AR16

CODE: 16CE3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

STRUCTURAL ANALYSIS – II

(Civil Engineering)

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

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

UNIT-I

1. a) A three hinged parabolic arch is of span 30 m and has its supports at depths of 4 m below the crown 'C'. The arch carries a load of 100 kN at a distance of 5 m to the left of crown 'C'. Determine the reactions at the supports and the bending moment under the load. 10M

   b) State Eddy's theorem 4M

(OR)

2. a) A Two-hinged parabolic arch of span 30 m and rise 6 m carries two point loads, each 60 kN acting at 7.5 m and 15 m from the left end respectively. The moment of Inertia varies as the Secant of slope of the rib axis. Determine the horizontal thrust and maximum positive moment in the arch rib. 7M

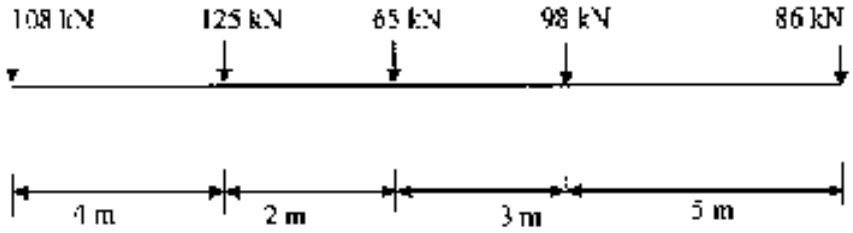
   b) A Two-hinged Semi-circular arch of radium 'R' carries a concentrated load W at the crown. Show that the horizontal thrust at each support is $\frac{W}{\pi}$. Assume Flexural Rigidity. 7M

UNIT-II

3. A simply supported beam has a span of 15 m. A UDL of 40 kN/m and 5 m long crosses the girder from left to right. Draw the influence line diagram for shear force and bending moment at a section 6 m from left end. Use these diagrams to calculate the maximum shear force and bending moment at this section. 14M

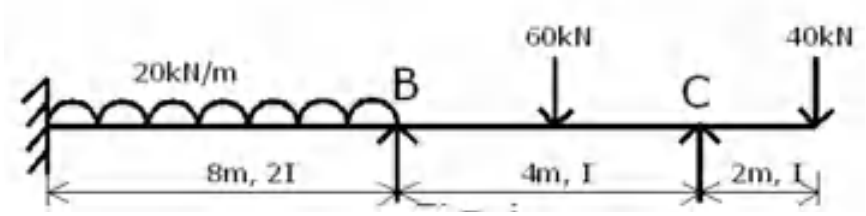
(OR)

4. A train of wheel loads shown in fig crosses a span of 36 m. Calculate the maximum positive and negative shear at mid-span of the beam. Also calculate the absolute maximum bending moment. 14M



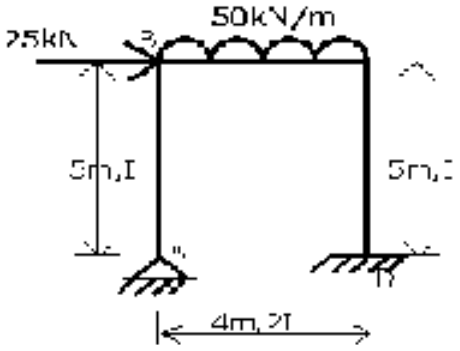
UNIT-III

5. Analyse the continuous beam shown in fig. by Moment Distribution Method. Draw BMD. 14M



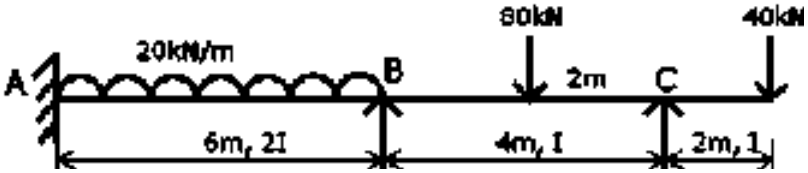
(OR)

