to the square of the input number.   6M

<div align="center">(OR)</div>

6.a   Realize a carry look ahead adder and explain its operation.   8M

b.   Perform Excess-3 addition of following numbers (i) 9+5   (ii) 4+3   6M

<div align="center"><u>UNIT-IV</u></div>

7.a   Explain the working of 4-bit priority encoder with example.   7M

b   Realize a 4-bit comparator and explain its truth table.   7M

<div align="center">(OR)</div>

8.a   Implement the following Boolean function using an 8:1 multiplexer considering as the input and A, B, C as the selection lines $F(A, B, C, D) = AB'+BD+B'CD'$ 8M

b   Design a 4-bit binary to gray code converter and explain its conversion table.   6M

<div align="center"><u>UNIT-V</u></div>

9.a   Draw a schematic circuit of a D flip flop with negative edge triggering using NAND gates. Give its truth table and explain its operation.   8M

b   With neat diagram explain the working of the following types of shift registers (i) serial-in, serial-out (ii) Parallel- in , Parallel- out.   6M

<div align="center">(OR)</div>

10.   a. Design mod-10 asynchronous counter using T- flip flop and explain its count table with example.   6M

b   Convert D- flip flop into (i) SR flip flop (ii) T-flip flop   8M

<div align="center">2 of 2</div>

AR16

CODE: 16CS2009   SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Regular Examinations, April,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) What is an Operating System and explain the different types of Operating Systems?   **7**

    b) Enumerate and explain various Operating System Services   **7**

(OR)

2. a) Consider the following set of processes, assumed to have arrived at time '0' in the order given with the length of the CPU burst time in milliseconds

Process	Burst Time
P1	10
P2	29
P3	3
P4	7
P5	12

8

Consider FCFS and Round Robin (quantum(Q)=10 milliseconds) scheduling algorithms for this set of processes and schedule them. Find the average waiting time for each algorithm provide Gantt charts

    b) State and explain the various states that a process can be in.   **6**

UNIT-II

3   Write and explain Bankers algorithm for dead lock avoidance with following example.   **14**

Four resources ABCD. A has 6 instances, B has 3 instances, C has 4 instances and D has 2 instances.

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

i) Is the current state safe?

(OR)

4. a) State and explain four conditions that are necessary for deadlocks to occur with example.   **7**

    b) Explain the resource allocation graph for deadlock detection with relevant diagram   **7**

UNIT-III

5.   Explain LRU page replacement algorithm. Consider the following reference string
7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Assume there are three frames. Apply LRU replacement algorithm to the reference string above and find out how many page faults are produced.   14

(OR)

6. a) Why are segmentation and paging sometimes combined into one scheme?   **7**

    b) Explain the concept of paging with diagrams   **7**

UNIT-IV

7. a) Write short notes on
(i) File sharing (ii) Protection   **7**

    b) Describe the most common schemes for defining logical structure of a directory   **7**

(OR)

8. a) Explain about various file access methods.   **7**
    b) Explain about file system structure.   **7**

UNIT-V

9.   a) Explain the following disk scheduling algorithms with proper diagram.
(i) FCFS (ii) SSTF (iii) SCAN (iv) LOOK   **7**

     b) Implement the (i) FCFS (ii) SSTF (iii) SCAN (iv) LOOK algorithms for the following queue
95   180   34   119   11   123   62   64   with the read write head initially at the track 50 and the tail track being at 199.   **7**

(OR)

10.   Draw and explain disk structure and its operations   14

AR13

CODE: 13CE2006   **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April, 2018
STRENGTH OF MATERIALS-II
(Civil Engineering)

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

PART-A

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

1.
    a) Write hoop stress and langitudinal stress for thin cylindrical shell
    b) What are the stresses developed in thick cylindrical shell
    c) σ_x, σ_y, are normal stresses, τ_{xy} is shear stress, Write the maximum shear stress its planes
    d) σ_x, σ_y, are normal stresses, τ_{xy} is shear stress. Write the equation for principle planes and principle stresses
    e) Write the torsion equation and explain the terms.
    f) Write the distortion energy theory.
    g) Define Polar modulus
    h) What is the equivalent length of a column with one end fixed other end free.
    i) Define slenderness ratio.
    j) Write Rankine's formula

PART-B

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

UNIT-I

2. A cylindrical shell 90 cm long and 20 cm internal diameter having thickness of metal as 8 mm is filled with fluid at atmospheric pressure an addition 20 cm^3 of fluid is pumped in to cylinder, find i) the pressure exerted by the fluid on cylinder
The hoop stress induced.

