K S R M College of Engineering (Autonomous), KADAPA – 516 003
B. Tech IV Semester Regular Examinations, (R18) Model Question Paper- 2020
Sub: Engineering Geology (Civil Engineering)

Time: 03:00 Hrs. **Max. Marks: 70**

Note: Answer All Questions. All questions carry equal marks

Q No	UNIT – I	Marks
1	(a) Define Geology? Describe Various Branches of Geology and their importance in Civil Engineering Field. (b) A Brief note on Scope of Geology	8 6
	(Or)	
2	Define Weathering? Explain with neat sketches Weathering of Rock.	14
	UNIT – II	
3	(a) What is the Classification of Minerals? (b) Write the following physical properties of Minerals? (a) Mica (b) Hematite	7 7
	(Or)	
4	Write an Essay Physical Properties of minerals for Identification.	14
	UNIT – III	
5	(a) Explain briefly about Formation of Igneous Rocks? (b) Describe the following Rocks Physical characteristics (a) Basalt (b) Conglomerate	7 7
	(Or)	
6	Write an essay with neat sketches Textures of Igneous Rocks	14
	UNIT – IV	
7	Difference between dip & Strike? Explain with neat sketches Classification of Fold?	14
	(Or)	
8	(a) What are the causes of Rocks Deformations (b) Enumerate How to Recognize Fault? What are the classifications of Faults?	4 10
	UNIT - V	
9	Write an Essay Earthquake?	14

	(Or)	
10	(a) What are the Geological considerations of selection of Dams? (b) Application of Dams.	8 6

K S R M College of Engineering (Autonomous), KADAPA – 516 003
B. Tech IV Semester Regular Examinations, Model Paper, (R18)
2020 Sub: Fluid Mechanics
(Civil Engineering)

Time: 03:00 Hrs. **Max. Marks: 70**

Note: Answer All Questions. All questions carry equal marks

	UNIT – I	
1	(a) List of the properties of fluids and explain in brief. (b) Explain the phenomenon of capillarity obtain an expression for capillary rise of a liquid	7m 7m
	(Or)	
2	State and prove Newton's law of viscosity. Explain the effects of temperature and pressure on viscosity	14m
	UNIT – II	
3	(a) Explain the different methods of measuring pressure devices (b) State and prove the pascal"s law	7m 7m
	(Or)	
4	Derive an expression for hydrostatic force and centre of pressure for inclined plane surface	14m
	UNIT – III	
5	(a) Explain types of flows (b) Define stream function and velocity potential function and write short notes on flow net	7m 7m
	(Or)	
6	(a) Define the rate of flow and derive the continuity equation	7m

	(b) A 30cm diameter pipe conveying water, branches in to two pipes of diameters 20cm and 15cm respectively. If the average velocity in 30cm diameter pipe is 2.5m/s, find the discharge in this pipe and also determine the velocity in 15cm pipe. If the average velocity in 20cm dia pipe is 2m/s	7m
	UNIT – IV	
7	Derive the equation of Bernoulin's equation for stream line and from Eullar's equation and write the applications of bernoulli's and its principles	14m
	(Or)	
8	A 45º reducing bend is connected to a pipe line the diameter at inlet and outlet of the bend 600mm and 300mm respectively find the force excerted by the water on the bed. If the intensity of pressure at inlet to the bend is $8.829X10^4$ N/m^2 and the rate of flow of water is 600 lit/sec	14m
	UNIT - V	
9	(a) Define the Dimensionless numbers and their types. Brief explanation about their types (b) Water is flowing through a pipe of diameter 30cm at a velocity of 4m/s. Find the velocity of oil flowing in another pipe of diameter 10cm, if the condition of dynamic similarity is satisfied between the two pipes. The viscosity of water and oil is given as 0.01 poise and 0.025 poise. The specific gravity of oil = 0.8.	7m 7m
	(Or)	
10	Derive the Buckingham's π – theorem	14m

K S R M College of Engineering (Autonomous), KADAPA – 516 003
B. Tech IV Semester Regular Examinations, (R18)Model Paper, 2020
Sub: SOLID MECHANICS-1
(Civil Engineering)

Time: 03:00 Hrs. **Max. Marks: 70**

Note: Answer All Questions. All questions carry equal marks

	UNIT – I	
1	Find the young's modulus of a rod of diameter 30mm and of length 3000mm which is subjected to a tensile load of 60kN and the extension of the rod is equal to 0.4mm.	14
	(Or)	
2	Derive an expression for volumetric strain for a rectangular bar which is subjected to three mutually perpendicular tensile stress.	14
	UNIT – II	
3	(a)What are the different types of beams? Differentiate between overhanging and simply supported beam. (b)Draw the S.F and B.M diagrams for simply supported beam of length L carrying a point load W at its middle point.	7 7
	(Or)	
4	A simply supported beam of length 8m carries point loads of 4kN and 6kN at a distance of 2m and 4m from the left end . Draw the S.F and B.M diagrams for the beam.	14
	UNIT – III	
5	(a) What do you mean by simple bending or pure bending? What are the	7

	assumptions made in the theory of simple bending? (b) Define the term: bending stress in a beam ,neutral axis and sectional modulus	7
	(Or)	
6	A steel plate of width 60mm and of thickness 10mm is bent in to a circular arc of radius 10m. Determine the maximum stress induced and the bending moment which will produce the maximum stress .Take $E=2X10^5$ N/mm^2.	7 7
	UNIT – IV	
7	Find an expression for deflection at any section of a simply supported beam with an eccentric point load .using Macaulay's method.	14
	(Or)	
8	A wooden beam 4m long ,simply supported at its ends , is carrying a point load of 7.25 kN at its centre .The cross section of the beam is 140mm wide and 240mm deep. If E for the beam $=6x10^3$, find the deflection at the centre.	14
	UNIT - V	
9	(a) Define the term: Torsion , torsional rigidity and polar moment of inertia. (b) A solid shaft of 20mm diameter is used to transmit torque. Find the maximum torque transmitted by the shaft if the maximum shear stress induced in the shafts is 150 N/mm^2	7
	(Or)	
10	Derive an expression for the shear stress produced in a circular shaft which is subjected torsion. What are the assumptions made in the derivation?	14

K S R M College of Engineering (Autonomous), KADAPA – 516 003
B.Tech IV Semester (R18) Regular Examinations, Model Paper, 2020
Sub: DISASTER PREPAREDNESS AND PLANNING MANAGEMENT
(Civil Engineering)

Time: 03:00 Hrs. **Max. Marks: 70**

Note: Answer All Questions. All questions carry equal marks

	UNIT – I	
1	a.) Define Hazard and Disaster?	7
	b.) Define Vulnerability and risks severity.	7
	(Or)	
2	Illustrate the classification of disasters	14
	UNIT – II	
3	Write a note on manmade landslides. State the mitigation measures at the time of landslides.	14
	(Or)	
4	Write short notes on i). cyclones ii). Floods iii). Drought iv). soil erosion	14
	UNIT – III	
5	(a) Explain briefly about impacts of transportation accidents? (b) Explain about volcanic types based on shape?	7 7
	(Or)	
6	Discuss the hazard and vulnerability profile of India.	14