6. Analyse the portal frame shown in fig. by slope deflection method. Draw BMD. 14M



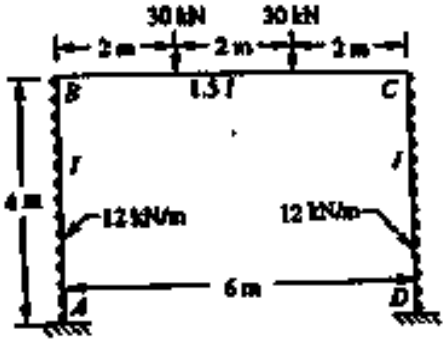
UNIT-IV

7. Analyze the continuous beam shown in figure by Kani's method and also draw the bending moment and shear force diagram. 14M



(OR)

8. Analyze the symmetric portal frame shown in figure by Kani's method. Draw the bending moment diagram. 14M



UNIT-V

9. A two span continuous beam ABC has the end A a fixed end and the end C a hinged end. The span AB is of length 5 m and carries a central concentrated load of 200 kN. The span BC is 8 m and carries a Uniform distributed load of 80 kN. Analyze the beam by stiffness method. 14M

(OR)

10. A two span continuous beam PQR has the end P a fixed end and the end R a simply supported end. The span PQ is of length 6 m and carries a central concentrated load of 240 kN. The span QR is 10 m and carries a central concentrated load of 120 kN. Analyze the beam by (stiffness) displacement method. 14M

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AR16

CODE: 16EE3015 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

ELECTRICAL MEASUREMENTS

(Electrical and 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) With a neat sketch explain the working principle & constructional details of an attraction type moving iron instrument. 7M
   b) Derive a general equation for deflection of moving iron instruments. Comment upon the shape of the scale. 7M

(OR)

2. a) Explain how the range of measuring instruments can be extended 8M
   b) A moving coil meter gives a full-scale deflection with a current of 5mA.If the coil of the instrument has a resistance of 10 ohms, show how it can be adopted to work 6M
      i) As an ammeter with a range of 0-10 Amps and
      ii) As a voltmeter with a range of 0-100 volts

UNIT-II

3. a) What are the sources of errors in current transformer? 4M
   b) Explain the measurement of active power by using two wattmeter method and find the power factor. 10M

(OR)

4. a) Derive the expression for deflecting and controlling Torques in Wattmeters 8M
   b) A 3-phase 440V motor has a powerfactor of 0.6. two wattmeters connected to measure the power show the input to be 25kW. Find the reading in each instrument 6M

UNIT-III

5. a) What is creeping in an energy meter? List out the reasons and methods to reduce creeping in an energy meter. 7M
   b) A single phase 5A, 230V energy meter on full load u.p.f test makes 60 revolutions in 360 seconds. If the normal disc speed is 520 revolutions per KWH, what is the % error? 7M

(OR)

6. a) What are different types of Power Factor meters 6M
   b) Explain the method of testing energy meter using phantom loading method 8M

UNIT-IV

7. a) Explain the loss of charge method for measurement of insulation of resistance of cables. 6M
   b) Derive the equation for balance in the case of Schering bridge? And draw the phasor diagram? 8M

(OR)

8. a) With a neat sketch explain the resistance measurement using Wheatstone's bridge and derive the expression for measuring unknown resistance? 10M
   b) What are the limitations of Wheatstone's Bridge? 4M

UNIT-V

9. a) Explain the operation of a D.C. Crompton potentiometer with a neat sketch. 8M
   b) Explain the process of standardization of a D.C Crompton potentiometer 6M

(OR)

10. a) What are different types of A.C. potentiometers, name them? 4M
    b) Explain the method of analysis of B-H loop and the loss calculation 10M

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AR16

CODE: 16ME3014 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November, 2018

KINEMATICS & DYNAMICS OF MACHINERY

(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) Sketch slider crank chain and its various inversions, stating actual machines in which these are used in practice. 9

   b) State Grashoff's law and explain how it is used in identifying inversions of quadric cycle chain. 5

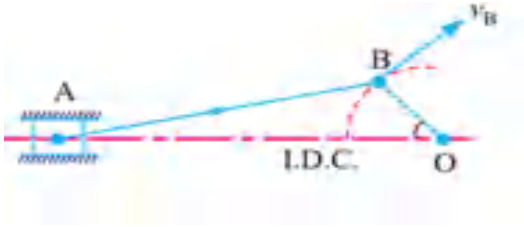
(OR)

2. a) Sketch and Describe the Scott-Russel and Hart's straight-line motion mechanisms. 8

   b) Explain about classification of kinematic pairs. 6

UNIT-II

3. a) A reciprocating engine has a crank of radius 180 mm and connecting rod has a length of 720mm. At the instant, the crank has turned through an angle 30^0 from inner dead centre. The crank rotates uniformly at 240 rpm in clockwise direction. 10