(OR)

3.
    a) Derive hoop stress developed in a thin spherical shell
    b) A cylindrical shall 3 m long which is closed at the ends has in internal diameter of 1 m and a wall thickness of 15 mm. Calculate the circumferential and longitudinal stresses induced and also change in dimensions of the shell, if it is subjected to an internal pressure of 1.5 N/mm^2.

UNIT-II

4.
    a) An external pressure 10 MPa is applied to thick cylinder of internal diameter 150 mm and external diameter 300mm. If the maximum hoop stress permitted on the inside wall is 35 Mpa . Calculate i) The maximum internal pressure that can be applied,

   b) The change in out side diameter if cylinder has closed ends.

(OR)

5. A steel cylinder is 1 m inside diameter and is to be designed for an internal pressure of 8 MPa. Calculate, the thickness, if the maximum shearing stress is not to exceed 35 MPa. Calculate also the increase in volume due to working pressure. If the cylinder is 6 m long with closed ends. E = 200 GPa and poissions ratio = 1/3

UNIT-III

6. a) Find principle stresses if a shaft subjected to bending moment 'M' and torsion 'T'

   b) Find the principle stresses if a shaft subjected to torsion 1500N-m and bending moment 3750 N-m

(OR)

7. The state of stress at a point is $\sigma_x = 10$ N/ mm^2 (compressive), $\sigma_y = 60$ N/mm^2 tensile are normal stresses, $\tau_{xy} = 30$ N/mm^2 (shear). Determine the normal stress and shear stress on a plane 30^0 with σ_x direction and also, calculate principle stresses, maximum shear stress and their planes.

UNIT-IV

8. a) Find Polar modulus for a hollow circular shaft

   b) A solid propeller shaft is to transmit 4.50MW at 180 rpm without exceeding a shear stress of 50 N/mm^{2}or twisting through not more than 1^0 in a length of 26 diameters. Compute the smallest diameter of the shaft. For steel G= 83GPa.

(OR)

9. A shaft is subjected to maximum torque 15 kN-m and maximum bending moment of 10 kN-m at a particular section. If the allowable equivalent stress in simple tension is 150 N/mm^2. Find the diameter of the shaft according to maximum shear stress theory.

UNIT-V

10. a) Derive Euler's buckling load for a long column with one end fixed and other hinged.

   b) Explain the limitations of Euler's buckling load.

(OR)

11. Compare the crippling load given by Euler's and Rankine formulae for tubular strut 2.50m long, having outer and inner diameters 4 cm and 3 cm respectively through pin-joints at each end. Take the yield stress as 330 N/mm^2, the Rankine constant = 1 /7500and E = 200 GPa

AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April, 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)   Define translational system.
   b)   Write any two rules for block diagram reduction.
   c)   Write the transfer function of PI and PID controllers.
   d)   Mention the applications of a Synchro.
   e)   The closed loop transfer function of second order system is $C(s)/R(s) = \dfrac{100}{s^2 + 5s + 6}$. what is the type of damping in the system?
   f)   Distinguish between absolute stability and conditional stability.
   g)   What is a break away point on a root locus? How do you determine it?
   h)   Define gain margin and phase margin.
   i)   Write the transfer function of a lag compensator.
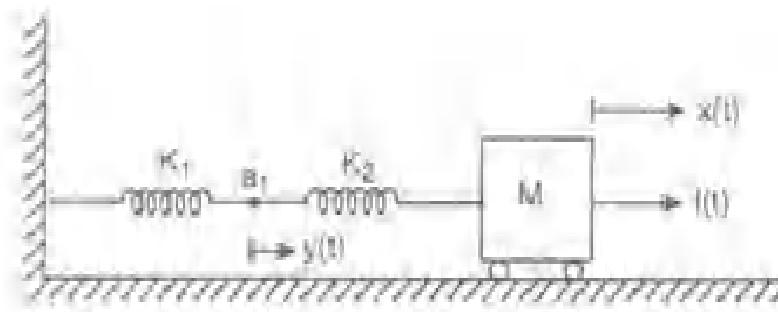   j)   What is a state model?

