Q.P. Code: 257612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Geo-Technical Engineering -1 (CE)

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) Differentiate between void ratio and porosity of soil. Give relationship between them. 7M
   (b) An embankment, having a total volume of 5000 m^3 has a water content of 16 % and dry density of 1.75 g/cc. If it was constructed from a borrow pit where the undisturbed soil has a water content of 13 % and void ratio of 0.6. Calculate the quantity of soil which was excavated for the construction of the above embankment. Take specific gravity of soil solids as 2.68. 7M

(OR)

2. (a) The sieve analysis of a soil gave the following results. 7M
   % passing 75 μ sieve = 4, % retained on 4.75 mm sieve = 50,
   Coefficient of curvature = 2, Uniformity coefficient = 6
   Classify the soil according to the Indian Standard classifications system.
   (b) The Atterberg limits of clay sample are liquid limit = 70 %, plastic limit = 45% and natural water content = 50 %. Determine the liquidity index, consistency index and plasticity index. 7M

UNIT – II

3. (a) What is Darcy's law? Explain how the permeability of a soil is affected by various factors. 7M
   (b) An earth dam is built on an impervious foundation with a horizontal filter at the base near the toe. The permeability of the soil in the horizontal and vertical directions are $3x10^{-2}$ mm/s and $2x10^{-2}$ mm/s respectively. The full reservoir level is 30 m above the filter. A flow net constructed for the transformed section of the dam, consists of 4 flow channels and 16 head drops. Estimate the seepage loss/meter length of the dam. 7M

(OR)

4. (a) A glass cylinder 5 cm internal diameter and with a screen at the bottom was used as a falling head permeameter. The thickness of the sample was 10 cm. With the water level in the tube at the start of the test as 50 cm above the tail water, it dropped by 12 cm in one minute, the tail water level remaining unchanged. Calculate the value of k for the sample of the soil. Comment the nature of the soil. 7M
   (b) Define critical hydraulic gradient and explain how piping is produced. 7M

UNIT – III

5. (a) Discuss various approximate methods for the determination of the vertical stress at a point. What are their limitations? 7M
   (b) Two columns A and B are situated 5 m apart. Column A transfers a load of 500kN and column B, a load of 350kN. Determine the resultant vertical stress on a horizontal plane 20 m below the ground surface at points vertically below the points A and B. 7M

(OR)

6. (a) Discuss the basis of the construction of Newmark's influence chart. 7M
   (b) A ring foundation is of 3 m external diameter and 2 m internal diameter. It transmits a uniform pressure of 90 kN/m^2. Calculate the vertical stress at a depth of 1.5 m directly beneath the center of the loaded area. 7M

UNIT – IV

7. (a) What are the factors that affect compaction? Discuss in brief. 7M

(b) The following results were obtained from a standard compaction test on a sample of soil. 7M

Water content (%)	7.7	11.5	14.6	17.5	19.7	21.2
Mass of wet soil (kg)	1.7	1.89	2.03	1.99	1.96	1.92

The volume of the mould used was 950 cc. Make necessary calculations and plot the compaction curve and obtain the maximum dry density and the optimum water content.

(OR)

8. (a) What is the coefficient of consolidation? What is its use in the settlement analysis? 7M

(b) A clay layer 4 m thick is subjected to a pressure of 60 kN/m^2. If the layer has a double drainage and undergoes 50 % consolidation in one year, determine the coefficient of consolidation. Take T_v = 0.196. If the coefficient of permeability is 0.020 m/year, determine the settlement in one year. 7M

UNIT-V

9. (a) Explain the basic differences between box shear test and a triaxial shear test for soils. 7M

(b) A direct shear test was conducted on a soil and the following results were obtained: 7M

Normal stress (kN/m^2)	55	105	145
Shear stress (kN/m^2)	30	36	41

Determine the cohesive strength and the angle of shearing resistance.

(OR)

10. (a) What is Mohr's strength theory for soils? Sketch typical strength envelopes for a clean sand. 7M

(b) The following results were obtained from a triaxial test on two soil specimens: 7M

Sample No	Confining pressure (kPa)	Deviator stress at failure (kPa)	Porewater pressure (kPa)
1	200	244	55
2	300	314	107

Determine the shear strength parameters of the soil in terms of
(i) total stresses and (ii) effective stresses.

Q.P. Code: 257812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Hydraulic Machinery (CE)

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) Prove that for a channel of circular section the depth of flow d = 0.95 D for maximum discharge where d = depth of flow and D = diameter of circular channel **7M**
   (b) What are the conditions for the kinematic similarity to exist between model and prototype **7M**

(OR)

2. (a) Explain in detail about Buckingham's pi theorem of dimensional analysis. Give one example **7M**
   (b) A model with length scale ratio, model to prototype equal to x, of a Mach 2 supersonic aircraft is tested in a wind tunnel where in air is maintained at atmospheric temperature and a pressure of is times atmospheric pressures. Find the speed of the model in the tunnel. Given that the velocity of sound in atmospheric air=Z. **7M**

UNIT – II

3. (a) Derive the expression for stationary and moving flat plate with sketch **7M**
   (b) A jet of water of diameter 50mm strikes a fixed plate in such a way that the angle between the plate and the jet is 300. The force exerted in the direction of the jet is 1471.5N. Determine the rate of flow of water. **7M**

(OR)

4. A jet of water having a velocity of 60m/sec is deflected by a vane moving at 25m/sec in a direction at 300 to the direction of jet. The water leaves the vane normally to the motion of the vane. Draw the inlet and outlet velocity triangles and find out the vane angles for no shock at entry and exit. Take the relative velocity at the exit as 0.8 times the relative velocity at the entrance. **14M**

UNIT – III

5. An impulse turbine of 2.75 m diameter is rated at 11000kW at 300 r.p.m under a head of 490 m. It uses 2.7 m^3/sec discharge if the turbine is operated under a head of 400m.
   (i) What will be the speed, power and discharge.
   (ii) Determine the size of the wheel to develop 7000kW power under a head of 300 m. Also determine the speed and discharge **14M**

(OR)

6. (a) An inward flow reaction turbine has an exit diameter of 1metre and its breadth at inlet is 250mm. If the velocity of flow at inlet is 2m/s, find the mass of water passing through the turbine per second. Assume 10% of the area of flow is blocked by blade thickness. If the speed of the runner is 210 r.p.m and guide blades make an angle of 100 to the wheel tangent, draw the inlet velocity triangle and find the runner vane angle at inlet, the velocity of wheel at inlet, the absolute velocity of water leaving the guide vanes and the relative velocity of water entering the runner blade. **7M**
   (b) Explain in detail about Governing of turbines **7M**