	UNIT – IV	
7	Explain briefly about Disaster management cycle?	14
	(Or)	
8	Discuss the Post-disaster environmental response?	7 7
	UNIT - V	
9	Explain aboutRoles and responsibilities of government, community, local institutions, NGOs and other stakeholders.?	14
	(Or)	
10	What are Policies and legislation for disaster risk reduction?	14

KSRM COLLEGE OF ENGINEERING, KADAPA
(AUTONOMOUS)
B.TECH VI SEM SEMESTER EXAMS OF APRIL 2020
SUB: ELECTRICAL MEASUREMENTS

Time:20 Min Max. Marks: 70

Unit-I

1(a) Describe the construction and working of PMMC instrument. Derive the equation for deflection if the instrument is spring control. 10 M

1(b) A 2mA meter with an internal resistance of 100 ohms is to be converted to (0-150)mA ammeter .Calculate the value of the shunt resistance. 4M

OR

2(a) The law of deflection of moving iron ammeter is given by I=4 ampere where θ is the deflection in radian and n is a constant. The self –inductance when the meter current is zero is10mH.The spring constant is 0.16N-m/rad.

(i) Determine an expression for self-induction of the meter as a function of θ and n.

(ii) With n=0.75 Calculate the meter current and the deflection that corresponds to a self –inductance of

60mH. 7M

2(b) Explain in detail about Repulsion type moving iron Instrument. 7M

Unit-II

3(a) Derive the deflecting torque expression of single phase dynamometer wattmeter. 8M

3(b) An electro dynamic wattmeter is rated at 10A and 100V will full scale reading of 1000W .The inductive of voltage circuit is 5mH and its resistance is 2000 ohms .If the voltage drop across the current coil of the wattmeter is negligible ,What is the error in the wattmeter at the rated VA rating with zero power factor the supply frequency is 50Hz. 6M

OR

4. Explain the construction & working of single phase dynamometer power factor meter. 14M

Unit-III

5. Draw the Kelvin's double bridge circuit and explain the measurement of low resistance using this bridge. 14M

OR

6. Explain about the Maxwell's Bridge for both inductance and capacitance comparison. 14M

Unit-IV

7.Draw neat connection diagram for measuring high voltage and high current with the help of potential transformer and current transformer. What purpose do they serve? 14M

OR

8(a). Describe the construction and working of a polar type ac potentiometer. 7M

8(b) Draw the diagram and explain the operation of DC Crompton's potentiometer. 7M

Unit-V

9(a) Explain about the block diagram of Cathode Ray oscilloscope 10M

9(b) Describe how to measure phase by using lissajous patterns 4M

OR

10.Explain about the ramp and integrating type of digital voltmeters 14M

K.S.R.M COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

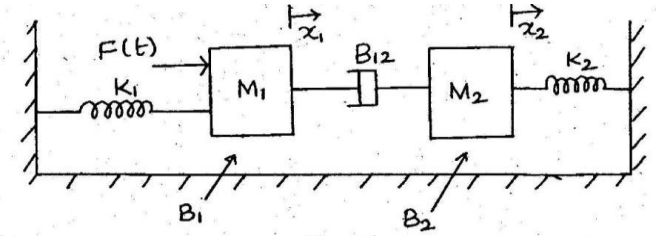
MODEL PAPER

SUB: CONTROL SYSTEMS

UNIT-1

1. (a) Discuss the advantages and disadvantages of open and closed loop control systems. 4M

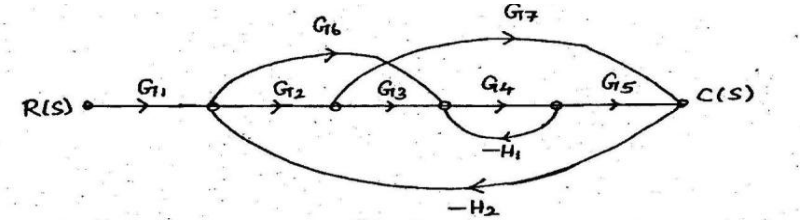
   (b) Write the differential equations for the mechanical system shown in figure and obtain analogous electric circuit based on force- current analogy. 10M



(OR)

2. (a) what is effect of feedback on sensitivity and stability. 4M

   (b) Consider the signal flow graph shown in figure obtain the closed loop transfer function C(S)/R(S) using the masons gain formula. 10M



UNIT-2

3. (a) what are test signal. 4M

   (b) Derive an expression for the rise time, peak time and peak over shoot of a second order under damped system for an unit step input. 10M

(OR)

4. (a) Define rise time and settling time. 4M

   (b) Derive the expression for 2nd order under damped system with unit step as input. 10M

UNIT-3

5. (a) Describe the procedure to construct root locus. 7M

   (b) By means of Routh criterion, determine the stability of the system represented by the characteristic equation $S^4+8S^3+18S^2+16s+5 = 0$. Comment on the location of the roots of the characteristic equation. 7M

(OR)

6. (a) Describe the procedure to construct Routh array. 4M

(b) Sketch the root locus plot of a unity feedback system with an open loop transfer function G(s)=K/s(s+2)(s+4). Determine the value of K so the damping ratio of the closed loop system is 0.5. 10M

UNIT-4

7. Draw bode plot for given transfer function and determine 14M

(i) gain crossover frequency and phase-margin

(ii) phase crossover frequency and gain margin

$$G(s) = \frac{(1+0.1S)}{S\,(1+0.2S)\,(1+S)}$$

(OR)

8. For the given open loop transfer function draw Nyquist plot. 14M

$$G(s)\,H(s) = \frac{1}{S\,(1+2S)\,(1+S)}$$

UINT-5

9. (a) What are the different types of compensation? 4M

(b) Explain the realization of Lag Compensator using electrical network and draw the frequency response. 10M

(OR)

10. (a) Define Lag-Lead compensator and draw the electrical lag-lead compensator network. 4M

(b) Explain the realization of Lead Compensator using electrical network and draw the frequency response. 10M

K.S.R.M. COLLEGE OF ENGINEERING, KADAPA.(AUTONOMUS)

IV Sem EEE(R18) I SESSIONAL EXAMINATIONS, February 2020.

Sub: Electrical Machines II

MODEL QUESTION PAPER

Note: 1. Answer all from the following. 2. All questions carries equal marks.

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1. A) Explain the construction and classification of 3 – Phase induction motor.
B) Explain the concepts of production of rotating magnetic field.

(OR)

2. A) Explain torque – Slip and Torque – Speed Characteristics along derivation of necessary equations.
B) Draw the equivalent Circuit and Phasor Diagram of 3 – Phase induction motor and Develop the Condition for maximum running torque.

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3. Draw the circle diagram from the no-load and short-circuit test of a 3-phase, 14.92kW, 400W, 6-pole induction motor from the following test results.

