AR16

CODE: 16CE2008 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, October / November-2020
STRUCTURAL ANALYSIS-I
(CIVIL ENGINEERING)

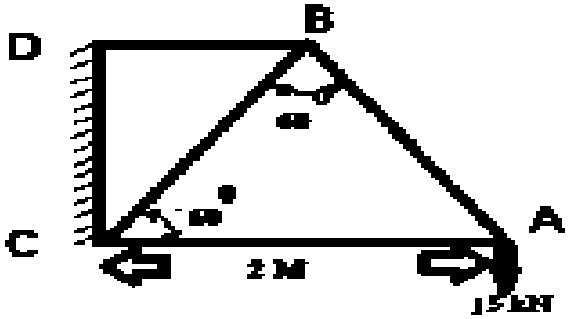
Time: 3 Hours **Max Marks: 70**

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

UNIT-I

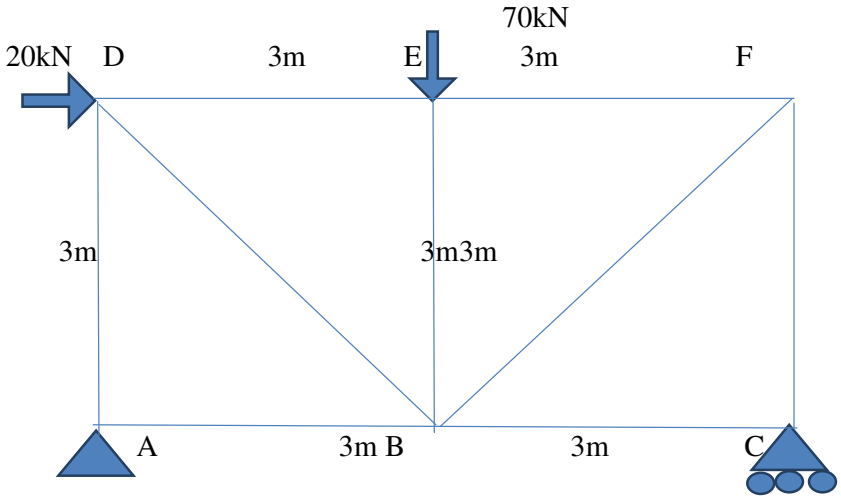
1.a) Write types of frames and Assumptions in the members of a perfect frame. (5M)

b) A Cantilever truss of 2m span is loaded as shown. Find the forces in the Various members of the frames truss and tabulate the results. (9M)



(OR)

2. Analysis the truss shown in fig by method of joints



(14M)

UNIT-II

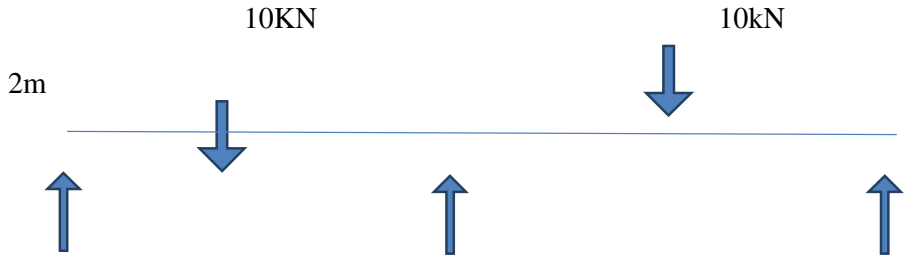
3. Find the fixed end moments, point of contra flexure, Shear force and bending moment diagrams of fixed beam. The UDL load is 60kN/m acting entire span of the beam of the length 5.5m (14 M)

(OR)

4. A propped cantilever beam of span 4m is subjected to UDL of intensity 40kn/m throughout the span.Draw SFD, BMD (14 M)

UNIT-III

5. Analysis the continuous beam by three moment theorem. Draw SFD &BMD. AB=6M, BC=6M. (14M)

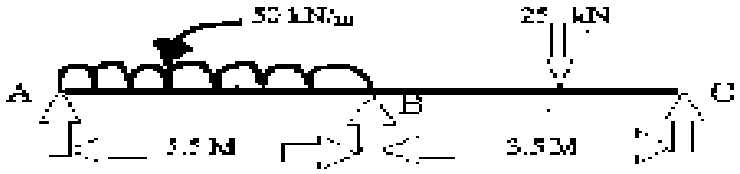


(OR)

6. Derive the Clapayrons's theorem of three moments for continous beam.(14M)

UNIT- IV

7. Draw the bending moment and shear force diagram for the two span continuous beam show in fig. given below by slope deflection method. EI is constant (14 M)



(OR)

8. A continuous beam ABC 11m long consist of AB, BC of lengths5m, 6m respectively. If it is fixed at end A and simply supported at B,C.The span AB carriers a point load 100KN at center.while the span BC carriers UDL of 24kN/m.The moment of inertia of AB is I,BC is 3I.Determine the moments of supports and draw BMD by slope deflection method. .