UNIT – IV

7.	(a)	What do you mean by manometric efficiency, mechanical efficiency and overall efficiency of a centrifugal pump	**7M**
	(b)	The diameters of an impeller of a centrifugal pump at inlet and outlet are 20 cm and 40 cm respectively. Determine the minimum speed for starting the pump if it works against head of 25 m.	**7M**

(OR)

8.	(a)	Draw a typical layout and explain the working of centrifugal pump. Also indicate various components	**7M**
	(b)	Explain the method of selection of centrifugal pumps through the characteristic curves	**7M**

UNIT-V

9.	(a)	Draw indicator diagram and mention its parts	**7M**
	(b)	Explain the various performance characteristic curves of a turbine, in detail.	**7M**

(OR)

10.	(a)	Explain different types of reciprocating pumps	**7M**
	(b)	Discuss about percentage slip and Negative slip	**7M**

Q.P. Code: 258012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Building Construction (CE)

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

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. Define orientation of a building. Explain the various aspects of orientation of a building.

(OR)

2. (a) What are the principles of planning of a building? Explain any three.
   (b) List out the necessity of ventilation for a building.

UNIT – II

3. (a) Distinguish between stone masonry and brick masonry.
   (b) Define the terms (i) Squint (ii) Frog (iii) Closer (iv) Bevelled closer (v) Perpend (vi)Bullnose (vii) Bat.

(OR)

4. (a) List out the main features of the Flemish bond.
   (b) What are the different types of joints used in stone masonry? Describe ant three of them with a neat sketch?

UNIT – III

5. (a) Explain the method of construction of a Terrazzo floor.
   (b) What are the various types of sloping roofs? Describe briefly the construction of a lean-to-roof using timber as the construction material.

(OR)

6. (a) Enlist the various roof covering materials and explain any two of them in detail.
   (b) Draw a neat sketch of an arch and show its various component parts.

UNIT – IV

7. (a) What are the different types of windows? Give brief description of each type.
   (b) What is dampness What are its ill effects. Explain with the help of neat sketches the methods of damp proofing a building.

(OR)

8. (a) What can be the acoustical defects in an auditorium? Explain how these defects can be rectified.
   (b) Enumerate the essentials of a good ventilation system.

UNIT-V

9. (a) Explain the general design criteria for green building.
   (b) What is meant by intelligent building? Explain.

(OR)

10. (a) What are the limitations of limitations of an intelligent building?
    (b) What are the benefits of a green building?

Q.P. Code: 258212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Surveying - II (CE)

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 effect of curvature and refraction on staff readings. 7M
   (b) Determine the elevation of the top of tower A from the following observations: 7M

Inst. At	Staff Reading on B.M (m)	Vertical angle	Remarks
P	1.650	18º 20'	R.L of B.M= 150. 000m
Q	1.550	10º40'	Distance PQ=20m

(OR)

2. (a) Describe briefly the classification of Triangulation Systems. 7M
   (b) Two Triangulation stations A and B are 62 kilometers apart and have elevations of 140 m and 180 m respectively. Find the minimum height of signal required at B, so that the line of sight may not pass nearer the ground than 3 m. The intervening ground may be assumed to have a uniform elevation of 100m. 7M

UNIT – II

3. (a) Explain how the curve is designated and derive the relation between radius and degree of curve. 7M
   (b) A simple circular curve has a radius of 300 m and length of long chord 120m. Calculate offsets to the curve form the long chord at 10 m intervals. 7M

(OR)

4. (a) What is a reverse curve? Explain the situations in which it is used. 7M
   (b) A parabolic vertical curve is to be set out connecting two uniform grades of +0.5% and -0.5%. The chainage and reduced level of point of intersection are 1500 m and 235.550m respectively. The rate of change of grade is 0.1% per chain of 20 m. Calculate the reduced levels of the various station pegs. 7M

UNIT – III

5. (a) Explain the various purposes of "Hydrographic Surveying". 7M
   (b) Describe briefly the methods of plotting sounding. 7M

(OR)

6. (a) Explain the applications of GPS for engineering. 7M
   (b) Explain the GPS signal structure and types of GPS receivers 7M

UNIT – IV

7. (a) Write a short notes on the following: 7M
   (i) Oblique photography, (ii) Photo mosaic, (iii) Non-vertical photograph, (iv) Scale of vertical photograph
   (b) Describe in detail how ground Photogrammetry is conducted in field and in office. For what type of country Photogrammetry is suited? 7M

(OR)

8. (a) What are different types of aerial photography? Discuss each briefly with their uses. 7M
   (b) Define and explain photo-interpretation. State and discuss briefly the factors that aid in photo interpretation. 7M

UNIT-V

9. (a) Explain the features and capabilities of Total Station. 7M
   (b) Explain briefly application of Remote Elevation Method and Missing Line Measurement, using total station. 7M

(OR)

10. (a) Explain with a neat sketch, how the area of given field can be measured using Total Station. 7M
    (b) Explain how traversing is done using Total Station. 7M

Q.P. Code: 258412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Mechanics of Materials - I (CE)

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

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. The tensile test was conducted on a mild steel bar. The following data was obtained from the test. 14M

   Diameter of the steel bar = 16mm;
   Gauge length of the bar = 80mm;
   Load at proportional limit = 72kN;
   Extension at a load of 60kN = 0.015mm;
   Load at failure = 80kN;
   Final gauge length of bar = 104mm;
   Diameter of the rod at failure= 120mm.