No-Load:	400-V,	11A,	*p.f* = 0.2
Short-Circuit :	100-V,	25A,	*p.f* = 0.4

Rotor Copper loss at standstill is half the total copper loss.
From the diagram, find i) line current, slip, efficiency and p.f at full load.
ii)The maximum torque.

(OR)

4. A) Explain the starting method of slip-ring induction motor.
B) Develop the steps in a 5-step rotor resistance starter for a 3-phase induction motor. The slip at the Maximum starting current is 2% with slip-ring short-circuited and the resistance per rotor phase is
0.02 Ohms.

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5. Draw a neat sketch showing the various parts of a synchronous machine and explain?

(OR)

6. Explain any one method of predetermining the regulation of an alternator.

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7. Explain two reaction theory of synchronous machine. How can X_d and X_q be determined?

(OR)

8. For a salient pole synchronous machine, derive an expression for power developed as a function of load angle.

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9. Explain one method of starting a synchronous motor.

(OR)

10. What is meant by hunting in a synchronous motor? Why is it undesirable? What is done to minimize it?

Course Title	Power Systems - II				B. Tech. EEE II Sem		
Course Code	Category	Hours/Week		Credits	Maximum Marks		
1802406	Professional Core (PCC)	L	T	P	C	Continuous Internal Assessment	End Exam	Total
		3	--	--	3	30	70	100
Mid Exam Duration : 2Hrs					End Exam Duration : 3Hrs		

Course Objectives: The objective of the course is to learn transmission line performance, per unit system, fault analysis on transmission and iterative methods.

Course Outcomes: On successful completion of this course, the students will be able to,

CO 1	Understand various transmission lines, the formulation of impedance and admittance bus matrices for a power system network, symmetrical and unsymmetrical faults, importance of power flow studies.
CO 2	Evaluate the performances of transmission lines and Y_{bus} for a given power system network.
CO 3	Analyze per unit quantities and fault calculations for various types of faults.
CO 4	Investigate the load flow studies using different iterative techniques.

UNIT - I

Performance of Transmission Lines: Classification of transmission lines – short, medium and long line and their model representation – estimation of regulation and efficiency by nominal T, nominal π and rigorous methods - problems. equivalent T and π, surge impedance loading, Ferranti effect.

UNIT - II

System Modelling: Representation of power system components– per unit representations and advantages – single line diagram representation – impedance and reactance diagram – changing the base of per unit quantities.

UNIT - III

Symmetrical Fault Studies: Introduction to symmetrical fault analysis – short circuit capacity of a bus – the short circuit currents and the reactance of synchronous machines – internal voltages of loaded machines under transient conditions – expressions for fault MVA in terms of per unit and percentage quantities – need for current limiting reactors and their location.

UNIT - IV

Unsymmetrical Fault Studies: Symmetrical components – phase shift of symmetrical components in star-delta transformer banks – power in terms of symmetrical components – sequence impedances and sequence networks of synchronous machines, transmission lines, transformers – zero sequence networks of 3 Φ loads and 3 Φ transformer banks – unsymmetrical fault analysis on unloaded generator and on power systems with and without fault impedance.

UNIT - V

Load Flow Studies: Need for load flow studies in a power system – formation of bus admittance matrix – classification of types of buses in a power system – formulation of load flow equations – gauss-seidel iterative method for load flow studies – treatment of pv bus – acceleration factors – problems (sample one iteration only), newton - raphson method in rectangular and polar coordinates – formulation of load flow solution with or without pv buses – derivation of jacobian elements, algorithm and flowchart.

Text Books:

1. Elements of power system analysis, William. D. Stevenson, 4th Edition Jr., MGH
2. Computer Methods in Power Systems by Stagg EI – Abiad & Stags, TMH
3. Modern Power System Analysis by I. J. Nagarath & D. P. Kothari, TMH, 2nd Edition.
4. A Text Book on Power System Engineering by M. L. Soni, P. V. Gupta, U. S. Bhatnagar, Chakrabarti, Dhanpat Rai & Co Pvt. Ltd., 2003.
5. Power System Analysis by Nagsarkar and Sukhija, OXFORD University Press.
6. A course in Power Systems by J. B. Gupta, S. K. Kataria & Sons, 11th Edition, 2013.

Reference Books:

1. Electrical power systems by C. L. Wadhwa, New Age International publications.
2. Power system analysis by Hadi Saadat, MGH International.
3. Power system analysis by AR Bergen and Vijay Vittal, Pearson education Asia, 2001.
4. Power System Analysis by Grainger and Stevenson, TMH.
5. Computer Techniques in Power System Analysis by M. A. Pai, TMH, 2nd Edition.
6. Computer Techniques and Models in Power Systems by K. Uma Rao, I. K. International.
7. Electric Power Systems by S. A. Nasar, Schaum's Outline Series, Revised 1st Edition, TMH.

K.S.R.M.COLLEGE OF ENGINEERING-KADAPA

(Autonomous)

B.Tech IV SEM EEE END EXAMINATIONS APR-2020

SUB:-POWER SYSTEMS-II **Course Code:1802406**

Time: 3 Hrs Max.Marks:70

Note: Answer one question from each unit

Unit-I

1a) Estimate the regulation and efficiency of a given Medium Transmission Line assuming that the capacitor placed in the middle of the Line? 7 M

b) What is the maximum length in Km for a single phase transmission line having copper conductor of 0.7 775 Sq.cm cross-section over which 200Kw at unity power factor and at 3300V are to be delivered? The efficiency of transmission is 90%. Take specific resistance as 1.725 micro ohm. Cm. 7 M

OR

2 a) Evaluate the A,B,C and D parameters for a given long transmission line using rigorous solution and write down the equations for sending end voltage and current? 8 M

b) Define the following: 6 M

i) Surge Impedance Loading ii) Ferranti Effect

UNIT-II

3 a) Define Per Unit and Explain what are the advantages of Per Unit Representation? 7 M

b) What are the steps to be follow to draw Per Unit Impedance/Reactance Diagram? 7 M

OR

4 a) Explain the following: 6 M

i) Per unit representation of a transformer ii) per unit representation of a generator iii) conversion of per units from old to new

b) Draw the Per Unit reactance diagram for the following data. 8 M

Geneartor1: 30 MVA,10.5 KV,X^{11}=1.6 ohms Geneartor2: 15MVA,6.6 KV,X^{11}=1.2 ohms Geneartor3: 25MVA,6.6 KV,X^{11}=0.56 ohms

Transformer T1(3 Phase): 15 MVA,33/11KV,X=15.2 Ohms per phase on HT side

Transformer T2(3 Phase): 15 MVA,33/6.2KV,X=16 Ohms per phase on HT side

Transmission line: 20.5 ohms per phase

Load A: 40MW,11KV,0.9 LPF Load B: 40 MW,6.6 KV,0.85LPF

UNIT-III

5 a) Describe the various steps involved in calculation of symmetrical short circuit currents in three phase system? 7 M

b) Explain the following: 7 M

i) Need of Limiting Reactor ii) Expression for Fault MVA in terms of Per Unit and Percentage Quantities

