AR13

CODE: 13CE3010 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, March-2017
BUILDING PLANNING AND DRAWING
(CIVIL ENGINEERING)

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

PART-A

Answer any THREE questions from Part-A **[3 X 14 = 42 M]**

1. a) Enumerate the types of ventilation .explain in detail various types of artificial ventilation [7M]
   b) Explain the Principles underlying building byelaws [7M]
2. Explain the characteristics of various types of residential buildings and minimum standards for different parts of buildings [14M]
3. a) Describe the principal departments and facilities to be provided in the layout of a General hospital. [7M]
   b) Explain the general requirements in the planning of a normal residential building. [7M]
4. a) [7M]

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Preceding Activity	None	A	A	B	D	D	D	B	C,E	G	F,I,J	K	H,G	M
te	5	2	6	12	10	9	5	9	1	2	3	9	7	8

Draw the PERT network for the project , find critical path and project duration

   b) Differentiate clearly between PERT and CPM methods.
5. a) Explain about English bond and sketch for one brick and one and half brick thick walls [7M]
   b) Differentiate between king post and queen post trusses. Explain in detail about king post truss with neat sketch [7M]

PART-B

Answer any **one** question from Part-B **[1x28=28M]**

UNIT-I

6. (a) Draw section and elevation of a fully paneled door. [14M]
   (b) Draw section and elevation of a fully paneled window. [14M]
7. Draw the plan, section and elevation of the given line diagram for a G+2 building. [28M]

THIRD FLOOR GROSS INTERNAL FLOOR AREA

1,755 SQ FT/163.13 SQ M

AR13

CODE: 13EE3014 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, March-2017

POWER SYSTEMS – II
(Electrical and Electronics Engineering)

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

PART-A

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

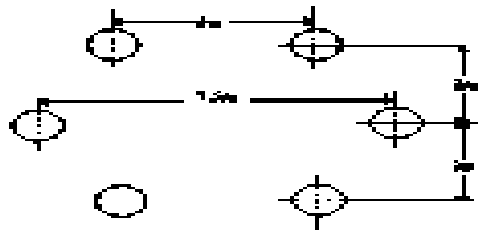
1. a) Why transmission lines are transposed?
   b) What are the factors that influence skin effect?
   c) Define voltage regulation of line.
   d) What is the significance of ABCD parameters?
   e) Give expression for velocity of propagation
   f) What is surge impedance loading?
   g) Define proximity effect?
   h) Define critical disruptive voltage?
   i) Define string efficiency?
   j) What is vertical sag?

PART-B

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

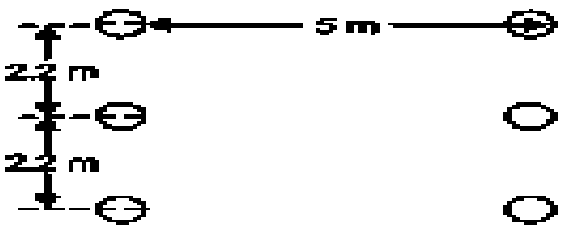
UNIT-I

2. a What are ACSR conductors? Explain the advantages of ACSR conductors. **4M**
   b Find the inductance per phase per km of double circuit 3-phase line shown in below figure. The conductors are transposed and are of radius 0·75 cm each. The phase sequence is ABC. **8M**



(OR)

3. a Why do you prefer the stranded composite conductor over the stranded conductor? **4M**
   b A 3-phase double circuit line is shown below. Radius of each conductor is 1 cm. Determine the capacitance and charging current per km assuming the line is transposed and operating voltage is 220 KV, 50 Hz **8M**



UNIT-II

4. a Derive the expression for voltage regulation of medium transmission line if the line is represented by nominal-T. **6M**

b A 50Hz, 3-phase transmission line is 200km long. It has a total series impedance of 35+j140 ohms and a shunt admittance of $j930x10^{-6}$ S. It delivers 40MW at 220kV, with 0.9 power factor lagging. Find the losses, efficiency and voltage regulation by nominal-π method. **6M**