   Determine i) Young's modulus, ii) Proportionality limit, iii) True breaking stress, iv) Percentage elongation

(OR)

2. (a) A steel bar ABCD 4m long is subjected to forces as shown in **fig.1**.Find the elongation of bar. Take E_{steel} = 200GPa 7M

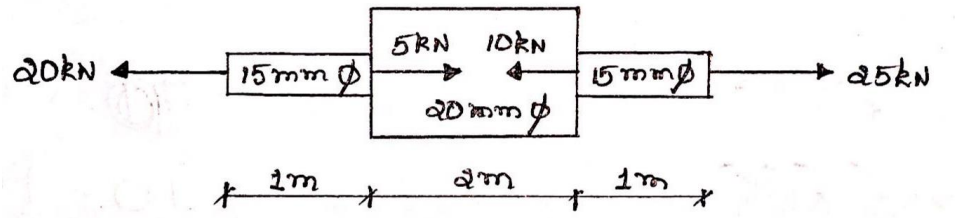


Fig.1

(b) Derive the expression for the strain energy stored in a body when the load is suddenly applied. 7M

UNIT – II

3. For a beam shown in **fig.2**. Draw shear force and bending moment diagram. Locate the point of contraflexure if any. 14M

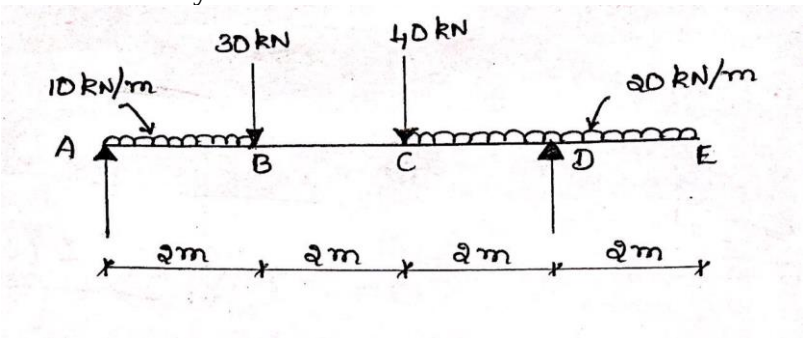


Fig.2

(OR)

4. (a) Obtain a relation between shear force, bending moment and rate of loading at a section of a beam. 7M

(b) Draw the shear force, bending moment diagram for the beam shown in **fig.3.** 7M

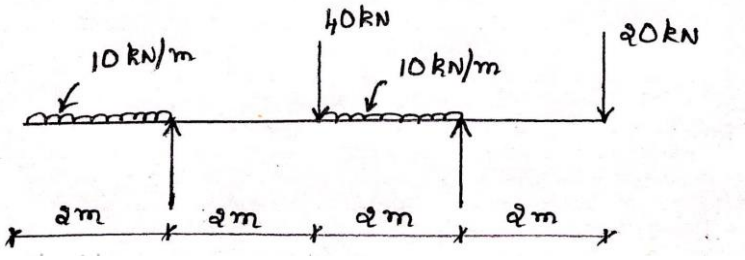


Fig.3

UNIT – III

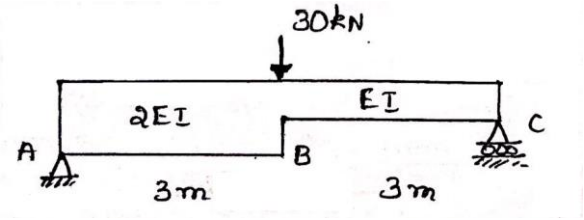
5. A thin cylindrical shell with following dimensions is filled with a liquid at atmospheric pressure. Length = 1.2m; External diameter = 200mm; Thickness of metal = 8mm; Find the value of the pressure exerted by the liquid on the walls of the cylinder and the hoop stress induced if an additional volume of 25000mm^3 is pumped into the cylinder. Take E = 2.1 x 105 N/mm2 and μ = 0.33 14M

(OR)

6. An I-section flange 200mm x 20mm, web 300mm x 15mm is subjected to a shear force of 10kN. Find the shear stress at the neutral axis, top of the web and flange fibre in contact with the web. What percentage of shearing force is carried by the web? Also sketch the variation of shear stress along the depth of the beam. 14M

UNIT – IV

7. Determine the slope and deflection under point load using conjugate beam method. 14M



(OR)

8. Determine the slope and maximum deflection for a cantilever beam subjected to a UDL over a entire span. 14M

UNIT-V

9. (a) Derive the expression for closely-coiled helical springs subjected to an axial twist. 7M

(b) A close -coiled helical spring of 100mm mean diameter is made up of 10mm diameter rod and has 20 turns. The spring carries an axial load of 200N. Determine the shearing stress. Taking the value of modulus of rigidity = 84 GN/m^2. Determine the deflection when carrying this load. Also calculate the stiffness of the spring and frequency of free vibrations for a mass hanging from it. 7M

(OR)

10. Find the diameter of round rod subjected to a bending moment of 1.8 kN/m and a torque of 1.2 kN.m, according to 14M

i) Maximum normal stress theory

ii) Maximum shear stress theory

Take allowable normal stress as 120 MPa and allowable shear stress as 72 MPa.

Q.P. Code: 258612 **SET - 2**

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

B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021

SUB: Basic Electrical and Electronics Engineering (CE)

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 division of current in the parallel branches 7M

   (b) A circuit consists of three resistances of 12, 18 and 36 ohms respectively by joined in parallel and the combination is connected in series with a resistance of 12 ohms. The whole circuit is connected to 60 V supply. Calculate current in each branch, total current drawn and power dissipated in each resistor. 7M

(OR)

2. Derive the expression for the following: 14M
   (a) Three resistors are connected in parallel.
   (b) Three inductors are connected in parallel.
   (c) Three capacitors are connected in parallel.

UNIT – II

3. (a) Explain the principle of operation of DC generator 7M

   (b) An 8-pole lap wound dc generator has 960 conductors, a flux of 40 mWb and is driven at 400 rpm. Find induced emf. Derive the formula used. 7M

(OR)

4. What are the different losses occurring in a transformer on load. How can these losses be determined experimentally? 14M

UNIT – III

5. (a) Explain the working principle of three phase induction motor. 7M

   (b) A 12-pole, 3-induction motor runs at 485 rpm on a 50 Hz supply. Calculate slip. 7M

(OR)

6. (a) Define diffusion capacitance in a P-N junction diode and discuss its dependence on diode biasing. 7M

   (b) Derive expressions for ripple factor and efficiency of rectification for a full wave rectifier. 7M

UNIT – IV

7. Explain the principle of operation of operation and VI characteristics of SCR. Also state few applications of SCR 14M

(OR)

8. (a) Explain the mechanism of current flow in a PNP and NPN transistors 7M

   (b) Explain how transistor will act as an amplifier 7M

UNIT-V

9. Explain how you measure 14M
   a) Voltage b) current and c) frequency Using CRO

(OR)