OR

6 a) Explain the reactance of synchronous machine in detail? 7 M

b) Explain about the short circuit currents of an alternator in detail? 7 M

UNIT-IV

7 a) Express Three Phase Power in terms of Symmetrical components? 6 M

b) Express in terms of positive , negative and zero sequences and determine the sequence components of voltages and currents? 8 M

OR

8 a) Explain the unsymmetrical fault analysis on an unloaded alternator for L-G and L-L faults? 8 M

b) A 15 MVA,6.9KV generator star connected has positive, negative and zero sequence reactance's of 25%,25% and 8% respectively. A reactor with 65% reactance based on the rating of the generator is placed in line from neutral to ground. A line to line fault occurs at the terminals of the generator when it is operating at rated voltage and disconnected from the system. Find the initial symmetrical R.M.S line and ground wire currents and lien to neutral voltages when the fault is solidly grounded at the instant of its occurrence. 6 M

UNIT-V

9 a) Derive the load flow solution using Gauss-Siedel Method to include P-V buses? 10 M

b) What is Acceleration factor? How it is to be implemented? 4 M

OR

10 a) Derive the expressions for all jacobian elements of N-R method for load flow studies in polar coordinates? 10 M

b) Discuss about the types of buses in power system? 4 M

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Code:1803401

K.S.R.M COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B.Tech. IV semester (R18)Regular Examinations, May 2020
APPLIED THERMODYNAMICS
(Mechanical Engineering)

MODEL QUESTION PAPER

Time: 3 hrsMaxMarks:70

Answer Five questions, selecting one Question from each Unit
All Questions carry equal marks

Unit-I

1. (a) Explain with suitable sketches the working of Four Stroke Diesel engine. (7M)

   (b) Discuss Battery Ignition System with a suitable sketch. (7M)

(OR)

2. (a) Compare four stroke and two stroke cycle engines. (7M)

   (b) During the trial of a four stroke diesel engine, the following observations were recorded: (7M)
   Area of the indicated diagram = 475 $mm^{2,}$, length of indicator diagram = 62 mm, spring number = 1.1 bar/mm, diameter of piston = 100 mm, length of stroke = 150 mm, engine RPM = 375, Determine (i) Indicated mean effective pressure (ii) Indicated power

Unit -II

3. (a) What do you mean by multi-stage compression? State its advantages. (7M)
   (b) Air is compressed in a single-stage reciprocating compressor from 1.013 bar and 15^0 C to 7 bar. Calculate the indicated power required for a free air delivery of 0.3 m^3/ min, when the compression process is polytropic, with n = 1.25 (7M)

(OR)

4. (a) Prove that the volumetric efficiency of a single-stage compressor is given by $\eta_v = 1 + k - k(P_2/P_1)^{1/n}$, where $k = V_c / V_s$. (7M)
   (b) Explain with a neat sketch the construction and working of Axial Flow Compresor. (7M)

Unit-III

5. (a) Give the comparison between "Fire-tube and "Water-tube boilers. (7M)
   (b) Explain the working of Babcock & Wilcox Boiler with a neat sketch. (7M)

(OR)

6. (a) Explain with a neat sketch the construction and working of Benson boiler. (7M)
   (b) The following observations were obtained during a boiler trial of 6 hours duration. (7M)

Mean steam pressure = 12 bar; mass of steam generated = 40000 kg; mean dryness fraction = 0.85; mean feed water temperature = 30^0 C; coal used = 4000 kg; Calorific value of coal = 33400 kj/kg; Calculate:
(i) Factor of equivalent evaporation;
(ii) Equivalent evaporation from and at 100^0 C;
(iii) Efficiency of the boiler

Unit-IV

7. (a) Define the term 'steam nozzle' . Explain various types of nozzles. (7M)
   (b) Steam at a pressure of 10 bar and 0.9 dry discharges through nozzle having throat area of 450 mm^2. If the back pressure is 1 bar, find (i) final velocity of the steam (ii) cross- sectional area of the nozzle at exit for maximum discharge. (7M)

(OR)

8. (a) Draw the schematic diagram of low level counter flow jet condenser and explain its working principle (7M)
   (b) Calculate the vacuum efficiency of a condenser from the following data: Vacuum at steam inlet to condenser = 725 mm; Barometer reading = 760 mm; Hot well temperature = 26.4^0 C. (7M)

Unit-V

9. (a) Give comparison between impulse and reaction turbine. (7M)

   (b) The rotor of an impulse turbine is 60 cm in diameter runs at 9600 rpm. The nozzles are at 20^0 to the plane of the wheel and the steam leaves at 600 m/sec. The blade outlet angle is 30^0 and the friction factor is 0.8. Determine the power developed and diagram efficiency. (7M)

(OR)

10. The following particulars refer to a stage of a parson's reaction turbine, comprising one ring of fixed blades and one ring of moving blades. (14M)
Mean diameter of blade ring=70 cm, RPM=3000, Steam velocity at exit of blades =160 m/s, Blade outlet angle=20^0, Steam flow through blades=7 kg/s. Draw a neat velocity diagram and find (i) Blade inlet angle (ii) Tangential force on the ring of moving blades and (iii) power developed in the stage.

Subject code: 1803402

K.S.R.M COLLEGE OF ENGINEERING (Autonomous), KADAPA

B.Tech IV Sem (R18) Regular Examinations, May 2020

Subject: FLUID MECHANICS

(Mechanical Engineering)

MODEL QUESTION PAPER

Time:3 Hrs **Max Marks:70**

Answer any Five questions. Selecting one question from each unit. All Questions carry equal marks

UNIT-I

1.a)Define Mass Density, Specific Weight, Specific Volume, Specific Gravity .

b) Calculate the Density, Specific Weight and weight of one litre of petrol of Specific Gravity=0.7

(OR)

2. What is a manometer? List out Various types of manometers? Describe Differential Manometer with neat Sketch?

UNIT-II

3. Explain terms

a).Steady and Unsteady flows
b).Compressible and in compressible flows
c).Stream line and stream tube
d).uniform and non Uniform flows

(OR)

4. Derive Bernoulli's equation and state its Assumptions?

UNIT-III

5.a)Explain concept of Flow through parallel pipes.

b)A main pipe divides into two parallel pipes which again forms one pipe.The length &diameter for the first parallel pipe are 2000m and 1.0m respectively, while the length and diameter of second parallel pipe are 2000m and 0.8m.find the rate of flow in each parallel pipe. If total flow in the main is 3.0 m^3/s. The coefficient of friction for each parallel pipe is same and equal to 0.005.