UNIT –V

9. (a) Explain the castigliano's theorem – I (7M)

(b) A 65mm diameter steel bar is 4m long and carries a tensile load of 100kN. Determine the strain energy stored in the bar . Take E= 200GN/m^2 (7 M)

(OR)

10. (a) Explain the castigliano's theorem – II (7M)

(b) Find the vertical deflection at the free end of a cantilever beam of length 4m and a point load of 35kN acting at free end

(Assume I= 25 x $10^{-4}\mathrm{m}^4$ and E= 2 x $10^{11}N/\mathrm{m}^2$ (7M)

AR16

CODE: 16EE2013 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, October / November-2020

CONTROL SYSTEMS

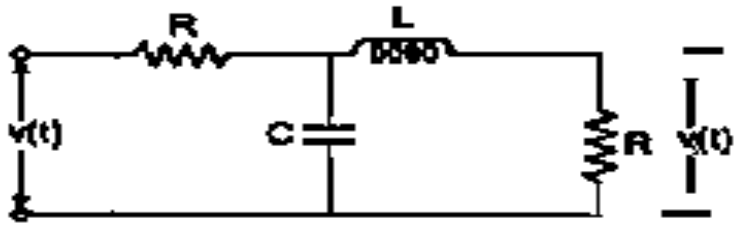
(Electrical & Electronics Engineering)

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

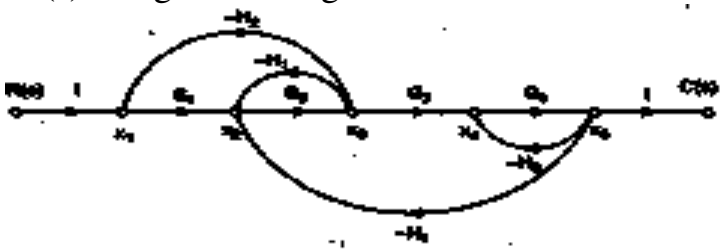
1. a) Determine the Transfer function for the electrical Network vo(s)/vi(s) **7M**



b) Define Closed loop system and explain one of the real time application using block diagram **7M**

(OR)

2. Find C(s)/R(s) using Mason's gain formula. **14M**



UNIT-II

3. a) Discuss the effect of PD and PI on performance of a control system. **6M**

b) For a second order system, the location of poles is known to be -3+j7 & -3-j7. Calculate peak time, % over shoot and approximate settling time. **8M**

(OR)

4. a) Explain the construction and principle of operation synchro transmitter. **5M**

b) Derive the transfer function of armature control DC servo motor. **9M**

UNIT-III

5. Consider the open-loop transfer function of a unity feedback control system: **14M**

$$G(s) = \frac{K(s+2)}{S(S+4)(S+6)}$$

Using Routh criterion, find the range of values of k that correspond to a stable system. Note that K is a positive real constant.

(OR)

6. A unity feedback system has an open loop function G (s) = $\frac{K}{S(S^2+3S+10)}$ **14M**

make a rough sketch of root locus plot by determining the following (i) Centroid, number and angle of asymptotes (ii) angle of departure of root loci from the poles, (iii) Breakaway points if any, (iv) points of intersection with jω axis and (v) maximum value of k for stability

UNIT-IV

7. Given the open loop transfer function of a unity feedback system G(S)= 100 / {S(1+0.1S) (1+0.01S)}.Draw the Bode plot. **14M**

(OR)

8. a) Explain about gain crossover frequency and phase cross over frequency **4M**

   b) Sketch the polar plot of the following transfer functions and from the plot determine the phase margin and gain margin **10M**

$$G(s) = \frac{10(s+1)}{(s+10)^2}$$

UNIT-V

9. A unity feedback system has an open-loop transfer function G(s) = $\frac{4}{S(2S+1)}$ It is desired to obtain a phase margin of 40^0 without sacrificing the K_v of the system. Design a suitable lag network and compute the value of network components assuming any suitable impedance level. **14M**

(OR)