PART-B

ANSWER ONE QUESTION FROM EACH UNIT   **[5 x 12 = 60M]**

UNIT-I

2. a)   Explain why is it necessary to employ feedback in control systems? Discuss the effect of feedback on various aspects regarding the performance of the system.   **[4M]**

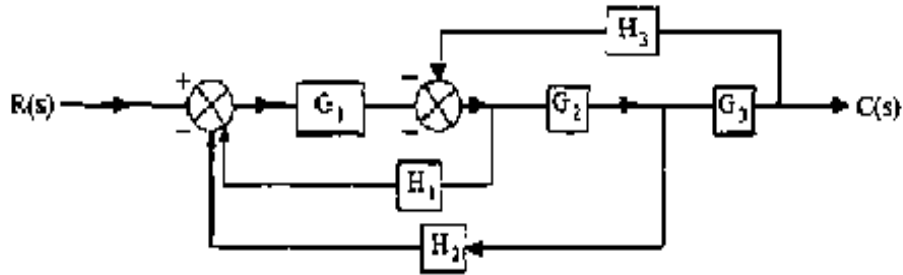   b)   Find the transfer function $\dfrac{X(S)}{F(S)}$ of the system given in figure.   **[8M]**

3. a) State the Mason's gain formula. Determine the overall transfer function from the **[6M]** signal flow graph given below.
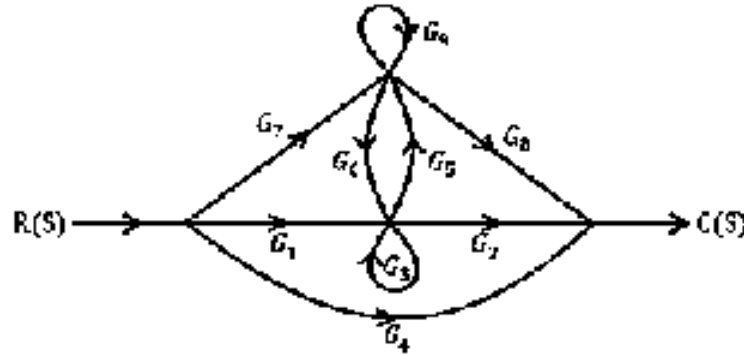
b) Using block diagram reduction techniques, obtain the transfer function C(s)/R(s) **[6M]** for the block diagram given below.

UNIT-II

4. a) Derive the transfer unction of an armature controlled DC servo motor and develop **[6M]** the block diagram. Clearly state the assumptions made in the derivation.
   b) Derive the transfer unction of a AC servo motor. **[6M]**

(OR)

5. a) What are the different types of standard input signals used in testing the response **[6M]** of a control system? Which type of input signal is commonly used and why?
   b) The open loop transfer function of a control system with unity feedback is **[6M]**

   $$G(s) = \frac{500}{s(0.1s+1)}$$

   Evaluate the error series for the system and determine the steady-state error for unit Step input

UNIT-III

6. a) What are the possible difficulties one may come across while using the R-H **[5M]** criterion?
   b) A unity feedback system has the forward transfer function: **[7M]**

   $$G(s) = \frac{K(s+0.5)(s+2)}{s^2(s+6)(s+8)}$$

   Using R-H criterion, find the range of 'K' over which the system would be stable.