Determine:

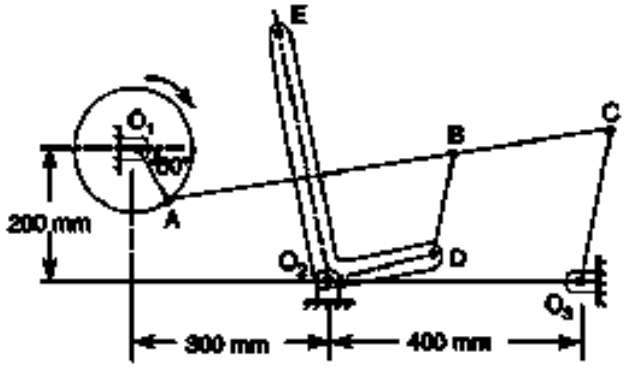
a) Velocity and acceleration of piston.

(b) The angular velocity and angular acceleration of the connecting rod.

   b) State and explain the Kennedy's theorem of three centres by taking a suitable example. 4

(OR)

4. a) The Mechanism of a wrapping machine as shown in fig. has the following dimensions O_1A= 100 mm, AC= 700 mm, BC= 200 mm, O_3C= 200 mm, O_2E= 400 mm, O_2D= 200 mm and BD= 150 mm. The crank O_1A rotates at a uniform speed of 100 rad/s. find the velocity of point E of the bell crank lever by the instantaneous centre method. 11



   b) Define Coriolis acceleration component? In which cases does it occur? 3

UNIT-III

5. a) Derive an expression for the acceleration of the piston of a slider crank mechanism 9
   b) Derive the expression for gyroscopic couple. 5

(OR)

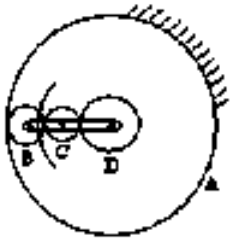
6. a) A ship is propelled by a turbine rotor having a mass of 6 tones and a speed of 2400 rpm. The direction of rotation of the rotor is clockwise when viewed from the aft. The radius of the gyration of the rotor is 450mm. Determine the gyroscopic couple and its effects, if (a) The ship steers to the left in a curve of 60m radius at a speed of 18 knots (1 knot = 1.860 Km/hr) (b) The ship pitches 7.5^0 above and 7.5^0 below the normal position and the bow is rising with its maximum velocity. The pitching motion is simple harmonic motion is with a time period of 18 seconds. Also find the maximum angular acceleration during pitching. The ship rolls with an angular velocity of 0.035 rad/sec. 12
   b) Define static force analysis. 2

UNIT-IV

7. a) A pair of spur wheels with 14 and 21 teeth is of involute profile and pressure angle 16^0. Find maximum addenda on the pinion and gear wheel to avoid interference, if module is 6mm. Also find the maximum velocity of sliding on either side of the pitch point if pinion runs at 300rpm. 10
   b) State the law of gearing and explain. 4

(OR)

8. a) An epicyclic gear train, as shown in Figure is composed of a fixed annular wheel A having 150 teeth. The wheel A is meshing with wheel B which drives wheel D through an idle wheel C, D being concentric with A. The wheels B and C are carried on an arm which revolves clockwise at 100 rp.m. about the axis of A and D. If the wheels B and D have 25 teeth and 40 teeth respectively, find the number of teeth and the speed and sense of rotation of C. 10



   b) Differentiate between compound and Simple gear train 4

UNIT-V

9. a) In a Porter governor, the links and arms are each 30 cm long. Each ball weighs 2.5kg and the central load is 25 kg. For the lowest and highest of the sleeve the arms are inclined 30^0 and 40^0 respectively to the vertical. The friction at the governor and the mechanism connecting it to the valve is equivalent to a force of 2.5 kg at the sleeve. Assuming the links and arms intersect on the axis, find:
   (a) Height of the governor.
   (b) The minimum ascending speed
   (c) The maximum descending speed
   (d) Range of speed of the governor. 11
   b) Discuss briefly about isochronism in governors. 3

(OR)