10. The state equation of a system is given by **14M**

$$\begin{bmatrix} \dot{X}_1 \\ \dot{X}_2 \end{bmatrix} = \begin{bmatrix} -3 & 1 \\ -2 & -1 \end{bmatrix} \begin{bmatrix} X_1 \\ X_2 \end{bmatrix} + \begin{bmatrix} 0 \\ 1 \end{bmatrix} u(t), t \geq 0$$

a) Is the system controllable?

b) Compute the state transition matrix

AR16

CODE: 16ME2012 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, October / November-2020

ENGINEERING METALLURGY

(Mechanical 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)	Define grain and grain boundary? How does the presence of grain boundary affect the physical and mechanical properties of metals?	7M
	b)	How do you determine the grain size?	7M
		(OR)	
2.	a)	Explain the properties of metals in detail, giving the proper explanation, considering the metallic bond.	7M
	b)	What is crystallization? Name and explain the steps in it?	7M

UNIT-II

3.	a)	What are the different types of solid solutions? Explain interstitial solid solution with suitable examples.	7M
	b)	Explain Hume-Rothery rules for the formation of substitutional solid solutions?	7M
		(OR)	
4.	a)	Name the three most common intermediate alloy phases? Explain any two of them.	7M
	b)	Explain in detail the necessity of alloying with four specific examples.	7M

UNIT-III

5.	a)	Derive the Lever rule as applied to equilibrium diagrams?	7M
	b)	What is eutectoid reaction? Explain eutectoid reaction in Fe-Fe_3C diagram?	7M
		(OR)	
6.		Draw a typical Equilibrium diagram for two metals completely soluble both in liquid & solid states. Label the important points, lines and areas in it.	14M

UNIT-IV

7.	a)	What are the characteristic properties of tool and die steels?	7M
	b)	Mention the properties, microstructure and applications of Low alloy steels.	7M
		(OR)	
8.	a)	Discuss the structure and properties of SG cast iron.	7M
	b)	What do you mean by alloy cast irons? Mention its properties and applications.	7M

UNIT-V

9.	a)	What is the purpose of tempering? Explain briefly the theory of tempering.	7M
	b)	Compare annealing and normalizing. When do you use them?	7M
		(OR)	
10.	a)	Explain the types of powder preparation methods with neat sketch.	7M
	b)	What are T-T-T diagrams? Explain the construction of TTT diagrams?	7M

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AR16

CODE: 16EC2009 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, October / November-2020

ELECTRONIC CIRCUITS – II

(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	Draw the RC phase shift oscillator and explain with neat sketch.	**10**
	b	Derive frequency of oscillations RC phase shift oscillator	**4**
		(OR)	
2.	a	State and briefly explain Barkhausen criterion for oscillation	**5**
	b	Draw the circuit of Colpitts oscillator and explain its working. Derive the expression for frequency of oscillation	**9**

UNIT-II

3.	a	Draw the RC coupled amplifier and explain with neat sketches.	**11**
	b	Draw the equivalent circuit of RC coupled amplifier at mid bad frequenc	**3**
		(OR)	
4.	a	Sketch a simple common-source amplifier circuit and discuss the general ac circuit characteristics	**7**
	b	Sketch Cascode Amplifier and explain its working.	**7**

UNIT-III

5.	a	What does the term small-signal imply?	**5**
	b	Describe the current gain with resistive load using hybrid-**π** model.	**9**
		(OR)	
6.		Sketch and explain the hybrid-**π** model of the transistor CE model.	**14**

UNIT-IV

7.	a	What is harmonic distortion? How does it arise in class-B operation? And how can it be corrected in push-pull circuit?	**9**
	b	Define and describe the power derating curve for a transistor.	**5**
		(OR)	
8.	a	Draw the circuit of a class B push-pull amplifier and explain its working.	**12**
	b	Give the advantages of class A power amplifier.	**2**

UNIT-V

9.		Explain single and double tuned amplifiers with neat sketches.	**14**
		(OR)	
10.	a	Describe the operation of transistorised series regulator.	**9**
	b	Compare linear and switched mode power supplies.	**5**

AR16

CODE: 16CS2010 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Regular & Supplementary Examinations, October / November-2020

PRINCIPLES OF PROGRAMMING LANGUAGES

(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)	Determine the factors that give raise to the evolution of new programming languages.	7M
	b)	Derive the expression for slope * x + intercept and draw the equivalent parse tree.	7M
		(OR)	
2.	a)	Differentiate BNF and EBNF with examples.	7M
	b)	Explain different phases of compilation with suitable examples.	7M