(OR)

5. a Obtain A, B, C and D constants for medium transmission line represented by nominal-π. **6M**

b A (medium) single phase transmission line 100km long has the following constants: **6M**
Resistance/km = 0.25 ohm
Reactance/km = 0.8 ohm
Susceptance/km = 14×10−6 mho
Receiving end line voltage = 66k V
Assume that the total capacitance of the line is localized at the centre of the line. Determine (a) the sending end current (b) the sending end voltage (c) regulation and (d) supply power factor. The line is delivering 15000kW at 0.8 power factor lagging.

UNIT-III

6. a State the properties of the transmission line terminated by surge impedance loading? **4M**

b Given a transmission line described by a total series impedance Z=zl=20+j80 and a total shunt admittance Y= yl=j0.5 milli mhos. **8M**
Find Zc, γl, $e^{\gamma l}$, sinh γl and cosh γl and ABCD parameters

(OR)

7. a Draw the nominal –T equivalent of long transmission line. **6M**

b A 3-φ transmission line 200 km long has the following constants : **6M**
Resistance/phase/km = 0·16 Ω
Reactance/phase/km = 0·25 Ω
Shunt admittance/phase/km = $1{\cdot}5 \times 10^{-6}$ S
Calculate by rigorous method the sending end voltage and current when the line is delivering a load of 20 MW at 0·8 p.f. lagging. The receiving end voltage is kept constant at 110 kV.

UNIT-IV

8.	a	Calculate the reflection coefficient for a line terminated by i) open circuit ii) short circuit	**6M**
	b	Estimate the corona loss for a three-phase, 110 kV, 50 Hz, 150 km long transmission line consisting of three conductors each of 10 mm diameter and spaced 2·5 m apart in an equilateral triangle formation. The temperature of air is 30ºC and the atmospheric pressure is 750 mm of mercury. Take irregularity factor as 0·85. Ionisation of air may be assumed to take place at a maximum voltage gradient of 30 kV/cm.	**6M**

(OR)

9.	a	Mention the methods of reducing corona effect.	**4M**
	b	A 200-Km transmission line has the following parameters at 60 Hz: Resistance r = 0.2 1 D /KM per phase Series reactance x = 0.78 D/KM per phase Shunt susceptance b = 5.42 X 1 0 - 6 siemen per phase Determine the attenuation constant , wavelength, and the velocity of propagation of the line at 60 Hz.	**8M**

UNIT-V

10.	a	Give the reason for the sag in the transmission line?	**4M**
	b	A string of 5 insulators is connected across three phase, 100kV line. If the self-capacitance of each unit is equal to 5 times pin to earth capacitance. Calculate the potential difference across each unit and string efficiency.	**8M**

(OR)

11.	a	How do you improve the string efficiency of insulators?	**6M**
	b	An overhead transmission line at a river crossing is supported from two towers at a height of 30 m and 70 m above water level. The horizontal distance between the towers is 250 m. If the required clearance between the conductor and the water midway between the towers is 45 m and the weight of the conductor is 0.8 kg/m. Evaluate the tension in the conductor.	**6M**

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AR13

CODE: 13ME3013 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, March-2017

DYNAMICS OF MACHINERY
(Mechanical Engineering)

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

PART-A

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

1. a) What is static force analysis?
   b) What do you mean by inertia force?
   c) Explain sensitiveness and hunting?
   d) Define spinning, precession and gyroscopic axes?
   e) Explain what is uniform pressure and wear?
   f) Enumerate clutches?
   g) Draw simple band brake.
   h) Explain transmission type dynamometer?
   i) How do you balance single rotating mass?
   j) Explain different types of vibrations?