10. a) The turning moment requirement of a machine is represented by the equation $T= (1000+500 \sin 2\theta-300\cos 2\theta)$N-m. Where θ is the angle turned by the crankshaft of the machine. If the supply torque is constant, determine:
   i) The moment of inertia by the flywheel, if the total fluctuation of speed is not to exceed one percent of the mean speed of 300 rpm.
   ii) Angular acceleration of the flywheel when the crankshaft has turned through 45^0 from the beginning of the cycle.
   iii) The power required to drive the machine. 14

AR16

CODE: 16EC3014 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B. Tech I Semester Regular Examinations, November, 2018

LINEAR IC APPLICATIONS

(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) Derive the Differential Amplifier- AC analysis of single input, dual output Configuration in detail. 9M
   b) Briefly explain about 5M
      i) The various types of IC Classifications.
      ii) What are the temperature grades of Integrated Circuits?

(OR)

2. a) Draw the ac equivalent circuit of dual input, unbalanced output differential amplifier and derive the expressions for small signal voltage gain, input resistance and output resistance. 7M
   b) Explain how large open circuit voltage gain of an Op-Amp can be obtained by cascading differential amplifiers. 7M

UNIT-II

3. a) Define i) CMRR ii) PSRR iii) Thermal Drift iv) Output offset voltage. 8M
   b) Explain the frequency compensation techniques of an Op-Amp. 6M

(OR)

4. a) Draw the equivalent circuit for practical Op-Amp and list out the ideal and practical characteristics of an Op-Amp. 7M
   b) Define slew rate of an Op-Amp and explain its significance in the dynamic Characteristics of an Op-Amp. 7M

UNIT-III

5. a) Draw and explain the ideal integrator circuit using Op-Amp. Mention its Drawbacks and explain the operation of practical integrator. 10M

   b) Design an adder circuit using an Op-Amp to get the output expression as $V_0 = -(V_1 + 10V_2 + 100V_3)$. Where V_1, V_2, V_3 are the inputs. 4M

(OR)

6. a) Differentiate between Comparator and Schmitt trigger? With neat figure, explain the Op-Amp as a Schmitt trigger and derive its hysteresis. 7M

   b) Draw and explain the operation of a Triangular Wave form generator. 7M

UNIT-IV

7. a) Explain the operation of Wein bridge oscillator with a neat schematic diagram and derive the expression for Frequency of Oscillation. 7M

   b) With the help of circuit diagram, explain the operation of 3-bit Inverted R-2R ladder type D/A converter. Derive the expression for output voltage. 7M

(OR)

8. a) Design a first order band pass filter with lower cutoff frequency of 100 Hz and a higher cutoff frequency of 1KHz. The pass band gain should be 4. Calculate the 'Q' of the filter. 5M

   b) Draw the block diagram of Dual Slope ADC and explain its operation in detail. 9M

UNIT-V

9. a) Draw the block diagram of Astable Multivibrator using 555 Timer and derive an expression for its frequency of oscillation. 8M

   b) List and explain the characteristics of three terminal IC regulators. 6M

(OR)

10. a) Explain the block diagram of PLL emphasizing the capture range and lock range. 8M

    b) Explain any two applications of 555 timer as a Monostable Multivibrator. 6M

AR16

CODE: 16CS3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular Examinations, November-2018

COMPUTER NETWORKS

(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)	Write a short notes on data communication block diagram and its components	7M
	b)	Explain the concept of Topology in networks	7M
		(OR)	
2.	a)	Explain in detail about TCP/IP protocol suite	7M
	b)	Describe the concept of encapsulation and decapsulation with relevant sketches	7M

UNIT-II

3.	a)	Encode the following message sequence by using hamming code with even parity. Message sequence:1101	7M
	b)	What are the design issues of data link layer . Explain in detail	7M
		(OR)	
4.	a)	Explain the concept of sliding window protocol in both noise and noise less channels	7M
	b)	Explain the concept of ALOHA	7M

UNIT-III

5.	a)	Compare the concept of datagram and virtual circuit approaches of packet switching	7M
	b)	Explain the concept of distance vector routing algorithm	7M
		(OR)	
6.	a)	Explain the concept of token bucket method to improve the quality of service.	7M
	b)	Explain the header format of IPV4	7M

UNIT-IV

7.	a)	Define UDP and explain its header format	7M
	b)	What are the operations of UDP and explain its uses	7M
		(OR)	
8.	a)	Explain the concept of connection establishment in TCP	7M
	b)	Explain the services and features of TCP	7M