UNIT-II

3.	a)	Illustrate different storage allocation mechanisms.	7M
	b)	Explain in detail about static scoping.	7M
		(OR)	
4.	a)	Explain garbage collection and its advantages.	7M
	b)	Explain about synthesized and inherited attributes.	7M

UNIT-III

5.	a)	Illustrate the importance of operator precedence and associatively while evaluating expressions with examples.	7M
	b)	Write short notes on composite types.	7M
		(OR)	
6.	a)	Differentiate between static and dynamic type checking.	7M
	b)	Explain Enumeration-Controlled loops.	7M

UNIT-IV

7.		Explain various parameter passing techniques with suitable examples.	14M
		(OR)	
8.	a)	Explain the sequence of operations performed before and after a function call.	7M
	b)	Illustrate exception handling mechanism in C++.	7M

UNIT-V

9.	a)	Illustrate how inheritance can be achieved without extending a class.	7M
	b)	Explain different types of polymorphism with examples.	7M
		(OR)	
10.		Explain object oriented programming features with example.	14M

AR13

CODE: 13CE2008 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

II B.Tech II Semester Supplementary Examinations, October / November-2020

STRUCTURAL ANALYSIS-I
(CIVIL ENGINEERING)

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

PART-A

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

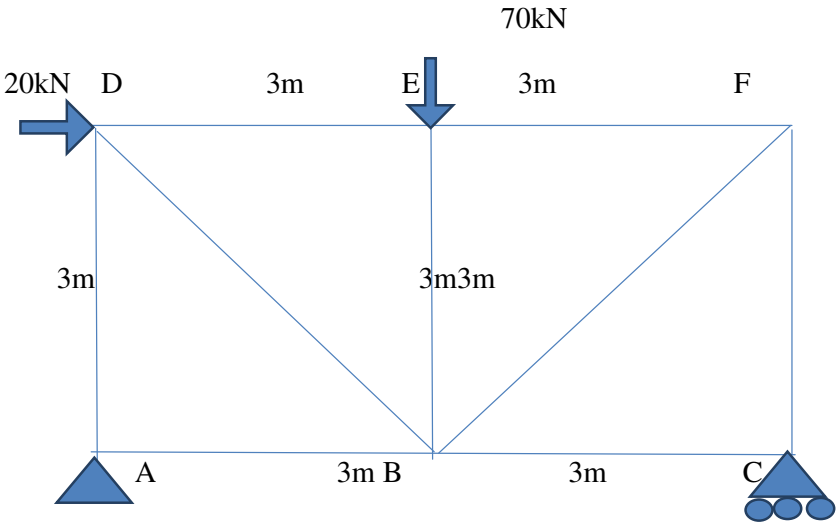
1. a) List the steps to compute absolute maximum bending moment?
   b) What are the statically determinate beams?
   c) Modulus of resilience is the ratio of?
   d) In a propped cantilever at the propped end is?
   e) A cantilever of length "l" carries a concentrated load "W' at its mid span. Reaction of the free end for propped cantilever is
   f) What is the equation for strain stored in the beam is?
   g) The advantages of fixed beam is?
   h) In a fixed beam having uniformly distributed load over the whole span, the moment will be calculated by the formula
   i) A continuous beam has two equal spans, 1 each and is simply supported at the two ends. If it is subjected to IDL w/m on both the spans. The bending moment at the central support will be?
   j) What is the basic formula for Clapeyron's theorem of three moment equation?

PART-B

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

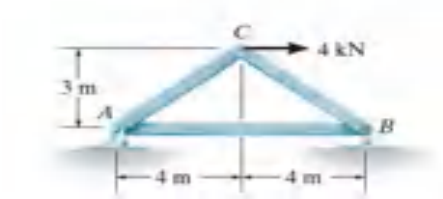
UNIT-I

2 Analysis the truss shown in fig by method of joints 12m



(OR)

3 The cross-sectional area of each member of the truss shown in Figure *is* A=400 mm^2 and E = 200 GPa. (a) Determine the vertical displacement of joint *C* if a 4-kN force is applied to the truss at *C*. (b) If no loads act on the truss, what would be the vertical displacement of joint *C* if member *AB* were 5 mm too short? 12m