(OR)

7. A unity feedback control system has an open loop transfer function **[12M]**

$$G(s) = \frac{K}{s(s^2 + 4s + 13)}$$

Sketch the root locus plot of the system by determining the following:
   a) Centroid, number and angle of asymptotes.
   b) Angle of departure of root loci from the poles
   c) Break away points, if any and
   d) The value of 'K' and the frequency at which the root loci cross the jω axis (imaginary axis).

UNIT-IV

8. Draw the Bode plots for the transfer function: **[12M]**

$$G(s) = \frac{50}{s(1 + 0.25s)(1 + 0.1s)}$$

From the Bode plots, determine the values of
   i) Gain cross over frequency
   ii) Phase cross over frequency
   iii) P.M and G.M and
   iv) The stability of the system.

(OR)

9. Using Nyquist stability criterion, find the value of K for which the closed loop **[12M]** system with the following characteristic equation is stable.

$$F(s) = s^3 + (K + 0.5)s^2 + 4Ks + 50$$

UNIT-V

10. a) What is a lead compensator, obtain the transfer function of lead compensator and draw its pole-zero plot. **[4M]**

   b) Design compensating network for $G(s) = \dfrac{K}{s(1 + 0.2s)(1 + 0.01s)}$ so that its phase **[8M]**

   margin at least will be 40^0 and the steady state error will be in the final position will not exceed 2 % of the final velocity.

(OR)

11. What is a state transition matrix? Discuss the properties of it. For the system **[12M]** given below,

$$\begin{bmatrix} \dot{x}_1(t) \\ \dot{x}_2(t) \end{bmatrix} = \begin{bmatrix} 0 & 1 \\ -3 & -2 \end{bmatrix} \begin{bmatrix} x_1(t) \\ x_2(t) \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u; \quad C = \begin{bmatrix} 1 & 1 \end{bmatrix}$$

Find the State Transition Matrix. Also obtain the transfer function from this state model.

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AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April, 2018
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. Draw sectional front view and top view of double riveted, zig zag joint with dia of rivet as 10 mm.   **7M+8M**

2. Sketch the thread profiles for the following   **15M**
            (i)   Square thread
            (ii)   ACME thread
            (iii)   Worm thread