(OR)

6. a).Derive an Expression for Rate of flow Through Venturimeter?

b).A horizontal Venturimeter with inlet and throat diameters 30cm & 15 cm respectively is used to measure the flow of water. The reading of differential manometer connected to the inlet and the throat is 20cm of mercury. Determine the rate of flow. Take c_d=0.98

UNIT-IV

7. Derive an equation for Displacement Thickness & Energy Thickness ?

(OR)

8. For the Velocity profile in laminar boundary layer as $\frac{u}{U} = \frac{3}{2}(\frac{y}{\delta}) - \frac{1}{2}(\frac{y}{\delta})^3$ .Find the Thickness of the boundary layer and the shear stress 1.5m from the leading edge of a plate. The Plate is 2m long and 1.4m wide and is placed in water which is moving with a velocity of 200mm per second. Find the total drag force on the plate if μ for water =0.01 poise.

UNIT-V

9. A 2mm diameter spherical metallic ball(specific weight 117.5 KN/m^3) is dropped in a large mass of fluid of viscosity 15 poise and specific gravity 0.95.proceeding from first principles make calculations for the drag force exerted by fluid on metallic ball, pressure drag and skin friction drag and the terminal velocity of ball in fluid.

(OR)

10.a)A man descends to the ground from an aero plane with help of a parachute against the resistance of air. The shape of the parachute is hemi spherical of 2m diameter. Find the velocity of the parachute with which it comes down. The total weight of the man and the parachute is 1 KN.

b). A cylinder rotates at 150 rpm with its axis perpendicular in an air stream which is having uniform velocity of 25 m/s. The cylinder is 1.5m in diameter and 10m long, Assuming ideal fluid theory, find 1) The circulation 2) Lift Force and 3) Position of stagnation points. Take density of air as 1.25 kg/m^3.

Code: 1803403

K.S.R.M COLLEGE OF ENGINEERING, KADAPA (AUTONOMOUS)

II B. Tech IV Sem (R18) Regular Examinations, April 2020

Kinematics of Machinery

(Mechanical Engineering)

MODEL QUESTION PAPER

Time:3 hrs **Max Marks: 70**

Answer five questions. Selecting one Question from each unit
All Questions carry equal marks

Unit-I

1. (a)Discuss in Detail about Degrees of freedom of mechanisms.
   (b) Explain in detail different types of constrained motions.

(OR)

2. (a)Sketch and explain any one inversion of double slider crank chain.
   (b)Explain the classification of kinematic pairs.

Unit-II

3. sketch and explain Hart's straight line motion mechanism. Prove that it produces an exact straight line motion.

(OR)

4. What is the condition for correct steering? Sketch and explain Davis steering gear mechanism and discuss relative advantages.

Unit-III

5. In Fig., the angular velocity of the crank OA is 600 r.p.m. Determine the linear velocity of the slider D and the angular velocity of the link BD, when the crank is inclined at an angle of 75° to the vertical. The dimensions of various links are : OA = 28 mm ; AB = 44 mm ; BC 49 mm ; and BD= 46 mm. The centre distance between the centres of rotation O and C is 65mm. The path of travel of the slider is 11 mm below the fixed point C. The slider moves along a horizontal path and OC is vertical.

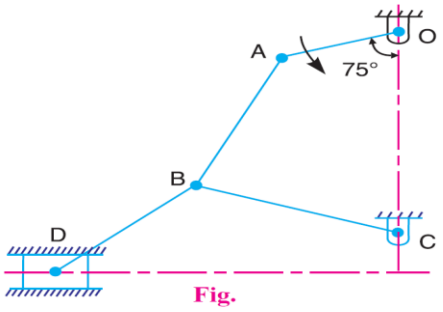


Fig.

(OR)

6. (a) Derive an expression for the magnitude and direction of coriolis component of acceleration.

(b) Explain the procedure to locate all I-Centers for a mechanisam consists of 4 links.`

Unit-IV

7. A cam operating a knife-edged follower has the following data :
   (*a*) Follower moves outwards through 40 mm during 60° of cam rotation.
   (*b*) Follower dwells for the next 45°.
   (*c*) Follower returns to its original position during next 90°.
   (*d*) Follower dwells for the rest of the rotation.
   The displacement of the follower is to take place with simple harmonic motion during the outward and with Uniform velocity during return stroke. The least radius of the cam is 50 mm. Draw the profile of the cam when the axis of the follower is offset 20mm towards right from the cam axis. If the cam rotates at 300 r.p.m., determine maximum velocity and acceleration of the follower during the outward stroke and the return stroke.

(OR)

8. (a) Explain with sketches the different types of cams and followers.

(b) Define and explain the terms

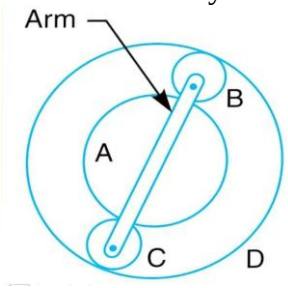
(i) Base circle (ii) Prime circle (iii) Pitch curve (iv) Pressure angle

Unit-V

9 (a) State and prove law of gearing. Show that involute profile satisfies the conditions for correct gearing.
(b) What do you understand by the term "Interference" as applied to gears.

(OR)

10. An epi cyclic train of gear is arranged as shown in fig.How many revolutions does the arm, to which the pinions B and C are attatched., make i) when A makes one revolution clock wise and D makes half a revolution anti clock wise , and ii) when A makes one revolution clock wise and D is stationary ? The number of teeth on the gears A and D are 40 and 90 respectively.



Subject code: 1803405

K.S.R.M COLLEGE OF ENGINEERING (Autonomous), KADAPA

B. Tech IV Sem (R18) Regular Examinations, May 2020

Subject: **INSRTMENTATION AND CONTROL SYSTMS**

(Mechanical Engineering)

MODEL QUESTION PAPER

Time:3 Hrs Max Marks:70

Answer any Five questions. Selecting one question from each unit. All Questions carry equal marks

Unit-I:-

1) a) what is measurement system and explain its elements? (7M)

b) Explain briefly the application of measuring systems / instruments? (7M)

(OR)

2) a)What are the different measurement methods? Explain briefly? (7M)

b) What are the different types of errors in the measurement? Explain briefly? (7M)

Unit -II-

3) a) Explain the operating principle of an LVDT with a diagram? (7M)

b) Describe the working principle of an electrical resistance thermometer? (7M)

(OR)

4) a)Describe the working principle of Piezo electric transducer with neat sketch? (7M)

b) Explain the concept of pressure measurement using diaphragm gauges? (7M)

Unit-III:-

5) a) what are bubbler level indicators? Describe their working? (7M)

b) Describe with a neat sketch, the principle of operation of a laser Doppler anemometer. (7M)

(or)

6) a) Explain the working principle of a vibrometer with a neat sketch? (7M)

b) Describe the working principle of stroboscope with a neat sketch? (7M)

Unit -IV:-

7) a) what is strain gauge rosette? Explain its importance. (7M)

b) what are different types of strain gauges? Explain briefly? (7M)

(or)

8) a) Distinguish between bonded and unbounded type of strain gauge? (7M)

b) what is temperature compensation in strain gauge? How is it achieved? (7M)

Unit – V

9) a) Describe how the torque and power are measure of by using a prony brake dynamometer? (7M)

b) How is a hydraulic cell used for force measurement? Explain. (7M)

(or)

10) a) Describe the working principles of a dew point meter with a neat sketch? (7M)

b) What are the different types of control system? Explain term with block diagrams? (7M)

MODEL PAPER: –

B.Tech. IV SEMESTER R18 April 2020 EXAMINATION

ECE

PROBABILITY THEORY AND STICHASTIC PROCESSES

Time: 3 hours **Maximum: 70**

Answer FIVE questions, choosing ONE question from each unit.