UNIT-V

9.	a)	Explain the concept of DNS	7M
	b)	Explain the concept of HTTP	7M
		(OR)	
10.	a)	Explain the concept of web documents	7M
	b)	Explain the resource record of DNS	7M

AR13

CODE: 13CE3014 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018
STRUCTURAL ANALYSIS -II
(Civil Engineering)

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

PART-A

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

1. a) Calculate the horizontal thrust of a two hinged arch having a point load at the center of magnitude 50kN.
   b) Write an expression for determining horizontal thrust in two hinged arches?
   c) What are the sign conventions used in slope deflection equations and
   d) Write the slope deflection equations with usual notations?
   e) Define distribution factor?
   f) Derive the relation for the stiffness factor for a beam S.S at its both ends.
   g) The sum of the rotation factors at a joint is------
   h) What is the relation between distribution factor and rotation factor?
   i) Define Stiffness of a member?
   j) What is the relation between flexibility and Stiffness Matrix methods ?

PART-B

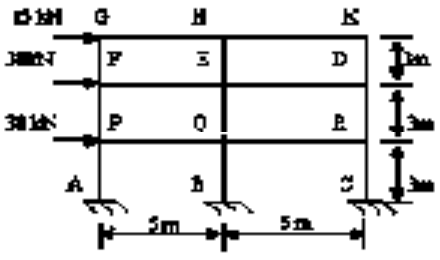
Answer one question from each unit **[5x12=60M]**

UNIT-I

2. A two-hinged parabolic arch has a span 10 m and rise 1 m. It is subjected to two concentrated loads, one 60 kN at 3 m from the left hinge and the other 80 kN acts at its crown. Assume that I = I_c Sec θ and Cosθ=1. Take area of cross section at the crown. A_C = 0.18 m^2 and E = 15×10^6 kN/m^2. Determine the reduction in the horizontal thrust in the arch due to rib shortening effect. 12M

(OR)

3. Analyse the frame shown in figure by Cantilever method. Assume that all the columns have equal area of cross-section for the purpose of analysis. 12M



UNIT-II

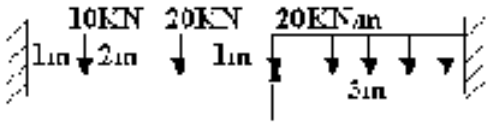
4. A continuous beam ABC consists of spans AB=2m, BC=3m, the ends A and C being fixed. AB Carries an u.d.l of intensity 40KN/m and BC carries a central concentrated load of 40KN . Using slope- deflection method, find the support moments and draw S.F and B.M diagrams 12M

(OR)

5. A continuous beam ABC consists of spans AB=3m, BC=3m, the ends A and C being fixed. AB and BC carry u.d.l of intensity 20KN/m and 40KN/m respectively. Using slope- deflection method, find the support moments and draw S.F and B.M diagrams. 12M

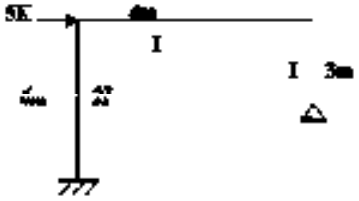
UNIT-III

6. Analyse the Continuous beam shown in figure using moment distribution method. Sketch the BMD & SFD. EI is constant. 12M



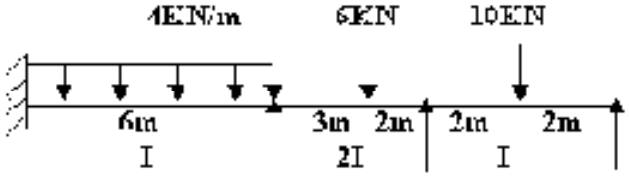
(OR)

7. By using moment distribution method, determine the support moments at all the joints of the Portal frame shown in figure . 12M



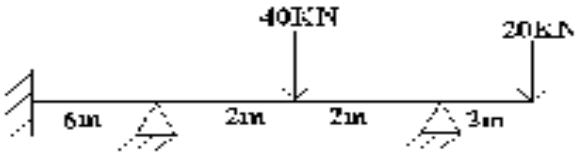
UNIT-IV

8. Analyze the continuous beam shown in figure using kani's method and draw BMD. 12M



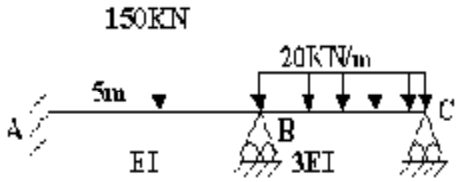
(OR)