10. (a) State and Prove the following Boolean laws. 9M
    (i) Commutative , (ii) Associative , (iii) Distributive

    (b) Realize XOR gate using minimum number of NAND gates 5M

Q.P. Code: 357612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Power Systems- I (EEE)

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 following (i) Load curve, (ii) Load duration curve	8M
	(b)	Define the following (i) Load factor, (ii) Peak demand, (iii) Demand factor, (iv) Diversity factor	6M
		(OR)	
2.		Explain about various types of Tariffs.	14M

UNIT – II

3.	(a)	Explain about Suspension type Insulator with neat diagram.	7M
	(b)	Explain the methods of improving string efficiency.	7M
		(OR)	
4.	(a)	Explain the effect of wind and ice on weight of conductors	7M
	(b)	Explain various types of line supports	7M

UNIT – III

5.	(a)	Derive the Capacitance of a single phase two wire line.	7M
	(b)	A three phase 80 km long transmission line has its conductors of 1.0 cm diameter spaced at the corners of the equilateral triangle of 100 cm side. Find the inductance per phase of the system.	7M
		(OR)	
6.	(a)	Explain the types of conductors	7M
	(b)	Explain the effect of earth on capacitance of line.	7M

UNIT – IV

7.	(a)	Explain the comparison of single phase, three phase-three wire and three phase –four wire distribution systems.	7M
	(b)	Define Kelvin's law and write its limitations.	7M
		(OR)	
8.		Derive the voltage drop and power loss in AC Distribution system fed at one with concentrated loads for (i) power factors with respect to receiving end and (ii) power factors with respect to respective load points.	14M

UNIT-V

9.		Describe the use of Intersheaths in cable.	14M
		(OR)	
10.	(a)	Describe the phenomenon of Corona	7M
	(b)	Derive an expression for power loss due to Corona.	7M

Q.P. Code: 357812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Electrical Machines-II (EEE)

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 principle of operation of Buchholdz relay with neat diagram? 7M
   (b) Define Voltage regulation of a transformer and derive the equation for regulation from the phasor diagram? 7M

(OR)

2. Define All-day efficiency? Determine the all-day efficiency of a 250kVA, 33000/440V transformer having iron losses of 3750W and full load copper losses of 6250W and the operating timings are 10:00PM to 5:00 AM at 20% of full load at 0.85 pf, 5:00 AM to 9:00 AM hrs at 75% of full load at 0.95 pf, 9:00 AM to 2:00 PM at full load UPF, 2:00PM to 7:00PM at 60% of full load 0.8pf and 7:00 PM to 10:00 PM 30% of full load 0.8pf? 14M

UNIT – II

3. (a) Draw the equivalent circuit of a single phase transformer and explain about each parameter in equivalent circuit? 7M
   (b) Explain how to separate iron losses in a transformer? 7M

(OR)

4. (a) What are conditions for parallel operation of transformers? Derive load sharing for unbalanced loads. 7M
   (b) Explain the operation of autotransformer with neat diagram and also explain the saving of copper in an autotransformer when compared to static two winding transformer? 7M

UNIT – III

5. (a) What are different harmonics in 3 phase transformer and how to reduce the harmonics? 7M
   (b) Explain Scott connection in detail with neat circuit and vector diagrams? 7M

(OR)

6. (a) Draw the equivalent circuit of 3 phase induction motor? How mechanical load converted in terms of rotor resistance? 8M
   (b) Define the Slip? Prove that rotor input : rotor copper losses : rotor output = 1:s:(1-s) 6M

UNIT – IV

7. (a) Draw the performance characteristics of 3 phase induction motor? 7M
   (b) A 2000V, 50Hz delta connected induction motor has a star-connected slip ring rotor with a phase transformation ratio of 3.5. The rotor resistance and standstill leakage reactance are 0.015 Ohm and 0.3 Ohm per phase respectively. Neglecting stator impedance and magnetizing current determine. 7M
   i) The rotor current and power factor at start with slip-rings shorted.
   ii) The rotor current and power factor at 4% slip with slip-rings shorted.
   iii) The external rotor resistance per phase required to obtain a starting current of 120A in the stator supply lines.

(OR)

8. What are the different tests should conduct to draw the circle diagram and explain? 14M

UNIT-V

9. (a) Explain how an auto transformer can be used for starting of induction motor? Compare staring torque and starting current with DoL starter? 7M

	(b)	Calculate the steps in a 5 steps 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.	7M

(OR)

10.	(a)	What is the necessity of speed control? Explain how to control speed of Induction motor by cascade connection?	9M
	(b)	Explain principle operation of Induction Generator?	5M

Q.P. Code: 358012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Electrical & Electronics Measurements (EEE)

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) Describe the constructional details of an attraction-type moving iron instrument with the help of a neat diagram. Derive the equation for deflection if spring control is used and comment upon the shape of scale — 7M

   (b) The inductance of a certain moving-iron ammeter is $\left(8 + 4\theta - \frac{1}{2}\theta^2\right)$pH, where Θ is the deflection in radian from the zero position. The control spring torque is 12×10^{-6} Nm/rad. Calculate the scale position in radian for current of 5 A. — 7M

(OR)

2. (a) How many operating forces are necessary for successful operation of an indicating instrument? Explain the methods of providing these forces. — 7M

   (b) Derive the expression for the deflection of a spring controlled permanent magnet moving coil instrument. Why not this instrument able to measure the ac quantity? — 7M

UNIT – II

3. (a) Describe the constructional details of an electro-dynamometer type wattmeter. Comment upon the shape of scale when spring control is used. — 7M

   (b) A 230 V single-phase watthour meter records a constant load of 5 A for 6 hours at unity power factor. If the meter disc makes 2760 revolutions during this period, what is the meter constant in terms of revolutions per unit? Calculate the load power factor if the number of revolutions made by the meter is 1712 when recording 4 A at 230 V for 5 hours. — 7M

(OR)

4. (a) Two wattmeters are connected to measure the power consumed by a 3-phase balanced load. One of the wattmeters reads 1500 Ω and the other, 700 Ω. Calculate power and power factor of the load, when (i) both the readings are positive, and (ii) when the reading of the second wattmeter is obtained after reversing its current coil connection. — 7M

   (b) Explain the construction and working of Moving iron type power factor meter — 7M

UNIT – III

5. (a) Describe the working of a Schering bridge for measurement of capacitance and dissipation factor. Derive relevant equations and draw phasor diagram under balanced condition. — 7M