All questions carry equal marks.

UNIT-1

1. a) Explain the different methods to define the probability. Derive the Total probability expression and define Bayes theorem.

   b) An elementary binary communication system consists of a transmitter and receiver. The channel occasionally causes errors to occur. The probabilities that the symbols 1 and 0 are selected are $P(B_1)=0.6$ and $P(B_2)=0.4$. The conditional probabilities are $P(A_1/B_1)=0.9$, $P(A_2/B_1)=0.1$, $P(A_1/B_2)= 0.1$ and $P(A_2/B_2)= 0.9$. Determine the total probabilities and Bayes theorem probabilities.

(OR)

2. a) Define a random variable. Write conditions for a function to be a random variable.
   b) Find a constant b>0 so that the function

$$f_X(x) = \begin{cases} e^{3x/4}, & 0 \le x \le b \\ 0, & elsewhere \end{cases}$$

is a valid probability density.

UNIT-II

3. a) Explain the moments about the origin and mean.
   b) Find the variance of X, skew and coefficient of skewness for the exponential density function.

(OR)

4. a) Explain the transformation of a discrete random variable.
   b) A random variable X is uniformly distributed on the interval $(-\pi/2,\pi/2)$. X is transformed to the new random variable $Y=T(X)= a\tan(X)$, where a>0, find the probability density function of Y.

UNIT-III

5. a) Define the joint density function and list out its properties.

   (b) Find a constant b (in terms of a) so that the function

$$f_{X,Y}(x,y) = \begin{cases} be^{-(x+y)}, & 0 \le x \le a \ and \ 0 < y < \infty \\ 0, & elsewhere \end{cases}$$

is a valid joint probability density.

(OR)

6. a) Statistically independent random variables X and Y have respective densities

$f_X(x) = 5u(x)e^{-5x}$ *and* $f_Y(y) = 2u(y)e^{-2y}$. Find the density function of the sum W=X+Y.

   (b) State and Prove the Central Limit Theorem.

UNIT-IV

7. a) Explain Time Averages and Ergodocity.

   b) State and prove the properties of Auto correlation function.

(OR)

8. a) Explain the relationship between the cross-correlation function and the cross power spectral density.

   b) Find the power spectrum and average power of the response of the LR network where X(t) is white noise for which $S_{XX}(\omega) = N_0 / 2$.

UNIT-V

9) a) Derive an expression for power spectral density of LTI system response.

   b) Explain the relationship between the cross-correlation function and the cross power spectral density.

(OR)

10) a) Write about band limited and narrow band processes.

   b) Explain the concept of band limited process and list out its properties.

Code No: 1804403

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech IV SEMESTER(R 18) BRANCH: ECE MODEL PAPER

SUB: ANALOG AND DIGITAL CIRCUITS (ECE)

Time: 3 Hours Max.Marks:70

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Unit I

1. (a). What are the characteristics of CB,CE, and CC amplifiers? (4)

(b). Explain the CE amplifier with h parameter model and find input impedance, output impedance, voltage gain and current gain? (10)

Or

2. (a). Draw the high frequency π - model of a transistor and explain it? (6)

(b). Derive the expression for the CE short circuit current gain A_I as a function of frequency (8)

Unit II

3. Prove that the high-pass and low-pass RC circuits act as differentiator and integrator respectively. (14)

Or

4. Discus the Operation and circuit diagram of the RC two stage coupled amplifier. And derive its band width (14)

Unit III

5. what is feedback? Analyze the performance characteristics of negative feedback with proof (14)

Or

6. (a). Explain in detail about RC Phase shift oscillator? (7)

(b). In the Hartely Oscillator L_2 = 0.4 mH and C= 0.004 μF. If the frequency of the oscillator is 120KHz, find the value of L_1. Neglect the mutual inductance (7)

Unit IV

7. (a).Explain in detail about Double tuned amplifier? (7)

(b). Explain the effect of cascading single tuned amplifier on Bandwidth ? (7)

Or

8. (a).what are the classification of power amplifier and explain in detail bout class-A amplifier? (7)

(b).Calculate the effective resistance seen looking into the primary of a 10:1 transformer connected to an output load of 16 Ω . (7)

Unit V

9. With the help of neat diagrams explain the working of (a) a two input TTL NAND gate, (b). a two- input ECL OR Gate (c) IIL NAND and NOR gate (14)

Or

10. With the help of neat diagrams explain the working of (a) a CMOS inverter, (b). a two- input CMOS NAND Gate (c) two input CMOS NOR gate (14)

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B.Tech. IV Semester (CSE) (R18) Degree Examinations
(1805405) DESIGN AND ANALYSIS OF ALGORITHMS
Model Question Paper

Max.Time: 3Hrs **Max.Marks:70**

Note: Answer One Question from Each Unit
All Questions Carry Equal Marks

UNIT-I

1 a) Define Algorithm and Using Frequency count method, analyze the time complexity to find factorial of given number. (7M)
b). What is pseudo-code? Explain with an example. (7M)

(OR)

2. a) Explain in detail about Asymptotic Notations. (7M)
b) Explain Weighted Union and Collapsing Find algorithms with example. (7M)

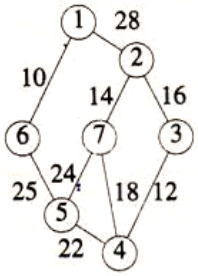
UNIT-II

3. a) Write Quick Sort algorithm and analyze its Space and Time complexity. (7M)

b) Discuss in detail about Strassen's Matrix Multiplication. (7M)

(OR)

4. Formulate greedy based prim's algorithm to generate shortest path and explain with the following graph. (14M)



UNIT-III

5. Draw an Optimal Binary Search Tree for n=4 identifiers (a1,a2,a3,a4) = (do,if, read, while)
P(1:4)=(3,3,1,1) and Q(0:4)=(2,3,1,1,1). (14M)

(OR)

6. Define travelling sales person problem and discuss optimal solution of the following. (14M)

$$C = \begin{bmatrix} 0 & 10 & 15 & 20 \\ 5 & 0 & 9 & 10 \\ 6 & 13 & 0 & 12 \\ 8 & 8 & 9 & 0 \end{bmatrix}$$

UNIT-IV

7. Let w = {5,7,10,12,15,18,20} and m=35.Find all possible subsets of w that sum to m. Do this using SumOfSub.Draw the portion of the state space tree that is generated. (14M)

