AR13

CODE: 13CE3010 **SET-I**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular / Supplementary Examinations, November-2016
BUILDING PLANNING AND DRAWING
(Civil Engineering)

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

PART-A

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

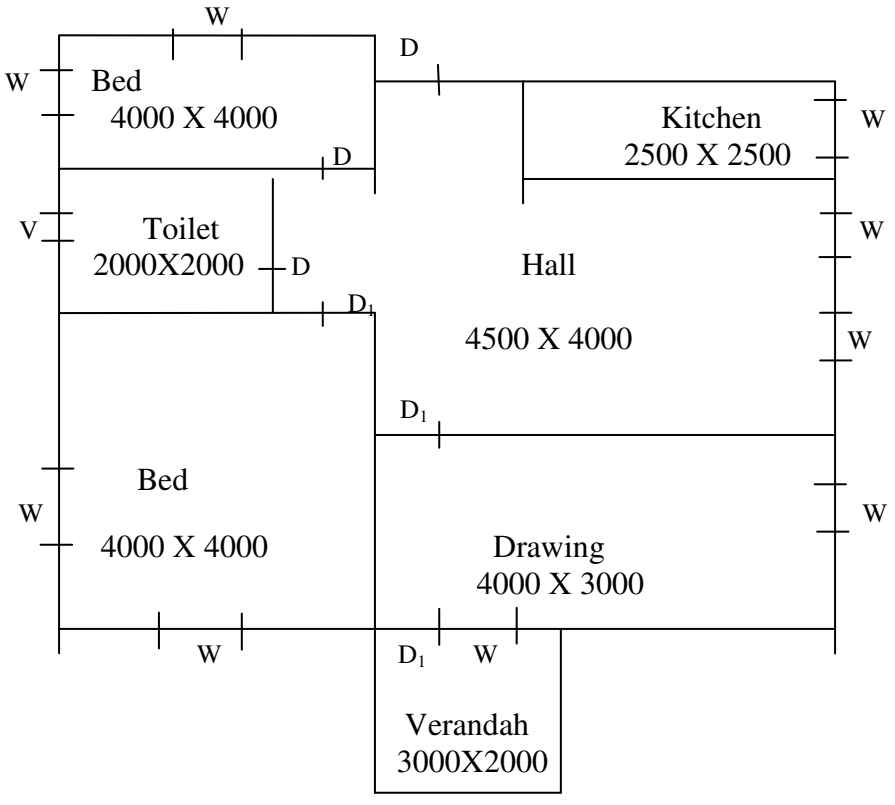
1. a) What are the objectives of building bye laws and explain the necessity of these laws? [7M]
   b) Give the classification of bye buildings and explain the open space requirements [7M]
2. Give the requirements of different rooms and their grouping in a residential building [14M]
3. a) Write the importance and necessity in planning of office building. [7M]
   b) Write the importance and necessity in planning of banks? [7M]
4. What do you understand about the planning of construction project and explain scheduling of bar charts. [14M]
5. a) Explain the lighting and ventilation requirements and give the built up area limitations. [7M]
   b) Explain the consideration of Height of buildings in accordance with building bye-laws? [7M]

PART-B

Answer any one question Part-B **[1X28=28M]**

UNIT-I

6. (a) Draw the sign conventions of brick, sand filling, steel, glass, timber and concrete? [8M]
   (b) Draw the plan and elevation of the given line diagram? [20M]
7. Draw the plan, section and elevation of the given line diagram? [28M]



REFERENCE:

D: 1000 X 2100

W: 1200 X 1400

V: 900 X 500

AR13

CODE: 13EE3014 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Regular / Supplementary Examinations, November-2016

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) What are the advantages of bundled conductors?
   b) Define GMD and GMR
   c) What is the effect of increased tower height on the capacitance of a line?
   d) What is the difference between nominal T and nominal π method
   e) How transmission lines are classified
   f) Give the expression for capacitance of a 3 Phase Transposed line.
   g) What are the ABCD Parameters of Short Transmission lines?
   h) What is meant by Ferranti effect?
   i) What is the use of stringing chart
   j) Why insulators are used in overhead lines?