   (b) Derive an expression for the unknown resistance measured using the loss of charge method. — 7M

(OR)

6. (a) Four arms of a Wheatstone bridge are as follows: AB = 150 Ω, BC = 15 Ω, CD = 6 Ω, DA = 60 Ω. A galvanometer with internal resistance of 25 Ω is connected between BD, while a battery of 20 V dc is connected between AC. Find the current through the galvanometer. Find the value of the resistance to be put on the arm DA so that the bridge is balanced. Derive the expression for the bridge balance. — 7M

   (b) Explain how Wien's bridge can be used for measurement of unknown frequency. Draw the phasor diagram under balanced condition and derive the expression for balance. — 7M

UNIT – IV

7.	(a)	Derive expressions for the corresponding ratio error and phase angle error of a current transformer.	7M
	(b)	What are the different forms of AC potentiometers and explain anyone them.	7M
		(OR)	
8.	(a)	With neat diagram explain Crompton's dc potentiometer	8M
	(b)	What is standardization of dc potentiometer? Why it is necessary	6M
		UNIT-V	
9.	(a)	Draw and explain construction of Cathode ray tube	7M
	(b)	In a CRT, the distance between the deflecting plates is 1.0 cm, the length of the deflecting plates is 4.5 cm and the distance of the screen from the centre of the deflecting plates is 33 cm. If the accelerating voltage supply is 300 volt, calculate deflecting sensitivity of the tube.	7M
		(OR)	
10.	(a)	Explain briefly Ramp type DVM	7M
	(b)	Explain briefly Successive approximation type DVM	7M

Q.P. Code: 358212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Generation of Electrical Power (EEE)

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)	Justify the statement, "overall efficiency of steam power station is quite low". (Give the reason)	4M
	(b)	For a steam power plant, explain functions of: (i) Cooling Tower, (ii) ESP, (iii) ID Fan, (iv) Condenser, (v) Economizer.	10M
		(OR)	
2.	(a)	Write a brief note on i) Super heater, ii) Air Pre Heater	7M
	(b)	State the factors governing for selection of site for thermal power plant.	7M

UNIT – II

3.	(a)	What are the different parameters to be considered to construct a hydro electric power plant?	7M
	(b)	Explain the functions in Nuclear reactor i) Nuclear fuels, ii) Moderator, iii) coolants	7M
		(OR)	
4.	(a)	What is meant by Hammer effect ,with neat sketch explain the function of surge tank	7M
	(b)	Explain the advantages and disadvantages of Nuclear plant.	7M

UNIT – III

5.	(a)	Explain construction and working of solar distillation unit with suitable figure	10M
	(b)	Explain the working of Geothermal Power Plants.	4M
		(OR)	
6.	(a)	Define: (i) solar constant, (ii) beam radiation, (iii) Diffuse radiation	10M
	(b)	Explain the advantages and disadvantages of geothermal energy over the other forms of energy.	4M

UNIT – IV

7.	(a)	Derive the expression for power developed due to wind	10M
	(b)	Discuss the advantages and disadvantages of horizontal and vertical axis windmill.	4M
		(OR)	
8.	(a)	Explain the advantages and disadvantages of Wind Energy	4M
	(b)	Briefly describe cut-in speed and cut-out speed in wind energy conversion system	10M

UNIT-V

9.	(a)	Explain various biomass energy conversion technologies in detail.	7M
	(b)	Explain the closed cycle OTEC System, with its advantages over open cycle system.	7M
		(OR)	
10.	(a)	Explain with neat sketches the various methods of Tidal power generation. What are the limitations of each method	7M
	(b)	What is meant by wet fermentation and dry fermentation	7M

Q.P. Code: 358412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Switching Theory and Logic Design (EEE & 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)	Convert the following numbers: (i) (1431)8 to base 10 (ii) (11001101.0101)2 to base 8 and base 4 (iii)(53.1575)10 to base 2	7M
	(b)	Distinguish between weighted and non-weighted codes with an example	7M
		(OR)	
2.		Explain the procedure to Detect and Correct errors in the received Hamming code with the help of example.	14M

UNIT – II

3.	(a)	i) What are universal gates? Implement NOT,AND & OR gates using Universal gates ii) State and prove Demorgan's theorem	7M
	(b)	Reduce the following using K-Map Technique. $F(A,B,C,D)=\pi(0,2,3,8,9,12,13,15)$	7M
		(OR)	
4.		Simplify the following using tabulation method $y(w,x,y,z)=\sum m(1,2,3,5,9,12,14,15)+d(4,8,11)$	14M

UNIT – III

5.	(a)	Define an Encoder. Design octal to binary encoder	7M
	(b)	Implement the following Boolean function with 8 x 1 multiplexer $F(A,B,C,D) = \sum (0, 3, 5, 6, 8, 9, 14, 15)$	7M
		(OR)	
6.	(a)	With relevant Diagrams, Discuss about Encoder and Decoder.	7M
	(b)	Decoder Implement full adder circuit with one 3 x 8 Decoder and two OR gates	7M

UNIT – IV

7.	(a)	Write short notes on (i) ROM , (ii) PROM	7M
	(b)	Illustrates the differences between PAL and PLA	7M
		(OR)	
8.		Implement the following Boolean functions with PAL $w(A, B, C, D) = \sum(2, 12, 13)$ $x(A, B, C, D) = \sum(7, 8, 9, 10, 11, 12, 13, 14, 15)$ $y(A, B, C, D) = \sum(0, 2, 3, 4, 5, 6, 7, 8, 10, 11, 15)$ $z(A, B, C, D) = \sum(1, 2, 8, 12, 13)$	14M

UNIT-V

9.	(a)	Draw the sequential circuit for serial adder using shift registers, full adder and D-FF. Explain its operation with state equations and state table	7M
	(b)	With relevant diagram and tables, discuss about Sequence Detector	7M
		(OR)	
10.	(a)	Convert JK flip-flop to T flip-flop.	7M
	(b)	Discuss the design of mod 6 counter	7M

Q.P. Code: 358612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Analog Electronic Circuits (EEE)

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) Analyze Single Stage Transistor Amplifier Using Hybrid Model? 7M
   (b) Draw the hybrid parameter equivalent circuit for an n-p-n common emitter transistor and briefly explain? 7M

(OR)