. **(OR)**

8. Discuss Techniques for Binary Tree. (14M)

UNIT-V

9. Explain in detail about LC branch and bound solution for the instace n=4, {p1,p2,p3,p4}={10,10,12,18},(w1,w2,w3,w4}={2,4,6,9},and m=15. (14M)

(OR)

10. a) Discuss in detail about Non Deterministic algorithms. (7M)

b) Discuss in detail about NP-Hard and NP-Complete classes. (7M)

KSRM COLLEGE OF ENGINEERING, KADAPA
(AUTONOMOUS)
B. Tech., IV SEM. R 18 ECE
MODEL PAPER
SUB: LINEAR IC APPLICATIONS

Time: 3Hrs Max. Marks: 70

Note: Answer ***five*** of the following
Choosing one from each unit

UNIT – I

1.(a)	Explain the operation of level translator with the help of circuit diagram.	7M
(b)	Explain the operation of dual input, balanced output differential amplifier by performing dc analysis.	7M
	(OR)	
2.(a)	Illustrate the frequency compensation techniques of an op-amp.	7M
(b)	Illustrate the input bias and offset currents characteristics of an op-amp.	7M
	UNIT – II	
3.(a)	Analyze the operation of an op-amp inverting amplifier.	7M
(b)	Analyze the operation of an op-amp differentiator.	7M
	(OR)	
4.(a)	Analyze the operation of an op-amp integrator.	7M
(b)	Analyze the operation of a positive clipper circuit using op-amp.	7M
	UNIT – III	
5.(a)	Illustrate the regenerative comparator circuit using op-amp.	7M
(b)	Write the design procedure of a First order low pass filter in detail.	7M
	(OR)	
6.(a)	Illustrate the operation of a triangular wave generator circuit using op-amp.	7M
(b)	Write the design procedure of a second order high pass filter in detail.	7M
	UNIT – IV	
7.(a)	Explain the operation of an astable multi-vibrator using 555 timer.	7M
(b)	Explain the operation of a PLL circuit using block diagram.	7M
	(OR)	
8.(a)	Explain the operation of an RC phase shift oscillator using op-amp.	7M
(b)	Draw the circuit of a phase detector and explain the operation.	7M
	UNIT – V	
9.(a)	Draw the circuit of a weighted resistor DAC and explain the operation.	7M
(b)	Explain the operation of a direct type ADC.	7M
	(OR)	
10.(a)	Draw the circuit of an inverted R-2R DAC and explain the operation.	7M
(b)	Explain the operation of a successive approximation ADC.	7M

K.S.R.M.COLLEGE OF ENGINEERING, KADAPA - 516003
(AUTONOMOUS)
B.Tech IV Semester (ECE) (R18) Examinations, April - 2020
Sub: ELECTRO MAGNETIC THEORY & TRANSMISSION LINES

Time: 3 Hours Maximum: 70 Marks

Answer any five questions, choosing one question from each unit
All questions carry equal marks

UNIT-I

1) a) Explain Coulomb's law in detail and derive the expression for Electric field intensity?

b) Point charges 1mc and -2mc are located at (3,2,-1) and (-1,-1,4) respectively. Calculate the electric force on a 10nc charge at (0,3,1) and the Electric field intensity at that point?

(or)

2) a) Derive the expressions for continuity equation and relaxation time?

b) Explain the general procedure for solving Poisson's and Laplace's equations?

UNIT-II

3)

a) State Biot-savart's law and derive the expression for magnetic field intensity at a point P due to finite length current carrying conductor?

b) The positive y-axis (semi infinite line with respect to origin) carries a filamentary current of 2A in the $-\mathbf{a}_y$ direction. Assume it is a part of a large circuit. Find **H** at point P (2, 3, 0).

(or)

4)

a) State Ampere's circuital law and derive the expression for magnetic field intensity of infinite long coaxial transmission line?

b) Derive the Maxwell's two equations for magneto static fields?

UNIT-III

5)

a) What is the inconsistency of Ampere's law and explain the concept of displacement current?

b) A parallel plate capacitor with plate area of $5cm^2$ and plate separation of 3mm has a voltage $50 \sin 10^3 t$ V applied to its plates. Calculate the displacement current assuming $\varepsilon=2\varepsilon_0$.

(or)

6) a) Give the Maxwell's equations in point form and integral form along with word statements?

b) Derive the boundary conditions for Dielectric-Dielectric case?

UNIT-IV

7) a) Derive the relationship between E and H?

b) A uniform plane wave propagating in a medium has $E=2e^{-\alpha z}\sin(10^8 t-\beta z)\mathbf{a}_y$ V/m, if the medium is characterized by $\varepsilon_r=1$, $\mu_r=20$ and $\sigma=3$S/m, find α, β and H.

(or)

8)

a) Explain the concept of pointing theorem and pointing vector with appropriate expressions?

b) In a nonmagnetic medium $E=4\sin(2\pi \times 10^{7}t-0.8x)\ \mathbf{a_z}$ v/m, find

i) ε_r, η

ii) The time average power carried by wave.

UNIT-V

9)

a) Derive the condition for distortion less and lossless transmission lines?

b) A distortion less line has $Z_0=60\Omega$, $\alpha=20$ Np/m, $\beta=1.5$ rad/m. Find the line parameters R,L,G,C.

(or)

10)

a) Write a short note on Smith chart?

b) Derive the expression for input impedance of transmission line?

K.S.R.M.COLLEGE OF ENGINEERING, KADAPA-03

B.TECH III SEM EEE (R18)(AUTONOMOUS)MODEL QUESTION PAPER

SUB: DIGITAL SYSTEM DESIGN

Time: 3Hrs **Max.Marks:70**

Answer ALL questions

All questions carry equal marks

UNIT -1

1. **a)Convert the following numbers** **(10M)**
   - i) $(4310)_5$ to base 10
   - ii) $(C3DF)_{16}$ to base 2
   - iii) $(6054.263)_8$ to base 16
   - iv) $(420.6)_{10}$ to base 8
   - v) $(12120)_{10}$ to base 6

b) Encode the word DATA into 7-bit ASCII code **(4M)**

(OR)

2. **a) Convert the following numbers in to Gray code** **(5M)**

i. $(96)_{10}$ **ii.** $(234)_8$

b) Subtract the following numbers by using BCD code **(9M)**

i. 920-356 **ii. 476.7-258.9** **iii. 206.7-147.8**

UNIT-2

3. **a) Simplify the following Boolean function for minimal POS using K-map** **(8M)**

F(A,B,C,D)= ∑(1,2,5,6,9)+d(10,11,12,13,14,15)

b) Find the complement of F=wx+yz , then show that FF'=0 and F+F'=1 **(6M)**

(OR)

4. **a)Reduce the following Boolean expressions to the indicated number of literals** **(6M)**

i. A'C'+ABC+AC' to three literals

ii. (x'y'+z)'+z+xy+wz to three literals

iii. A'B(D'+C'D)+B(A+A'CD) to one literal

b. Simplify the following Boolean function using tabulation method (8M)

F(A,B,C,D)=∑(0,1,2,3,5,7,8,9,11,14)

UNIT-3

5. a)Design a 4-bit binary to gray code converter. (7M)

b) Implement the following Boolean function with a 4:1 MUX and external gates.