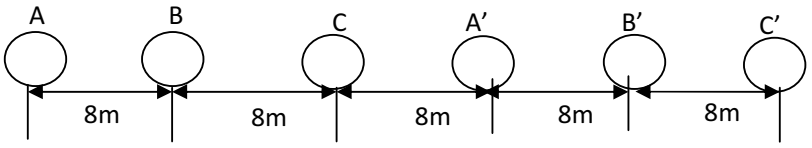
PART-B

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

UNIT-I

2. a Explain the concept of self GMD and mutual GMD for evaluating inductance of transmission lines. **4M**

   b Calculate the inductance per phase for a three phase double circuit line whose phase conductors have a radius of 5.3 cm with horizontal conductor arrangement as shown fig. **8M**



(OR)

3. a Explain the effect of earth on capacitance of transmission line? **4M**
   b A 400 KV three phase bundled conductor line is shown in the below figure. Find the capacitive reactance to neutral in Ω/km at 50 Hz. Radius of each conductor is 1 cm. **8M**

UNIT-II

4. a Express A,B,C and D constants for medium transmission line if the line is represented by nominal-Π. **4M**

   b A three phase short transmission line delivers 3500kW at a 0.8 p.f lagging to a inductive load in industry having resistance 2 Ω and reactance 6 Ω of each conductor. If the industry required sending end voltage as 33kV, then determine i). Receiving end voltage ii). Line current iii). Transmission efficiency. **8M**

(OR)

5. a Why is receiving end voltage higher than sending end voltage under no-load condition? What this phenomenon is known? **4M**

   b A balanced three phase load of 30 MW is supplied at 132 kV, 50Hz and 0.85 p.f lag by means of a transmission line. The series impedance of a single conductor is (20+j52) ohms and the total phase to neutral admittance is 315 X 10^{-6} Siemens. Using nominal T method, determine:
   (i) A,B,C and D constants of the line (ii) sending end voltage (iii) regulation of the line. **8M**

UNIT-III

6. a Obtain the Nominal-T representation of long line. **4M**

   b A long Transmission line has resistance of 63.5Ω and reactance per phase of 167 Ω and capacitive susceptance to neutral is 1.1milli mhos. Calculate the ABCD Constants. **8M**

(OR)

7. a Express A,B,C and D constants for long transmission line. **4M**

   b A 60-Hz, 230-km, three-phase overhead transmission long line has a series impedance z=0.8431∟ 79.04 Ω/km and a shunt admittance y= 5.105 x 10^{-6} ∟ 90 S/km. The load at the receiving end is 125 MW at unity power factor and at 215 kV. Determine the voltage, current, real and reactive power at the sending end and the percent voltage regulation of the line. Also find the wavelength and velocity of propagation of the line **8M**

UNIT-IV

8. a What is Ferranti effect? What is its effect on the regulation of transmission line? **4M**

   b A single circuit 50Hz three phase transmission line has the following parameters/km:- **8M**
   R=0.2Ω, L= 1.3mH and C=0.01μF.
   The voltage at the receiving end is 132kV. If the line is open at the receiving end, find the rms value and phase angle of the following:-
   (i) the incident and reflected voltages to neutral at the receiving end
   (ii) the incident and reflected voltages to neutral at 120km from the receiving end.

(OR)

9.	a	Mention the methods of reducing corona effect.	**4M**
	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.	**8M**

UNIT-V

10.	a	Write an approximate expression for sag in overhead lines when (i) supports are at equal levels (ii) supports are at unequal levels.	**4M**
	b	A string of four suspension insulators is to be graded to obtain uniform distribution of voltage across the string. If the capacitance to ground of each unit is 10% of the capacitance of the top unit, determine the capacitance of the remaining three units.	**8M**

(OR)

11.	a	What causes the string efficiency to be less than 100% with a suitable example? Discuss any two methods to increase the value of string efficiency.	**4M**
	b	A transmission line conductor at a river crossing is supported from two towers at heights of 30m and 90 m above water. The horizontal distance between the towers is 500m. If the tension in the conductor is 1600 kg, find the clearance between the conductor and water at a point mid way between the towers weight of conductor per meter is 1.5 kg. Assume that the conductor takes the shape of parabolic curve.	**8M**

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AR13 SET-2

CODE: 13ME3013

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech I Semester Regular / Supplementary Examinations, November-2016

DYNAMICS OF MACHINERY
(Mechanical Engineering)

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

PART-A

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

1. a) Define the superposition theorem as applicable to system of forces acting on a mechanism.
   b) What do you mean by a dynamically equivalent system? Explain briefly.
   c) Define Isochronism. Mention the condition for Isochronism
   d) Analyze the gyroscopic effect of a naval ship during its pitching
   e) What are the laws of solid dry friction
   f) Show the schematic of a centrifugal clutch
   g) Show the working principle of a shoe brake with a simple sketch
   h) Define the following: Swaying couple and Tractive effort.
   i) What is logarithmic decrement? Derive an expression for it
   j) Explain the concept of whirling of shafts with the help of a simple sketch.