3. Draw sectional front view and right side view of foot step bearing.   **15M**

4. Draw the sectional front view and top view of the assembled screw Jack from the given figure 4

40M

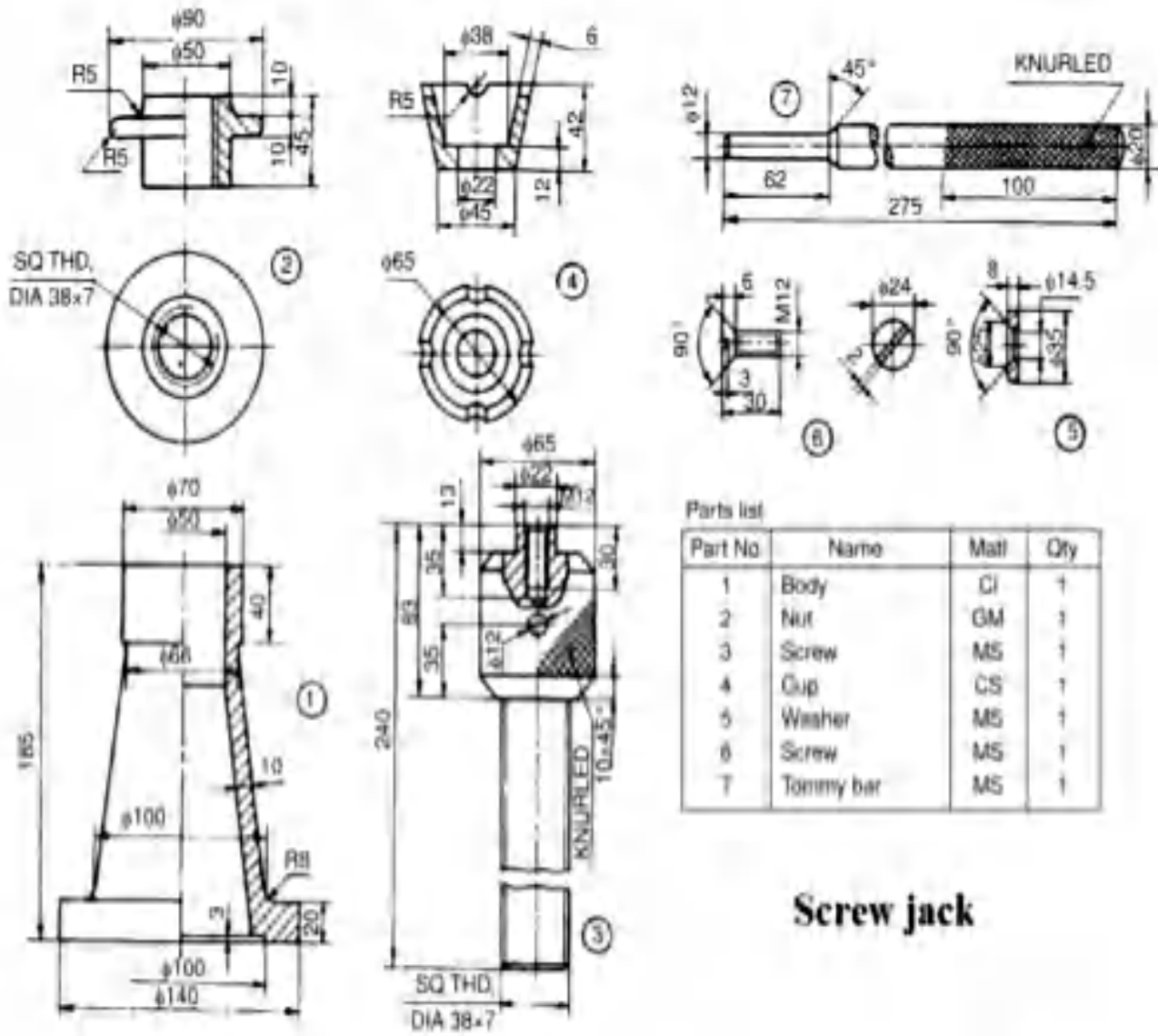| Parts list			
Part No.	Name	Matl	Qty
1	Body	CI	1
2	Nut	GM	1
3	Screw	MS	1
4	Cup	CS	1
5	Washer	MS	1
6	Screw	MS	1
7	Tommy bar	MS	1

Screw jack

Figure-4
2 of 2

AR13 SET-2

Code: 13EC2010

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April, 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)   When an RC high pass filter acts as good differentiator?
    b)   Define reverse recovery time?
    c)   What is a limiter?
    d)   What are the applications of attenuators?
    e)   Define clamping circuit theorem?
    f)   Define storage time.
    g)   What is the purpose of triggering in multivibrators?
    h)   What is stable state?
    i)   What is sweep speed?
    j)   Write the expression for pulse width of triggered transistor
         blocking oscillator   with base timing.

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

UNIT-I
2. a)   Draw the response of RC high pass circuit with a square wave input at   [6M]
         different time constants.
    b)   Derive an expression for output of a high pass RC circuit excited by a   [6M]
         ramp input.
(OR)
3.   A 1KHz symmetrical square wave of ± 10V is applied to an RC circuit   [12M]
         having 1msec time constant. Calculate and plot the output for the RC
         configuration as
         (i) High pass circuit
         (ii) Low pass circuit.

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UNIT-II

4. With a neat circuit diagram and necessary waveforms, expressions   [12M]
    explain about ringing circuit.

(OR)

5. Draw the circuit diagram of DC restorer circuit and explain its   [12M]
    operation .Sketch the output waveforms for different clampers for a
    sinusoidal input signal.