9. Analyse the continuous beam shown in the figure using flexibility method. EI is constant. 12M



UNIT-V

10. Analyse continuous beam shown in figure using stiffness method. Draw BMD. Given AB=BC=10m. 12M



(OR)

11. A Continuous beam ABC is continuous over two spans AB & BC of 4m and 4m respectively. The span AB is carrying a point load of 30KN at a distance of 3m from B and the span BC is carrying a u.d.l of 25 KN/m . Find the support moments using Stiffness method and also draw BMD. Support at B is fixed 12M

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AR13

CODE: 13ME3013 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, November, 2018

DYNAMICS OF MACHINERY
(Mechanical Engineering)

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

PART-A

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

1.	a)	Define coefficient of maximum fluctuation of energy	1M
	b)	State the function of a flywheel? List out few machines in which flywheel are used.	1M
	c)	Define the terms Effort and Power of a Governor	1M
	d)	Why there is no effect of the gyroscopic couple acting on the body of a ship during rolling?	1M
	e)	Write the applications of shoe brakes in automobiles.	1M
	f)	Write the applications of shoe brakes in automobiles.	1M
	g)	Why complete balancing is not possible in reciprocating masses?	1M
	h)	Differentiate static and dynamic balancing	1M
	i)	Define critical or whirling or whipping speed of shaft.? What are the causes of critical speed?	1M
	j)	What is meant by transmissibility?	1M

PART-B

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

UNIT-I

2. A shaft fitted with a flywheel rotates at 250 r.p.m. and drives a machine. The torque of machine varies in a cyclic manner over a period of 3 revolutions. The torque rises from 750 N-m to 3000 N-m uniformly during 1/2 revolution and remains constant for the following revolution. It then falls uniformly to 750 N-m during the next 1/2 revolution and remains constant for one revolution, the cycle being repeated thereafter. Determine the power required to drive the machine and percentage fluctuation in speed, if the driving torque applied to the shaft is constant and the mass of the flywheel is 500 kg with radius of gyration of 600 mm. 12M

(OR)

3. The turning moment diagram for a multi cylinder engine has been drawn to a scale 1 mm = 600 N-m vertically and 1 mm = 3° horizontally. The intercepted areas between the output torque curve and the mean resistance line, taken in order from one end, are as follows : 12M

+ 52, – 124, + 92, – 140, + 85, – 72 and + 107 mm2, when the engine is running at a speed of 600 r.p.m. If the total fluctuation of speed is not to exceed ± 1.5% of the mean, find the necessary mass of the flywheel of radius 0.5 m.

UNIT-II

4. A governor of the Proell type has each arm 250 mm long. The pivots of the upper and lower arms are 25 mm from the axis. The central load acting on the sleeve has a mass of 25 kg and the each rotating ball has a mass of 3.2 kg. When the governor sleeve is in mid-position, the extension link of the lower arm is vertical and the radius of the path of rotation of the masses is 175 mm. The vertical height of the governor is 200 mm. If the governor speed is 160 r.p.m. when in mid-position, find : 12M

1. length of the extension link; and
2. Tension in the upper arm.

(OR)

5. a) Discuss the effect of the gyroscopic couple on a two-wheeled vehicle when taking a turn. 6M

b) Describe the Gyroscopic effect on Aero plane 6M

UNIT-III

6. A single dry plate clutch transmits 7.5 kW at 900 r.p.m. The axial pressure is limited to 0.07 N/mm2. If the coefficient of friction is 0.25, find 1. Mean radius and face width of the friction lining assuming the ratio of the mean radius to the face width as 4, and 2. Outer and inner radii of the clutch plate. 12M

(OR)

7. A simple band brake operates on a drum of 600 mm in diameter that is running at 200 r.p.m. The coefficient of friction is 0.25. The brake band has a contact of 270°, one end is fastened to a fixed pin and the other end to the brake arm 125 mm from the fixed pin. The straight brake arm is 750 mm long and placed perpendicular to the diameter that bisects the angle of contact. 12M

1. What is the pull necessary on the end of the brake arm to stop the wheel if 35 kW is being absorbed ? What is the direction for this minimum pull ?
2. What width of steel band of 2.5 mm thick is required for this brake if the maximum tensile stress is not to exceed 50 N/mm^2 ?