UNIT-II

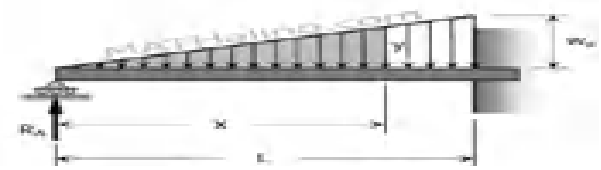
4. A symmetrical 3-hinged parabolic arch has a span of 20m and a rise of 5m is hinged at springing and at the crown. It carriers a concentrated load of 100kN at a distance of 5m from left support. Determine the maximum bending moment and plot the BMD. 12m

(OR)

5. Three-hinged circular arch of span 21m has a rise of 4m.the arch is loaded with a point load of 80 KN at a horizontal distance of 6 m from the left support, determine the horizontal thrust, reactions and bending moment under the load. 12m

UNIT-III

6. Find the reaction at the simple support of the propped beam shown in Fig. And sketch the shear and moment diagrams. 12m

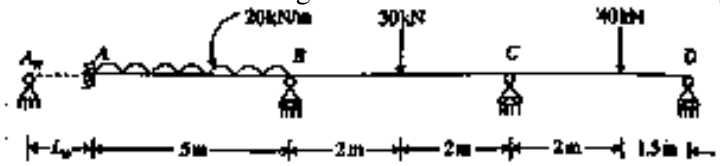


(OR)

7 Derive the expression for Fixed end moments if beam is carrying an eccentric point load. 12m

UNIT-IV

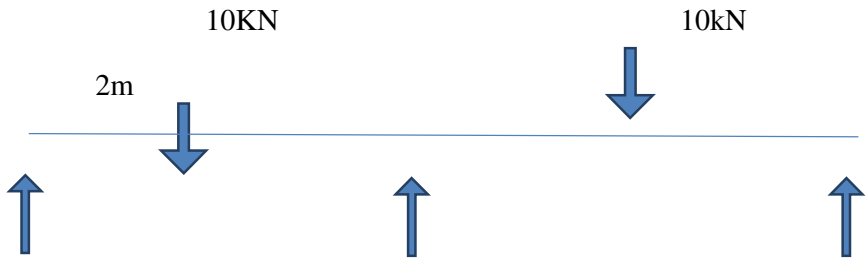
8 Determine the fixed end moments for a given continuous beam as shown fig. 12m



(OR)

9 Analysis the continuous beam by three moment theorem. Draw SFD &BMD. 12m

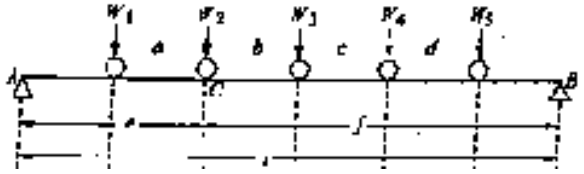
AB=6M, BC=6M.



UNIT-V

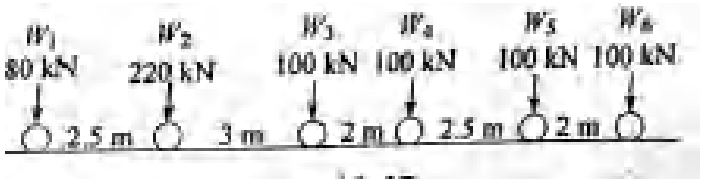
10. a) Explain the effect of moving loads and uses of influence lines? 5m

    b) Find the maximum shear force at section C in a given figure it carrying a wheel loads. 7m



(OR)

11. The load system as shown in figure moves from left to right on a girder of span 20m.find the maximum shear force at a section 7.5m from the left end and also draw the influence line diagram. 12m



AR13

CODE: 13EE2009

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, October / November-2020

CONTROL SYSTEMS
(Electrical and Electronics Engineering)

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

PART-A

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

1. a) Write the mason's gain formulae
   b) Write any two rules for block diagram reduction.
   c) List out the advantages of PI controller.
   d) What are the standard test signals.
   e) As the damping ratio increases oscillations reduces. Justify?
   f) Define peak-over shoot
   g) What is meant by resonant frequency? write the formulae
   h) Define gain-crossover and phase crossover frequencies.
   i) Write the advantages of lag compensator
   j) What is state transition matrix

PART-B

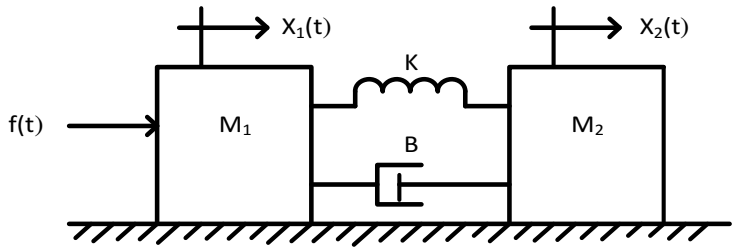
Answer one question from each unit **[5x12=60M]**