PART-B

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

UNIT-I

2. In a vertical double-acting steam engine, the connecting rod is 4.5 times the crank. The weight of the reciprocating parts is 120 kg, and the stroke of the piston is 440 mm. The engine runs at 250 rpm. If the net load on the piston due to the steam pressure is 25 kN when the crank has turned through an angle of 120^0 from the top dead centre, determine (i) thrust in the connecting rod, (ii) pressure in the slide bars, (iii) tangential force on the crank pin, (iv) thrust on bearings, (v) turning moment on the crank shaft

(OR)

3. A certain machine requires a torque of (1500 + 200 sin2θ) N-m to drive it. Where, θ is the angle of rotation of shaft. The machine is directly coupled to an engine that produces a torque of (1500 + 800 sin2θ) N-m. The flywheel and other rotating parts attached to the engine have a mass of 300 kg at radius of gyration of 200 mm. If the mean speed is 200 rpm, find (i) fluctuation of energy, (ii) total percentage fluctuation of speed, (iii) maximum and minimum angular acceleration of the flywheel and the corresponding shaft positions.

UNIT-II

4. In a spring controlled governor of Hartung type, the lengths of the horizontal and vertical arms of the bell crank levers are 100 mm and 80 mm respectively. The fulcrum of the bell crank lever is at a distance of 120 mm from the axis of the governor, The each revolving mass is 9 kg. The stiffness of the spring is 25 kN/m. If the length of each spring is 120 mm when the radius of rotation is 70 mm and the equilibrium speed is 360 rpm, find the free length of the spring. If the radius of rotation increases to 140 mm, what will be the corresponding percentage increase in speed?

(OR)

5 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 stern. The radius of gyration of the rotor is 0.45 m. Determine the gyroscopic effect when (i) the ship steers to the left in a curve of 60 m radius at a speed of 1.86 km/h. (ii) the ship pitches 7.5 degrees in both above and below from normal position and the bow is descending with its maximum velocity, and the pitching motion is simple harmonic with a periodic time of 18 sec. (iii) the ship rolls and at that instant, its angular velocity is 0.035 rad/sec counterclockwise when viewed from the stern.

UNIT-III

6 A multiple disc clutch has six active friction surfaces. The power transmitted is 20 kW at 400 rpm. Inner and outer radii of the friction surfaces are 90 mm and 120 mm respectively. Assuming uniform wear with a coefficient of friction 0.3, find the maximum axial intensity of pressure between the discs.

(OR)

7 A band brake acts on the 3/4th of circumference of a drum of 450 mm diameter which is keyed to the shaft. The band brake provides a braking torque of 225 N-m. One end of the band is attached to a fulcrum pin of the lever and the other end to a pin 100 mm from the fulcrum. If the operating force is applied at 500 mm from the fulcrum and the coefficient of friction is 0.25, find the operating force when the drum rotates in the **(a)** anticlockwise direction, and **(b)** clockwise direction.

UNIT-IV

8 Four masses P, Q, R and S are completely balanced. Masses R and S make angles of 90^0 and 195^0 respectively with that of mass Q in the counter clockwise direction. The rotating masses have the following properties: m_Q=25 kg, m_R=40 kg, m_S=35 kg, r_P= 15 cm, r_Q= 20cm, r_R= 10 cm, r_S= 180 mm. If the planes of Q and R are 25 cm apart, Determine (i) mass P and its angular position with that of the mass Q. (ii) position of all the planes relative to the plane of mass P.

(OR)

9 Each crank of a four-cylinder vertical engine is 225 mm. The reciprocating masses of the first, second and the fourth cranks are 100 kg, 120 kg and 100 kg respectively. The planes of rotation are 600 mm, 300 mm and 300 mm from the plane of rotation of the third crank. Determine the mass of the reciprocating parts of the third cylinder and the relative angular positions of the cranks if the engine is in complete primary balance.

UNIT-V

10 A shaft of 80 mm diameter and 5 m length has a mass of 30 kg per meter length. It is simply supported at the ends and carries three masses of 150 kg, 200 kg, and 100 kg at 1.6 m, 3 m and 4 m respectively from the left support. Taking E=200GN/m^2, find the frequency of the transverse vibrations.

(OR)

11 A 1.2 m long shaft has a diameter of 45 mm for half the length and 60 mm for the remaining length. One end of the shaft is fixed and the other carries a rotor of 200 kg mass with a radius of gyration of 45 mm. Find the frequency of free torsional vibration neglecting the inertia of the shaft. Take G= 84 GN/m^2.