UNIT-IV

8. A, B, C and D are four masses carried by a rotating shaft at radii 100, 125, 200 and 150 mm respectively. The planes in which the masses revolve are spaced 600 mm apart and the mass of B, C and D are 10 kg, 5 kg, and 4 kg respectively. Find the required mass A and the relative angular settings of the four masses so that the shaft shall be in complete balance. 12M

(OR)

9. a) The reciprocating mass per cylinder in a 60° V-twin engine is 1.5 kg. The stroke and connecting rod length are 100 mm and 250 mm respectively. If the engine runs at 2500 r.p.m., determine the maximum and minimum values of the primary and secondary forces. Also find out the crank position corresponding these values. 6M

b) Describe various Effect of Partial Balancing of Reciprocating Parts of Two Cylinder Locomotives 6M

UNIT-V

10. a) Deter mine the equation of vibration of the water column in a U-Tube 6M

    b) A shaft 40 mm diameter and 2.5 m long has a mass of 15 kg per meter length. It is simply supported at the ends and carries three masses 90 kg, 140 kg and 60 kg at 0.8 m, 1.5 m and 2 m respectively from the left support. Taking E = 200 GN/m^2, find the frequency of the transverse vibrations. 6M

(OR)

11. A machine supported symmetrically on four springs has a mass of 80 kg. The mass of the reciprocating parts is 2.2 kg which move through a vertical stroke of 100 mm with simple harmonic motion. Neglecting damping, determine the combined stiffness of the springs so that the force transmitted to the foundation is 1/20th of the impressed force. The machine crank shaft rotates at 800 rpm If under actual working conditions, the damping reduces the amplitudes of successive vibrations by 30 %, find, 12M

    i. The force transmitted to the foundation at 800 rpm,
    ii. The force transmitted to the foundation at resonance, and
    iii. The amplitude of the vibrations at resonance.

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AR13

CODE: 13EC3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018

LINEAR IC APPLICATIONS
(Electronics and Communication Engineering)

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

PART-A

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

1. a) Why open loop op-amp configurations are not used in linear applications?
   b) Define input bias current of an op-amp?
   c) Draw the block schematic of op-amp?
   d) What is thermal drift?
   e) Give the relationship between input and output of a practical differentiator.
   f) List the two applications of comparator using op-amps.
   g) Which is the fastest ADC & why?
   h) Write the transfer function of 2^{nd} order high pass active filter?
   i) Define the lock range of PLL.
   j) In which mode IC555 acts as FSK generator?

PART-B

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

UNIT-I

2. a) Derive the expression for voltage gain and input resistance of a dual input, balanced output differential amplifier. 8M
   b) Explain a level translator circuit used in operational amplifier. 4M

(OR)

3. a) Explain DC coupling of cascaded differential amplifiers using relevant diagrams and necessary expressions. 8M
   b) Draw the differential amplifier circuit using BJT? 4M

UNIT-II

4. a) What are the types of frequency compensation techniques used in op-amp. Explain in detail. 8M
   b) Define the DC characteristics of op-amp. 4M

(OR)

5. a) Define the Common Mode Rejection Ratio (CMMR) and explain the significance of relatively large value of CMRR. 8M
   b) The slew rate of an op-amp is 0.6V/μs. What is the maximum undistorted sine wave that can be obtained for 10V? 4M

UNIT-III

6. a) Draw the circuit diagram of a square wave generator using 741 op-amp and derive the expression for time period of the square wave? 7M
   b) Explain the operation of high input impedance non-inverting AC amplifier? 5M

(OR)

7. a) Draw the circuit of a precision full wave rectifier and explain its operation with necessary waveforms. 6M
   b) Draw and explain the operation of inverting comparator circuit as a Schmitt trigger? 6M

UNIT-IV

8. a) Describe the characteristics of a first order low-pass Butterworth filter and write the design steps. 6M
   b) Derive the expression for transfer function of a second order low pass Butterworth filter? 6M

(OR)

9. a) Mention the various types of A/D conversion techniques and their advantages and disadvantages? 4M
   b) Draw and explain the operation of weighted resistor DAC? Also mention the limitations. 8M