PART-B

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

UNIT-I

2. **a** What is mean by piston and crank efforts? **2M**
   b Find a relation for the coefficient of fluctuation of speed in terms of maximum fluctuation of energy and the kinetic energy of the flywheel at mean speed. **10M**

(OR)

3. **a** What is a flywheel? What is its use? **2M**
   b The length of the connecting rod of a gas engine is 500mm and its centre gravity lies at 160mm from the crank pin centre. The rod as a mass of 80kg and a radius of gyration of 180mm about an axis through the centre of the mass. The stroke of piston is 220mm and the crank speed is 300rpm. Determine the inertia force on the crank shaft when the crank has turned 130^0 from the inner dead centre. **10M**

UNIT-II

4. a How do you classify governors? **2M**
   b The following particulars refer to a proell governor with open arms. **10M**
   Length of all arms = 200mm. Distance of pivot arms from the axis of rotation 40mm. Length of extension of lower arms to which each ball is attached = 100mm. mass of each ball 6kg. mass of central load 150 kg. radius of rotation of balls 180mm. when the arms inclined at an angle 40^0 to the axis of rotation. Find the equilibrium speed for each above configuration.

(OR)

5.	**a**	What do you mean by gyroscopic couple?	**2M**
	b	Each road wheel of a motorcycle is of 600 mm diameter and has a moment of inertia of 1.1 kg.m^2. The motorcycle and the rider together weigh 220 kg and the combined centre of mass is 620mm above the ground level when the motorcycle is upright. The moment of inertia of the rotating parts of the engine is 0.18 kg-m^2. The engine rotates at 4.5 times the speed of road wheels in the same sense. Find the angle of heel necessary when the motor-cycle is taking a turn of 35m radius at a speed of 72 km/h.	**10M**

UNIT-III

6.	a	Define the terms coefficient of friction and limiting angle of frictions?	**2M**
	b	A plain collar type thrust bearing having inner and outer diameters of 200mm and 450 mm is subjected to an axial thrust 40 KN. Assuming coefficient of friction between the thrust surfaces as 0.025, find the power absorbed in overcoming friction at a speed of 120 rpm. The rate of wear is considered to be proportional to the pressure and rubbing speed?	**10M**

(OR)

7.	**a**	How do you classify dynamometers? Describe any one dynamometer with the help of sketch?	**6M**
	b	A multiple disc clutch has 6 active friction surfaces. The power transmitted is 20KW at 400 rpm. Inner and outer radii of the friction surface are 90 and 120mm respectively. Assuming uniform wear with a coefficient of friction 0.3 Find the maximum axial intensity of pressure between the discs?	**6M**

UNIT-IV

8.	a	Explain the method of balancing of different masses revolving in the different planes?	**4M**
	b	Four masses m_1 m_2, m_3 and m_4 are 200 kg, 300 kg, 240 kg and 260 kg respectively. The corresponding radii of rotation are 0.2 m, 0.15 m, 0.25 m and 0.3 m respectively and the angles between successive masses are 45°, 75° and 135°. Find the position and magnitude of the balance mass required, if its radius of rotation is 0.2 m.	**8M**

(OR)

9.	**a**	What do you mean by hammer blow?	**2M**
	b	A single cylinder reciprocating engine has speed 240 r.p.m., stroke 300 mm, mass of reciprocating parts 50 kg, mass of revolving parts at 150 mm radius 37 kg. If two-third of the reciprocating parts and all the revolving parts are to be balanced, find: 1. The balance mass required at a radius of 400 mm, and 2. The residual unbalanced force when the crank has rotated 60° from top dead centre.	**10M**

UNIT-V

10.	a	What are free, damped and forced vibrations? Explain.	**6M**
	b	A cantilever shaft 50 mm diameter and 300 mm long has a disc of mass 100 kg at its free end. The Young's modulus for the shaft material is 200 GN/m^2. Determine the frequency of longitudinal and transverse vibrations of the shaft.	**6M**

(OR)