2. (a) Derive input impedance, output impedance, current gain & voltage gain for CB & CC using simplified hybrid model. 8M
   (b) Draw the Small Signal Hybrid Model of CS Amplifier & Derive Voltage Gain, Input Impedance & Output Impedance? 6M

UNIT – II

3. (a) When Two Stages of Identical Amplifiers are Cascaded, Obtain the Expressions for Voltage Gain, Current Gain & Power Gain? 7M
   (b) Explain How to Calculate Bandwidth of Single Stage & Multistage Amplifier 7M

(OR)

4. (a) Distinguish different Coupling Schemes in a Multistage Amplifier 6M
   (b) Consider a Single Stage Amplifier having R_S= 6800hms, R_1 = 68K, R_2 = 22K, R_E=1K, R_C= 2.2K, R_L = 10K C_1= 0.1µF, C_2 = 0.1µF, C_E= 10µF and β=100. Determine Low Frequency Response of the Amplifier? 8M

UNIT – III

5. (a) Explain Effect of Negative Feedback on Amplifiers? 7M
   (b) Analyze the Circuit and Determine Input & Output impedances of Voltage Series Feedback Amplifier? 7M

(OR)

6. (a) Explain Working Principle of Hartley Oscillator with neat diagram? 10M
   (b) Distinguish between Negative Feedback & Positive Feedback? 4M

UNIT – IV

7. (a) Explain Second Harmonic Distortion and Power Dissipation due to Harmonic Distortion? 7M
   (b) Explain Working principle of Series, Fed, and Directly Coupled Class-A Power Amplifier? 7M

(OR)

8. (a) Explain Working Principle of Complimentary Symmetry Class-B Power Amplifier? 10M
   (b) Distinguish Class-A & Class-B Power Amplifier? 4M

UNIT-V

9. (a) Explain Working operation of Clamper in detail? 7M
   (b) Draw the RC-Low Pass Circuit and Response With respect to Ramp Input? 7M

(OR)

10. (a) Explain Working Principle of Schmitt Trigger with Transistor Circuit Diagram? 10M
    (b) List out the Applications of Monostable & Bistable Multivibrator? 4M

Q.P. Code: 457612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Probability Theory & Stochastic Processes (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) Explain: Joint and Conditional Probability. **7M**
   (b) In a single through of two dice, what is the probability of obtaining a sum of at least 10? **7M**

(OR)

2. (a) What is the concept of Random variable? Explain with a suitable example **7M**
   (b) A random variable X has the distribution function: **7M**

$F_x(x)=\sum_{n=1}^{12}\frac{n^2}{650}\,u(x-n)$

Find the probabilities (i)P{-∞<X≤6.5} (ii) P{X>4} (iii) P{6<X≤9}

UNIT – II

3. (a) Explain the moments about the origin and mean **7M**
   (b) Find the expected value of uniformly distributed random variable **7M**

(OR)

4. (a) Explain Moment Generating Function **7M**
   (b) Two random variables X and Y have a joint Probability density Function : **7M**

$f_{X,Y}(X,Y) = \begin{cases} \frac{5}{16}X^2 y & 0 < y < x < 2 \\ elsewhere \end{cases}$

(i)Find the marginal density function of X and Y

UNIT – III

5. (a) Give an expression for distribution function & Density Function. **7M**
   (b) A Gaussian random variable X with μ_x =4 and σ_x =3 is generated .Find the probability of X≤ 7.75 **7M**

(OR)

6. (a) State all the properties of Joint probability density function. **7M**
   (b) The joint distribution of X and Y is given by f(x)=4xy $e^{-(x^2+y^2)}$,x≥0,y≥0 Show that X and Y are independent random variables. **7M**

UNIT – IV

7. (a) Explain the relationship between the cross-correlation function and the cross power spectral density **7M**
   (b) Given the Autocorrelation function of the processes: **7M**

$\mathbf{R_{XX}(\tau)= 25+ \frac{4}{1+6\tau^2}}$

Find the mean and variance of the process X(t)

(OR)

8. (a) At a random process x(t) whose mean value is 2 and autocross correlation function is $\mathbf{4\,e^{-2|\tau|}}$ where the auto correlation is applied to the system whose transfer function is **1/(2+jw)**.Find the mean value ,auto correlation, Power density spectrum ,and average power of output signal of y(t). **7M**

(b) A random process has the power density spectrum $S_{XY}(\omega)=\frac{6w^2}{(1+w^2)^3}$, find the average power in the process. **7M**

UNIT-V

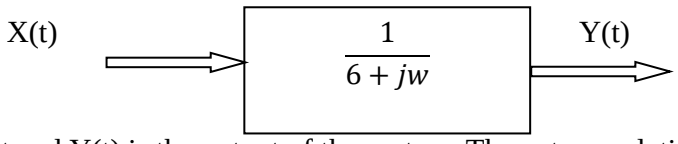
9. (a) Explain the concept of band limited process and list out its properties. **7M**

(b) Explain Spectral characteristics of system response. **7M**

(OR)

10. (a) Write a short note on band limited ,band pass and Narrow band process. **7M**

(b) Consider a linear system as shown in figure: **7M**



X(t) is the input and Y(t) is the output of the system. The autocorrelation of X(t) is $\mathbf{R_{XX}(\tau)=5\delta(\tau)}$ determine the PSD and autocorrelation.

Q.P. Code: 457812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Electromagnetic Waves & Transmission Lines (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) Explain propagation of uniform plane wave in lossy dielectric. What is the significance of it? 7M

   (b) The electric field intensity associated with a plane wave travelling in a perfect dielectric medium is given by , 7M

   $E_x(z,t) = 10\cos(2\pi X 10^7 t - 0.1\pi z)\ V/m$

   (i) What is the velocity of propagation?

   (ii) Write the expression for magnetic field intensity associated with wave if $\mu = \mu_0$.