UNIT-I

2. Distinguish between open loop and closed loop control system. Explain with one example. **[12M]**

(OR)

3 For the mechanical system with mass and friction components, shown in figure find transfer function $X_1(s)/F(s)$ and $X_2(s)/F(s)$ **[12M]**



UNIT-II

4. a) Derive the transfer function of field controlled dc servo motor. **[12M]**

(OR)

5. A unity feedback system has G(s)=$\frac{180}{s(s+6)}$. Determine a) steady-state error b) Error constants. **[12M]**

UNIT-III

6. a) Briefly explain the effect of adding zeros to the root-loci with an example. **[4M]**

b) A unity feedback system with closed loop transfer function is $\frac{C(S)}{R(S)} = \frac{KS+b}{S^2+aS+b}$ **[8M]**

Show that the steady state error with unit ramp input (a-k)/b

(OR)

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

Do the following:

i) Sketch root locus.

ii) Find the jw-axis crossing and gain ,K,at the crossing.

iii) Find all breakaway and break- in points.

UNIT-IV

8. The open loop transfer function of negative feedback system is given by G(S)= $\frac{100(1+0.02S)}{(1+S)(0.1S+1)(0.01S+1)}$ Draw the bode plot. **[12M]**

(OR)

9. The open loop transfer function of negative feedback system is given by $G(s)H(s) = \frac{10}{S(S+1)(S+2)}$ using nyquist stability criteria find the stability of the system **[12M]**

UNIT-V

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

(OR)

11. **a)** State space representation of a system is given by $\dot{X}(t) = \begin{bmatrix}0 & 1\\ 0 & -3\end{bmatrix} X(t) + \begin{bmatrix}1\\0\end{bmatrix} U(t)$ and $Y(t)=[2 \quad 4]\, X(t)$ and $X(0) = \begin{bmatrix}-1\\3\end{bmatrix}$ obtain state transition matrix **.** **[9M]**

b) What is meant by observability? Verify observability for the above system? **[3M]**

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AR13

CODE: 13ME2009 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, October / November-2020

KINEMATICS OF MACHINERY
(Mechanical Engineering)

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

PART-A

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

1. a) How many degrees of freedom exist for a spherical pair?
   b) Define the term 'Kinematic Chain'.
   c) How many number of links a Hart's Mechanism consist of?
   d) Write any two examples for an approximate straight line motion mechanism.
   e) State the three centers in line theorem of instantaneous centers.
   f) One link rotating with angular velocity 'ω_1' in the clockwise direction is connected by a means of a pin joint of radius 'r' to a link of angular velocity 'ω_2' rotating in the anticlockwise direction. Write the mathematical expression for rubbing velocity of the two links.
   g) Define the term 'Cam'
   h) What is meant by the term 'stroke of the follower'?
   i) State the law of gearing.
   j) Define module in terms of pitch circle diameter and number of tooth on the gear.

PART-B

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

UNIT-I

2. Explain in brief, the following inversions of double slider crank chain with neat sketches [12M]
   a) Elliptical Trammel. b) Scotch Yoke Mechanism.
   c) Oldham's Coupling.

(OR)

3. a) Classify kinematic pairs according to the type of contact between the elements of a pair. Explain in brief with two examples for each pair. [6M]
   b) In a quick return mechanism of the oscillating link type as shown in Fig. 1, the distance 'd' between the fixed centers O_1 and O_2 is 100 mm and the length of the driving crank O_1P is 25 mm, find the time ratio of the working stroke to the return stroke. [6M]

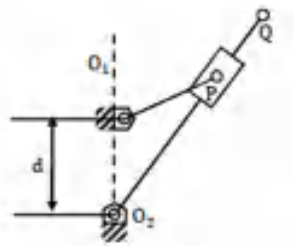


Fig. 1

UNIT-II

4. Prove that Peaucellier mechanism is an exact straight line motion mechanism with a neat diagram indicating all the links of that mechanism. [12M]

(OR)

5. a) Derive the condition for correct steering of a vehicle with a neat diagram. [6M]
   b) Write two important differences between Ackermann steering gear and Davis steering gear. Also draw a neat detailed schematic diagram of Ackermann steering gear. [6M]