F(A,B,C,D)=∑(1,3,4,11,12,13,14,15) (7M)

(OR)

6. a) Construct a 5-to-32 line decoder with four 3-to-8 line decoders with enable and 2- to-4 line decoder. (7M)

b) Define Hazard? Explain the types and Hazard free realization. (7M)

UNIT-4

7.a) Design a mod-12 synchronous counter using T-flip-flop. (7M)

b) Draw the state diagram and the state table for a sequence detector to detect the sequence 1010 and implement by using D-flip-flop (7M)

(OR)

8. a)Design a 3-bit up-down counter which counts up when the control signal M=1 and counts down when M=0. (7M)

b) Explain the flip-flop operating characteristics (7M)

UNIT-5

9. a)Design a combinational circuit using a ROM .The circuit accepts 3-bit binary number and generates an output binary number equal to the square of the input number. (7M)

b) Compare the three combinational PLD's- PROM , PLA and PAL (7M)

(OR)

10.a) Explain about the RAM types and its internal structure in detail (7M)

b) Design a BCD to XS-3 code converter using a PLA (7M)

Sub Code: 1814404

K.S.R.M.COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech IV SEMESTER(R 18) BRANCH: **ME** MODEL QUESTION PAPER

SUB: **BASICS OF ELECTRONICS ENGINEERING** (ME)

Time: 3 Hours Max.Marks:70

Answer any five questions, choosing one question from each unit.

All questions carry equal marks.

Unit I

1. (a). Explain the operation of a PN junction diode under forward biased and reverse biased condition and draw the characteristics curve.

14

Or

2. (a). Derive the expression for Ripple factor for Full wave Rectifier.

7

(b). Compare FWR and Bridge rectifier.

7

Unit II

3. (a). Explain the operation of CC Configuration of BJT and its input and output characteristics briefly.

14

Or

4. (a). What is Biasing? Explain the need of it. List out different types of biasing methods.

8

(b). How transistor act as a amplifier

6

Unit III

5. (a). Describe the construction and working principle of JFET and draw its characteristics.

8

(b). Compare BJT and FET

6

Or

6. (a). Compare CD,CS and CG Configurations

6

(b). Analyze how JFET act as a switch?

8

Unit IV

5. What is feedback? Derive feedback expression and explain advantages and disadvantages of feedback

14

Or

6. (a). With a neat diagram explain the construction and working principle of a RC Phase shift oscillator?
(7)

(b). With a neat diagram explain the construction and working principle of a Collpits oscillator? (7)

Unit V

9. With the help of neat diagrams explain the working of (a) Digital Voltmeter, (b). Electronic Multimeter
(14)

Or

10. With the help of neat diagrams explain the (a) Measurement of voltage using CRO, (b).Measurement of frequency using CRO
(14)

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA.

Model Question paper

B.Tech IV Sem (R18)

Mathematics – III

(EEE Branch)

Time: 3 Hrs. **Max Marks : 70**

Note : Answer any **FIVE** questions by choosing one from each unit.
All questions carry equal marks.

UNIT - I

1 Prove that (i) $J_n(x) = \frac{x}{2n}\,[J_{n-1}(x) + J_{n+1}(x)]$ (7M)

(ii) $J_n^1(x) = \frac{n}{x}J_n(x) - J_{n+1}(x)$ (7M)

(OR)

2 State and prove Rodrigue's formula. (14M)

UNIT – II

3 Prove that the function $f(z)$ defined by $f(z) = \frac{x^3\,(1+i)-y^3(1-i)}{x^2+y^2}$, $z \neq 0\ and\ f(0) = 0$ is continuous and Cauchy – Riemann equations are satisfied at the origin, yet $f'(0)$ does not exist. (14M)

(OR)

4 Determine the analytic function $f(z) = u + iv$, if $u - v = \frac{\cos x + \sin x - e^{-y}}{2(\cos x - \cos hy)}$ and $f\left(\frac{\pi}{2}\right) = 0$. (14M)

UNIT – III

5. Find the bilinear transformation which maps the points z=1, i, -1 onto the points w= i, 0, -i. Hence find the invariant points of this transformation. (14M)

(OR)

6. Discuss the transformation $w = e^z$.

UNIT – IV

7 a) Evaluate $\int_0^{2+i}(\bar{z})^2\,dz$, along the line $y = \frac{x}{2}$. (7M)

b) Evaluate , using Cauchy's Integral Formula $\oint_c \frac{\sin\pi z^2 + \cos\pi z^2}{(z-1)(z-2)}\,dz$ where c is the circle $|z| = 3$.

(OR)

8 Evaluate $\oint_c \frac{e^z}{(z^2+\pi^2)^2}\,dz$, where c is the circle $|z| = 4$ (14M)

UNIT – V

9. a) State and prove Cauchy's residue theorem (7M)

b) Evaluate $\oint_c tan\ z\ dz$ where 'c' is the circle $|z| = 2$ (7M)

(OR)

10. Show that $\int_0^{2\pi} \frac{\cos 2\theta\ d\theta}{1-2a\cos\theta+a^2} = \frac{2\pi a^2}{1-a^2}$, $a^2 < 1$ (14M)

R18 **Subject Code: 1824402**

K.S.R.M. COLLEGE OF ENGINEERING, (AUTONOMOUS) KADAPA

B.Tech 1V SEMESTER EXAMINIATION, APRIL 2020

CIVIL ENGINEERING

SUBJECT: EFFECTIVE TECHNICAL COMMUNICATION

Time : 3 Hrs. **Maximum Marks: 70**

Answer FIVE questions, choosing ONE question from each Unit.
All questions carry equal marks.

UNIT - 1

1. What are various types of communication, barriers of communication and methods of overcoming communication barriers? 14M

(OR)

2. A) Define communication and mention its objectives. 7M
   B) List out essentials of good communication. 7M

UNIT – 2

3. What is technical writing process and mention steps to be followed in technical writing process? 14M

(OR)

4. (A) Discuss style and language in technical writing. 7M
   (B) How do basics of grammar help in effective technical report writing? 7M

UNIT – 3

5.Continuous assessment is essential for self-development- Discuss with various aspects ofself-development. 14M

(OR)

6. (A) Discuss time management. 7 M
   (B) Support hints for career planning. 7 M

UNIT – 4

7. Write a technical report on feasibility of establishment of KIA Motors showroom in Kadapa. 14 M

(OR)

8. (A) What is Group Discussion? What are the essentials of effective group discussion? 7 M

(B) Wahat are the guidelines preparing for an interview? 7 M

UNIT – 5

9. Role and responsibilities of an engineer in the development of the nation? 14 M

(OR)

10. (A) Discuss e-mail etiquettes. 7 M

(B) Engineering Ethics. 7 M