(OR)

2. (a) What is skin effect? What is skin depth? What is its relation with attenuation constant, conductivity and frequency? 7M

   (b) A lossy dielectric has $\mu_r = 1, \varepsilon_r = 50$ *and* $\sigma = 60$ ▯ $/m$ at 15.9 MHz, Find α, β, v and η if the uniform plane wave is travelling through this medium. 7M

UNIT – II

3. (a) What is total reflection in case of oblique incidence at plane dielectric boundary? What is critical angle θ_c ? Derive the expression for θ_c. 7M

   (b) $\overline{E}$ and $\overline{H}$ wave travelling in a free space, arte normally incident on the interface with perfect dielectric with $\varepsilon_r = 3$.Compute the magnitude of incident, reflected and transmitted $\overline{E}$ and $\overline{H}$ waves at the interface . 7M

(OR)

4. (a) Derive the condition for polarization of sinusoidal wave. 7M

   (b) In free space, $\overline{E} = 10\sin(wt - \beta z)\overline{a_x}$ V/m .Show that the average power crossing a circular disc of radius 15.5m in a z = constant plane is 1w. 7M

UNIT – III

5. (a) Derive the expression for α and β in terms of primary constants of a line. 7M

   (b) For cable it is decided to provide lumped loading. The primary constants of the cable are : $R = 40\Omega/km, L = 1mH/km, G = 1$ ▯ $/km$ *and* $C = 0.05\mu F/km$.Find the new value of inductance required to achieve the distortion less condition .By what factor, the inductance is required to raised? 7M

(OR)

6. (a) Derive the condition for minimum attenuation with (i) L variable and (ii) C variable. 7M

   (b) Calculate the characteristic impedance, attenuation constant and phase constant of a transmission line if the following measurements have been made on the line $Z_{OC} = 550\Omega$ and $Z_{SC} = 500\Omega$. 7M

UNIT – IV

7. (a) Derive the relation between standing wave ratio and magnitude of the reflection coefficient($|K|$) 7M

(b) The characteristic impedance of high frequency line is 100Ω .It is terminated in an impedance of (100+j100)Ω. Using Smith chart find the impedance at one eighth wave length away from the load. 7M

(OR)

8. (a) Explain the significance and design of single stub impedance matching. Discuss the factors on which length depends. 7M

(b) Determine the input impedance of the transmission line of electrical length 28^0 with terminated load of $\frac{Z_R}{R_0} = 2.6 + j1.$ use smith chart. 7M

UNIT-V

9. (a) Show that for a rectangular waveguide $u_p = \frac{u'}{\sqrt{1-\left[\frac{f_c}{f}\right]^2}}$, $\lambda = \frac{\lambda'}{\sqrt{1-\left[\frac{f_c}{f}\right]^2}}$ 7M

(b) For an air- filled waveguide with a=2b =2.5cm operating at 20GHz, Calculate u_p and λ for TE_{11} and TE_{21} . 7M

(OR)

10. (a) Show that the a rectangular waveguide does not support TM_{10} and TM_{01} modes. 7M

(b) A 1-cm X2-cm waveguide is made of copper ($\sigma_c = 5.8X10^7 S/m$) and filled with a dielectric material for which $\varepsilon = 2.6\varepsilon_0$, $\mu = \mu_0$, $\sigma_d = 10^{-4} S/m$.If the guide operates at 9GHz, evaluate α_c and α_d for (i) TE_{10} and (ii) TM_{11}. 7M

Q.P. Code: 458012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Pulse 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) Explain in detail about RC Low Pass Circuit for Sinusoidal and Step Inputs with neat diagrams? 8M

   (b) A 10 V Step is switched on to a 50 KΩ resistor in series with a 500pF capacitor. Calculate the rise time of the Capacitor Voltage, the time for the capacitor to charge to 63.2% of its maximum voltage and the time for the capacitor to be completely charge. 6M

(OR)

2. (a) Explain in detail about RC High Pass Circuit with pulse Input with neat diagrams for different time constants? 7M

   (b) What is an attenuator? Explain its types. 7M

UNIT – II

3. (a) What is a clipper? Explain different types of Series Clippers? 7M

   (b) State and prove clamping circuit theorem. 7M

(OR)

4. What is Clamping? Explain in detail about types of Clamping Circuits? 14M

UNIT – III

5. (a) Explain in detail about Transistor as Switch? 7M

   (b) Explain the operation of a monostable Multivibrator with necessary waveforms and circuits? 7M

(OR)

6. Explain in detail about Schmitt trigger and derive expressions for UTP and LTP? 14M

UNIT – IV

7. (a) Explain in detail about UJT and Sweep Circuit generation using UJT? 7M

   (b) Explain in detail about Miller and Bootstrap Sweep Circuits? 7M

(OR)

8. Explain in detail about Transistor Bootstrap Time Base generator? 14M

UNIT-V

9. Explain briefly about CMOS Inverter, RTL NOR gate, Two input ECL NOR gates? 14M

(OR)

10. Explain the operation of linear bidirectional sampling gate using Transistors? 14M

Q.P. Code: 458212 **SET - 2**

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

B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021

SUB: Electronic Circuit Analysis (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 is an amplifier? Draw the neat diagram of CE amplifier and explain the role of each element. 7M
   (b) What are the biasing techniques are used for BJT as amplifier. Explain about any two biasing techniques. 7M

(OR)

2. (a) Write the differences between BJT and FET amplifiers in terms of voltage gain, current gain, input impedance, output impedance, and bandwidth. 7M
   (b) Explain the FET amplifier with voltage divider bias. 7M

UNIT – II

3. (a) Derive the expressions for f_α, f_β, and f_T. 7M
   (b) A CE amplifier is driven by a voltage source of internal resistance r_s=400Ω, and the load impedance is a resistance R_L=500Ω. The h-parameters are $h_{re}=1\times10^{-4}$, h_{ie}=0.5KΩ, h_{fe}= 25 and h_{oe}=12.5μA/V. Compute the current gain, output resistance using exact analysis. 7M

(OR)

4. (a) Explain the effects of coupling and bypass capacitance on low frequency response. 7M
   (b) Draw the Hybrid model for the transistor in three different configurations. 7M

UNIT – III

5. (a) Explain the small signal model of JFET CS amplifier. 6M
   (b) A CE, RC coupled amplifier uses transistors with the following h-parameters: h_{ie} = 1400Ω, h_{re} = 3.5×10^{-4}, h_{fe} = 50 and h_{oe} = 40 μA/V. The value of g_m at operating point is 75mmhos. The biasing resistor R_1 between V_{CC} and base is 200kΩ and R_2 between base and ground is 20kΩ. The load resistance R_C = 6kΩ. Let C = 200μF be the total shunt capacitance in the input circuit and the coupling capacitor C_C = 8μF . Calculate for one stage of the amplifier (a) mid-band current gain (b) mid-band voltage gain. 8M

(OR)