UNIT-III

6. a) Explain why there is a delay in a transistor switching. Define all the   [6M]
       transistor switching times.
    b) Define Resolution time , Transition time and Recovery time.   [6M]

(OR)

7. a) Design a fixed bias binary with $V_{CC}=V_{BB}=12V$, $h_{fe(min)}=20$ and   [6M]
       $i_{c(sat)}=4mA$. Assume n-p-n silicon transistors.
    b) The fixed biased binary uses NPN silicon transistors with   [6M]
       $h_{fe}=20$.Assume that $V_{cc}=12v,V_{bb}=3v,R_c=1K\Omega,R_1=10K\Omega,R_2=20K\Omega$.Find
       the stable state currents and voltages of $V_{CE}(sat)=0$ and $V_{BE}(sat)=0$.

UNIT-IV

8. Explain with the help of a circuit how a Astable multivibrator can be   [12M]
    modified as voltage to frequency converter

(OR)

9. Explain the working of a simple transistor voltage sweep circuit with   [12M]
    necessary diagrams.

UNIT-V

10. a) Explain the working of monostable Blocking oscillator with base   [6M]
       timing..

    b) What are the relative advantages of diode controlled and RC   [6M]
       controlled astable blocking Oscillator?

(OR)

11. a) What is pedestal? How it effects the output of a sampling gates?   [6M]
    b) What are the drawbacks of two diode sampling gates?   [6M]

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AR13

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, April, 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) Examine the truthiness of software myths
    b) Write the disadvantages of classic life cycle model.
    c) How the various elements of requirements modelling are using in a software project
    d) What is the need of requirements collection?
    e) What are the characteristics of good design?
    f) Discuss the relation between design and quality.
    g) What is LOC? How this can be used in project estimation?
    h) Differentiate testing and debugging?
    i) Differentiate Unit testing and Integration testing
    j) From your point of you, any simple measure of software reliability.

PART-B

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

UNIT-I

2. a) Demonstrate layered technology in software engineering is most suitable for every organization, with the diagrammatic representation of layers?   **6M**
    b) Waterfall model is used in small scale projects and give reasons why this model is not suitable for large scale projects?   **6M**

(OR)

3. a) What is process flow and Describe how each of the five framework activities, actions, and tasks are organized with respect to sequence and time in various process flows.   **6M**
    b) Why is it important to understand customer problem before creating a software solution?   Why is it important to understand customer problem before creating a software solution?   **6M**

UNIT-II

4. a) Justify how Pair programming, a concept used in agile process models, helps in better construction of the software and in what way it is different from normal programming?   **6M**
    b) Compare the waterfall model with the Unified process. And also list out various categories of non-functional requirements and their importance.   **6M**

(OR)

5. a) "Principles underlying agile methods lead to the accelerated development and the deployment of software". Deduce your views on the above statement?   **6M**
    b) Why Extreme Programming is suitable for a large scale projects where requirements keep changing? Conclude the advantages of this process model?   **6M**

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UNIT-III

6. a) Design any application software of your choice using design modeling principles. **6M**
    b) Assume a situation where Data centred architectural design is only suitable? Give a suitable example? **6M**

(OR)

7. a) List out the different factors to develop a system design from conceptual way to detailed object oriented design. **6M**
    b) How golden rules for creating better user interfaces and design steps? **6M**

UNIT-IV

8. a) Evaluate the test strategies for conventional software. **6M**
    b) How can project scheduling affect integration testing? **6M**

(OR)

9. a) Differentiate verification and validation in testing strategies in software testing? **6M**
    b) Why System testing is required? How Recovery, security, stress, performance, deployment testing can be the part of validation testing? Justify your answer with suitable example? **6M**

UNIT-V

10. a) Consider the following two examples of software projects: developing a conventional compiler for known programming language (e.g., C) for a new machine and developing an application to automate a doctor's office. Which of the two is likely to call for a waterfall life cycle development style? Why? What are the likely risks in the two examples and how can the chosen development life cycle model face the risks? **6M**

    b) How would you to propose Quality function deployment requirements like Normal requirements, expected requirements and Exciting requirements for any social networking website of your choice? **6M**

(OR)

11. a) How software quality can be achieved, explain with respect to software engineering methods, project management techniques, quality control, quality assurance? **6M**
    b) Explain various Reactive vs. Proactive Risk strategies? **6M**