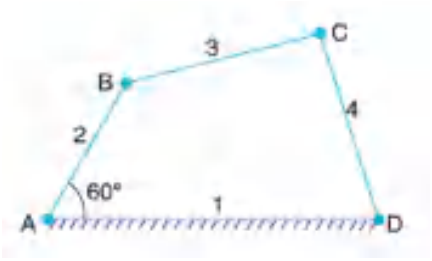
UNIT-III

6. a) The mechanism shown in Fig. 2 has crank OB = 40 mm and length of connecting rod AB = 200 mm. The center of gravity of the rod is at G which is 50 mm from B. The speed of the crank is 200 rpm. For the position shown, in which OB is turned 45^{o} from OA, Find 1. Velocity of point G, 2. Angular velocity of AB. [6M]

Fig. 2

   b) Locate all the instantaneous centers for a four bar mechanism as show in Fig. 3. The lengths of various links are: AD = 120 mm; AB = 60 mm; BC = CD = 70 mm. If the link AB rotates at a uniform speed of 20 rpm in the clockwise direction, find the angular velocity of BC. [6M]

Fig. 3



(OR)

7. In a pin jointed four bar mechanism ABCD, the lengths of various links are as follows. AB = 25 mm; BC = 87.5; CD = 50 mm and AD = 80 mm. The link AD is fixed and the angle BAD = 60^{0}. If the velocity of B is 2 m/s in the clockwise direction, find 1. Velocity and acceleration of mid-point of BC and 2. Angular velocity and angular acceleration of BC. [12M]

UNIT-IV

8. A cam is to give the following motion to a knife-edge follower : [12M]
   1. Outstroke during 60^0 of cam rotation
   2. Dwell for the next 30^0 of cam rotation
   3. Return during next 60^0 of cam rotation
   4. Dwell for the remaining 210^0 of cam rotation.

   The stroke of the follower is 35 mm and the minimum radius of the cam is 40 mm. The follower moves with SHM during both outstroke and return strokes. Draw the profile of the cam when the axis of the follower is offset by 20 mm from the axis of the cam shaft.

(OR)

9. In a symmetrical tangent cam operating a roller follower, the least radius of the cam is 25 mm and roller radius is 15 mm. The angle of ascent is 60^0 and the total lift is 15 mm. The speed of the cam shaft is 500 rpm. Calculate 1. The principal dimensions of the cam, 2. Acceleration of the follower at the beginning of the lift. [12M]

UNIT-V

10. a) Define the following in relevance to toothed gearing [6M]
    1. Circular Pitch 2. Diametral Pitch
    3. Pressure angle

    b) The following data refer to a pair of 20^0 involute gears in mesh : Module = 6 mm, Number of teeth on pinion = 15, Number of teeth on gear = 45, Addenda on pinion and gear wheel = 1 module. Find the number of pairs of teeth in contact. [6M]

(OR)

11. a) Two parallel shafts, about 500 mm apart are to be connected by spur gears. One shaft is to run at 300 rpm and the other at 120 rpm. Design the gears, if the circular pitch is to be 20 mm. [6M]

    b) In an epicyclic gear train as shown in Fig. 4, the number of teeth on the wheels A, B and C are 48, 24 and 50 respectively. If the arm rotates at 360 rpm clockwise, find 1. Speed of wheel C when A is fixed. 2. Speed of wheel A when C is fixed. [6M]

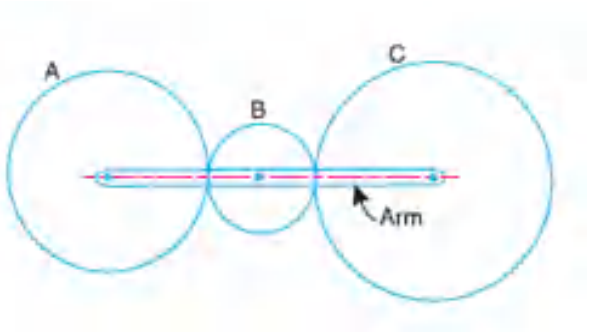


Fig. 4

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AR13

CODE: 13EC2008 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, October / November-2020
ELECTRONIC CIRCUITS – II
(Electronics and Communication Engineering)

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

PART-A

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

1. a) The Multistage amplifier in low frequency range behaves like_____
   b) What are different Coupling Schemes used in amplifiers
   c) What is the maximum conversion efficiency of class-A amplifier?
   d) What is the typical value of Q Factor of a crystal Oscillator?
   e) Explain why Negative Feedback is termed as degenerative
   f) What is the effect on the input resistance if the feedback signal is returned to the input in series with Applied Voltage
   g) In the Hartley Oscillator L2=0.4mH & C=0.004μF. If the frequency of the Oscillator is 120kHz. Find the Value of L1. Neglect Mutual Inductance.
   h) Classify Oscillator according to the Frequency generated.
   i) Plot the Gain Vs Frequency for Single tuned Amplifier.
   j) Classify Power Amplifiers.