UNIT-V

10. a) Explain the operation of IC 555 timer in Astable mode and mention its applications 6M
    b) Explain with a neat circuit diagram how a 555 timer can be used as linear ramp generator. 6M

(OR)

11. a) Draw the block diagram of IC 566 VCO and explain its operation. 8M
    b) Define Capture range and Lock-range of PLL. 4M

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AR13

CODE: 13CS3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018

COMPUTER NETWORKS
(Computer Science and Engineering)

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

PART-A

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

1. a) What are the components of Data Communication system?
   b) What is meant by collision free protocols? list any two.
   c) Differentiate between open loop and closed loop congestion control.
   d) What are the services provided by the Transport layer to upper-layer?
   e) Differentiate between static web document and dynamic web document.
   f) Define Network criteria?
   g) A bit string 0111101111110111110 need to be transmitted at the data link layer. What is the string actually transmitted after bit stuffing?
   h) Give the classification of IP addresses?
   i) Define multiplexing how it is used in transport layer?
   j) What is meant by Name servers.

PART-B

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

UNIT-I

2. Discuss the ISO-OSI layered model, bringout the functionalities of each layer with neat sketch. 12M

(OR)

3. a) With suitable example explain simplex, half duplex, and full-duplex communications. 6M
   b) What are the various types of network topologies? What are the implications of having different topologies. 6M

UNIT-II

4. a) What are the elementary data link protocols? Explain them with merits and demerits of each one. 12M

(OR)

5. a) What is pure ALOHA and slotted ALOHA? Mention the advantages and disadvantages? 6M
   b) Briefly describe the configuration and transfer modes of HDLC. 6M

UNIT-III

6. a) How hierarchical routing reduces the size of routing table? illustrate this with an example. 6M
   b) Briefly explain the Network layer Design issues. 6M

(OR)

7. Discuss each step of link state routing algorithm with an example. 12M

UNIT-IV

8. a) Explain Transport service premitives. 6M
   b) Discuss the protocol scenarios for releasing a connection in TCP. 6M

(OR)

9. a) Briefly explain the concept of addressing in transport layer. 6M
   b) Discuss the following with reference to transport layer. 6M
   I) Flow control II)Buffering

UNIT-V

10. a) What is the use of DNS? Explain how it works? 6M
    b) What is e-mail? Briefly discuss about the user Agent. 6M

(OR)

11. a) What is SNMP? Briefly discuss the SNMP model components. 6M
    b) What is an URL and what are its components? 6M

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AR13

CODE: 13IT3001 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Supplementary Examinations, November, 2018
COMPUTER GRAPHICS
(Information Technology)

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

PART-A

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

1. a) List the types of display devices.
   b) Write short notes on frame buffer.
   c) What is meant by normalized device co-ordinate system?
   d) Define "Line segment".
   e) What is Clipping?
   f) Give 2D Transformation matrix for Scaling.
   g) Define viewing transformation.
   h) List Different types of Perspective Projections.
   i) Define Animation.
   j) List the animation languages.

PART-B

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

UNIT-I

2. (a) Explain with neat diagram, the working of DVST. [6M]
   (b) Distinguish raster and random scan monitors? [6M]

(OR)

3. With a neat cross-sectional view explain the functioning of CRT [12 M]

UNIT-II

4. The end points of a given line are (0,0) and (6,1). Compute each value of Y as X steps from 0 to 6 sing DDA and Bresenham's algorithms and plot the resultant line. [12M]

(OR)

5 Briefly explain about inside and outside test [12M]

UNIT-III

6 Perform a 90 degrees rotation of triangle A(1,1),B(2,2) C(3,3) and D(4,4) about (2,2). [12M]

(OR)

7 (a) Explain mid-point subdivision line clipping with example [6 M]

(b) List out the various basic 2D transformations and explain with homogeneous coordinate transformation matrix representation? [6 M]

UNIT-IV

8 (a) Derive the matrix form for the Hermit interpolation [6M]

(b) . List out the various 3D basic transformations and explain? [6M]

(OR)

9 (a) What is meant by projection transformation and explain? [6M]

(b) Explain the following. [6M]

i) Parallel Projection ii) Perspective projection

UNIT-V

10 (a) Explain Scan-line algorithm for Visible surface detection [6M]

(b) Write about design of animation sequences. [6M]

(OR)

11 (a) Explain Warnock's algorithm. [6M]

(b) Describe the Z-Buffer algorithm. [6M]

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