11.	**a**	Distinguish between longitudinal, transverse and torsional vibrations?	**6M**
	b	A flywheel is mounted on a vertical shaft as shown in Fig 24.2. The both ends of a shaft are fixed and its diameter is 50 mm. The flywheel has a mass of 500 kg and its radius of gyration is 0.5 m. Find the natural frequency of torsional vibrations, if the modulus of rigidity for the shaft material is 80 GN/m .	**6M**

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CODE: 13EC3012 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, March-2017

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) Define an operational amplifier?
   b) In open loop mode, the output of an inverting op-amp is____
   c) Summing Amplifier amplifies ____
   d) Define bandwidth of high pass filter?
   e) Slew rate of an ideal op-amp is_____.
   f) Mono stable operation using IC 555 is also called _____
   g) Define analog switches?
   h) _____ Amplifier can be used as a buffer.
   i) Ideal op-amp has an input impedance_____
   j) _____ Number of comparators is required for n-bit flash type ADC.

PART-B

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

UNIT-I

2. Explain in detail about DC and AC analysis of dual input, balanced output differential amplifiers. [12M]

(OR)

3. (a) Write short notes on current mirror. [6M]
   (b) Explain about Cascade differential amplifier stages [6M]

UNIT-II

4. (a) With neat diagram explain the block diagram of an op-amp. [6M]
   (b) Explain about DC characteristics of an op-amp. [6M]

(OR)

5. Explain about
   (a) Ideal and practical characteristics of an op-amp [6M]
   (b) pole-zero compensation [6M]

AR13

CODE: 13EC3012 **SET-1**

UNIT-III

6. (a) With neat diagram explain about differentiator circuit using IC 741. [6M]
   (b) Derive the output voltage expression for non-inverting summing amplifier. [6M]

(OR)

7. Explain the operation of Log and Anti log amplifier using IC 741. [12M]

UNIT-IV

8. Design a 1^{st} order LPF, HPF using op-amp and derive transfer function. [12M]

(OR)

9. Explain in detail about Successive approximation and counter type ADC. [12M]

UNIT-V

10. Explain the operation of Schmitt trigger using IC 555 and IC 741. [12M]

(OR)

11. Explain about any three applications of PLL using IC 565. [12M]

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AR13

CODE: 13HS3006 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Supplementary Examinations, March-2017
INDUSTRIAL MANAGEMENT SCIENCE
(Common TO CSE & IT)

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

PART-A

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

1. a) Define management
   b) Define Theory X
   c) What is disadvantage of partnership
   d) What is accounting rate of return
   e) Define managerial economics
   f) What is expert opinion method
   g) Define isoquant
   h) Define explicit cost
   i) Define market
   j) What is monopolistic competition

PART-B

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

UNIT-I

2. Explain Taylor scientific management theory in detail **12**

(OR)

3. Discuss the leadership styles with examples which Indian managers follow. **12**

UNIT-II

4. Distinguish between the Joint Stock Company and Partnership. **12**

(OR)

5. What are the merits and limitations of Pay Back Period? How does Discounting approach overcome the limitations of Pay back method? **12**

UNIT-III

6. What are the possible approaches to forecasting demand for new products? Illustrate all the methods of demand forecasting **12**

(OR)

7. What is meant by 'Elasticity of Demand'? How do you measure it? What is cross Elasticity of Demand? Explain **12**

UNIT-IV

8. Discuss the role and importance of cost analysis in managerial decisions. **12**

(OR)

9. a) State and explain Break-Even analysis and explain its importance. **6**
   b) What are its limitations? Use suitable diagrams. **6**

UNIT-V

10. a)What is perfect competition? What are its features? **6**
    b) How is market price determined under conditions of Perfect Market Competition? **6**

(OR)

11. a)Explain the features of Monopoly. **6**
    b) How can a Monopolist attain equilibrium position under conditions of monopoly? **6**

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