PART-B

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

UNIT-I

2. a) A CE Amplifier is drawn by a voltage source of internal resistance r_s=800 Ω and the load impedance is a resistance R_L=1000 Ω. The h-parameters are hie=1kΩ, h_{re}= $2x10^{-4}$, hfe=50 and h_{oe}=25μA/V . Compute the current gain A_I 6M
   b) Derive A_I for Darlington Connection 6M

(OR)

3. a) Draw the RC coupled amplifier and explain with neat sketches. 6M
   b) Draw the equivalent circuit of RC coupled amplifier at mid bad frequenc 6M

UNIT-II

4. a) Explain the general characteristics of negative feedback amplifiers — 6M
   b) Explain different feedback amplifier Topologies — 6M

(OR)

5. a) Derive R_i and R_o for Current Shunt Feedback Amplifier with neat circuit Diagram — 6M
   b) An Amplifier has voltage gain with feedback of 100. If the gain without feedback changes by 20% and the gain with feedback should not vary more than 2%, determine the values of open loop gain A and feedback ratio β — 6M

UNIT-III

6. Explain about Wein Bridge Oscillator and derive its frequency of oscillations with neat sketches. — 12M

(OR)

7. a) In a colpitts C1=C2=C and L=100μH. The frequency of oscillations is 500kHz. Determine the value of C — 4M
   b) Derive the Frequency of Oscillations for Colpitts Oscillator — 8M

UNIT-IV

8. a) For a Class B amplifier providing a 20V peak signal to a 16Ω load and a power supply of V_{cc}=30V; Determine the input power, Output Power and Circuit efficiency. — 6M
   b) Explain the operation of Push pull amplifier. — 6M

(OR)

9. a) Draw the Class B puss pull power amplifier and explain — 6M
   b) Explain class A power amplifier. — 6M

UNIT-V

10. Explain single and double tuned amplifiers with neat sketches. — 12M

(OR)

11. a) Explain Zenar diode as a voltage regulator — 8M
    b) Explain about classification of Tuned amplifier and their applications — 4M

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AR13

CODE: 13CS2010 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
II B.Tech II Semester Supplementary Examinations, October / November-2020

PRINCIPLES OF PROGRAMMING LANGUAGES
(Common to CSE & IT)

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

PART-A

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

1. a) Define syntax and semantics of a language
   b) List out the errors that can occur in expression evaluation.
   c) Write a brief note on scope rules.
   d) List the design issues for subprograms.
   e) List the advantages of using control structures in any of the compiled programming languages.
   f) What are recursive functions.?
   g) Explain about parameter passing.
   h) What is late binding of machine code?
   i) Explain about multiple inheritance.
   j) What are higher order functions?

PART-B

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

UNIT-I

2. a) Write about static variables, stack dynamic variables and heap dynamic variables. 6M
   b) Explain different phases of compilation. 6M

(OR)

3. a) Present the classification of arrays based on subscript binding. Give programming examples. 6M
   b) Explain in detail arrays, indices, subscript bindings, and array categories. 6M

UNIT-II

4. a) Differentiate between procedural and object oriented languages. 6M
   b) Define a subprogram. Write the semantics of call and return of a subprogram. 6M

(OR)

5. a) Explain about evaluation of static scope and dynamic scope. 6M
   b) Explain about the following i) Macro expansion ii) Attribute grammar. 6M

UNIT-III

6. a) Explain the basic concepts of exception handling. 6M
   b) Explain about functional programming language. 6M

(OR)

7. a) Explain Fact and Rule Statements in Prolog with suitable examples. 6M
   b) Discuss how Haskell differs from ML. 6M

UNIT-IV

8. a) Define a Thread. How are threads different from processes? Explain java threads with examples. 6M
   b) Discuss about various parameter passing techniques. 6M

(OR)

9. a) Write about data types and structures in Scheme 6M
   b) Write notes on coercion expressions and short-circuit evaluation. 6M

UNIT-V

10. a) Discuss about dynamic method binding. 6M
    b) What are the applications of functional languages? Give a comparison between functional and imperative languages. 6M

(OR)

11. a) List and explain the applications of logic programming. 6M
    b) Explain about first-order predicate calculus. 6M