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AR13

CODE: 13EC3012 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech I Semester Regular / Supplementary Examinations, November-2016

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) Discuss Integrators are preferred over Differentiators in operational amplifiers
   b) Give the applications of the op-amp comparator
   c) Determine the CMRR of opamp with Ad of 500 and Ac of 50
   d) Relate input and output voltage with gain in non inverting mode of –ve feedback op-amp
   e) What is the purpose of control voltage terminal in 555 timer
   f) What is the purpose of instrumentation amplifier
   g) Which gate can be used as digital phase detector
   h) An 8bit DAC has an output voltage range of 0-2.55V. Find its resolution
   i) Define PSRR
   j) Predict the output wave form in Ideal differentiator circuit, if a triangular input is applied

PART-B

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

UNIT-I

2. a) For a differential amplifier determine voltage gain, i/p and o/p impedance if Rc=3.3kΩ, Rin=150Ω, RE=8.2kΩ, Vcc=12V, VEE=-12V, β=100, hie=2.8kΩ. **6M**
   b) Explain about DC coupling and cascade differential amplifier stages **6M**

(OR)

3. a) Derive the expression for voltage gain, input resistance and output resistance for dual input and balanced output differential amplifier using AC analysis **10M**
   b) Explain the significance of level translator in op-amp **2M**

UNIT-II

4. a) Provide DC and AC characteristics of Op-Amp **8M**
   b) What is meant by slew rate and how it can be improved in op amp **4M**

(OR)

5. a) Discuss different methods to improve CMRR in an Operational Amplifier **6M**
   b) Provide different frequency compensation techniques in op-amp **6M**

AR13

CODE: 13EC3012 SET-2

UNIT-III

6.	a)	Provide V-I and I-V converters using op amp and give the applications	**6M**
	b)	Design an adder circuit using an op-amp to get the output expression as Vout= -(V1+10V2+100V3) where v1,v2 and v3 are inputs. Given that Rf=100 Kohms.	**6M**
		(OR)	
7.	a)	What are the drawbacks present in Ideal differentiator Opamp Circuit? How to overcome these drawbacks, explain with the help of neat circuit diagram	**8M**
	b)	For an inverting and non inverting operational amplifier , the gain required is 61. If R1=1 KOhm then determine the value of RF.	**4M**

UNIT-IV

8.	a)	Explain the operation of Successive approximation A/D converter	**6M**
	b)	Give the specifications of ADC 574	**6M**
		(OR)	
9.	a)	Explain the operation of counter type ADC	**6M**
	b)	Design a wide band-pass filter with the following specifications f_L= 200Hz, f_H = 1kHz and a pass band gain = 4.	**6M**

UNIT-V

10.	a)	Discuss various applications of Monostable multivibrator using 555 timer	**6M**
	b)	Explain the operation of the Schmitt trigger circuit using 555 timer	**6M**
		(OR)	
11.	a)	Give the applications of analog switches and multiplexers	**6M**
	b)	Explain the operation of balanced modulator	**6M**

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AR13

CODE: 13HS3006 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech I Semester Regular / Supplementary Examinations, November-2016
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 Planning
   b) What is The Importance of Motivation?
   c) Define the Partnership
   d) What is Working Capital?
   e) Define Managerial Economics
   f)What is Law of Demand?
   g) Define Breakeven-point
   h) Define Price elasticity of demand
   i) Define Monopoly
   j) What is Equilibrium price?

PART-B

Answer one question from each unit **[5X12=60 M]**

UNIT-I

2. Describe modern principle of management. [12M]

(OR)

3. a)Explain briefly various functions of management. [6M]
   b) What is the importance of motivation? [6M]

UNIT-II

4. Define Business enterprise. Explain the various types of business enterprise. [12M]

(OR)

5. A company is evaluating two projects for investments and whose each cash flows are as follows

Project	YEARS				
	0	1	2	3	4
A	(Rs.10,000)	Rs.3000	Rs.3000	Rs.7000	Rs.6000
B	(Rs.10,000)	Rs.6000	Rs.6000	Rs.3000	Rs.3000

Compare the present worth of 'A' with the present worth of B for i=15% which have higher valve. [12M]

UNIT-III

6. a)What are the types of demand? [6M]
   b) Explain the demand function. [6M]

(OR)

7. What is demand forecasting? Explain the various methods of demand forecasting. [12M]

UNIT-IV

8. a)What is ISO quant curve? [6M]
b)Explain production function [6M]

(OR)

9. a) Explain fixed and variable cost concepts with diagrams. [6M]
   b) What are the managerial uses and the limitations of breakeven analysis? [6M]

UNIT-V

10. Distinguish between monopoly and perfect competition. [12M]

(OR)

11 a) What are the different market structure? [6M]
b) Distinguish between market price and normal price. [6M]

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