6. (a) Draw the simplified equivalent circuit of RC coupled amplifier for Mid-band Range. And derive the expression for current gain and voltage gain. 7M
   (b) Write short notes about i) Darlington pair and ii) Bootstrap circuits. 7M

UNIT – IV

7. (a) Explain in detail about effect of negative feedback on i) stability ii) noise and iii) distortion. 7M
   (b) What is Barkhausen criterion and explain RC phase shift oscillator. 7M

8. (a) Explain about voltage shunt feed amplifier in all aspects. 7M
   (b) Explain in detail about Hartley Oscillator. And derive the expression for the frequency of oscillations 7M

UNIT-V

9. (a) Explain the effect of cascading double tuned amplifiers on bandwidth. 7M
   (b) Classify the power amplifiers and compare. 7M

(OR)

10. (a) Explain the following 7M
    (i) Q-factor, (ii) Q-factor of a Capacitor, (iii) unloaded and loaded Q
    (b) Explain about complementary symmetry push pull power amplifier. 7M

Q.P. Code: 458612 **SET - 2**

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

B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021

SUB: Analog Communications (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) Explain the elements of a Communication system with a neat block diagram. 7M
   (b) Explain operation of square law detector with circuit diagram and waveforms. 7M

(OR)

2. (a) Discuss about the generation of Vestigial sideband modulation. What are its advantages and applications? 7M
   (b) One input to an AM modulator is a 500kHZ carrier with a peak amplitude of 32V.The second input is a 12kHz modulating signal whose amplitude is sufficient to provide a 14 Vp change in the amplitude of the envelope. Determine the following 7M
   (i) Upper and Lower side frequencies
   (ii) Modulation coefficient, percent modulation
   (iii) Maximum and minimum amplitude of envelope.

UNIT – II

3. (a) Define modulation index in FM. Discuss the spectra of NBFM and WBFM for various modulation indices 7M
   (b) An angle modulated signal is given by $X_c(t)=5\cos[2\pi(10^6)t+0.2\cos 200\pi t]$.Identify whether $X_c(t)$ is a PM or an FM signal? 7M

(OR)

4. (a) Write in detail about multitone and periodic modulation in FM. 7M
   (b) An Angle modulated signal has the form $V(t)=100\cos(2\pi f_c t+4\sin 2000\pi t)$ when $f_c=10$MHz. 7M
   (i) Determine average transmitted power.
   (ii) Determine peak phase deviation.
   (iii) Determine peak frequency deviation
   (iv)Is this an FM or a PM signal? Explain.

UNIT – III

5. (a) Explain, how the use of a RF amplifier improves the signal-to-noise ratio of a Super heterodyne receiver. 7M
   (b) The RF, local Oscillator and IF frequencies of an AM receiver are 800kHz and 455kHz respectively. Determine 7M
   (i)Image frequency
   (ii) Image frequency rejection ratio for a loaded Q of 120

(OR)

6. (a) Explain how the constant IF is achieved in Super heterodyne receiver. 7M
   (b) In a broadcast Super heterodyne receiver having no RF amplifier, the loaded Q of the antenna coupling circuit is 100.If the IF frequency is 455kHz, determine: 7M
   (i) The image frequency and its rejection ratio for tuning at 1.1kHz a station.
   (ii) The image frequency and its rejection ratio for tuning at 25MHz.

UNIT – IV

7. (a) Explain the following terms 7M
   i) Sources of internal and external noise

ii) Noise temperature
iii) FM threshold effect

(b) Compare noise performance of FM with AM. 7M

(OR)

8. (a) Derive the expression for figure of merit for FM receiver. 7M

(b) Prove that the product of the transfer functions of the pre-emphasis and de-emphasis circuits is constant. 7M

UNIT-V

9. (a) Differentiate between Natural Sampling and Flat-top Sampling. 7M

(b) Find the Nyquist rate and the Nyquist interval for the signal $X(t)= (1/2\pi)(\cos 4000\pi t)(\cos 1000\pi t)$ 7M

(OR)

10. (a) Describe the generation and demodulation of PPM with the help of block diagram and hence discuss its spectral Characteristics. 7M

(b) Compare the merits and demerits of PAM,PWM and PPM signals and list out their applications. 7M

Q.P. Code: 557612 **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Manufacturing Technology (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 different types of patterns commonly used with neat sketches.	7M
	(b)	List the pattern allowances and explain their significant.	7M
		(OR)	
2.	(a)	What is directional solidification? Why it is required.	7M
	(b)	Explain the types of gates.	7M

UNIT – II

3.	(a)	What are the different types of die casting processes? Enumerate differences between them.	7M
	(b)	State the classification of centrifugal casting. Discuss the applications of each.	7M
		(OR)	
4.	(a)	Explain the working principle of crucible furnace. Describe crucible pit furnace.	7M
	(b)	What are casting defects? Explain drop, misrun and hot tears.	7M

UNIT – III

5.	(a)	Explain basic types of welded joints with neat sketches.	7M
	(b)	Explain the working principle of thermit welding. Give its applications.	7M
		(OR)	
6.	(a)	What is resistance welding? List out different types of resistance welding processes.	7M
	(b)	Explain the working principle of plasma welding. Give its applications.	7M

UNIT – IV

7.	(a)	Explain the friction welding with neat sketches?	7M
	(b)	List the various welding defects which are commonly occur. Discuss them in brief.	7M
		(OR)	
8.	(a)	Describe the different types of non-destructive tests.	7M
	(b)	Write the differences between soldering and brazing.	7M

UNIT-V

9.	(a)	What are the advantages of forging of metals?	7M
	(b)	How hot forging differs from cold forging.	7M
		(OR)	
10.	(a)	Explain the principle of rolling with a neat sketch.	7M
	(b)	What are the various forging defects? Discuss briefly.	7M

Q.P. Code: 557812 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Thermal Engineering - I (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. Illustrate the constructional details of an I.C engines? Explain briefly about the important components and its materials? 14M

(OR)

2. (a) Explain the working principle of a four stroke SI engine and indicate the processes on PV and TS plots. 7M
   (b) What is valve timing of 4 stroke engine? Explain its significance through a diagram. 7M

UNIT – II

3. (a) Draw a schematic diagram of fuel feed pump and explain its working principle. 7M
   (b) With a neat sketch explain the battery ignition system. 7M

(OR)

4. (a) Explain thermo syphon cooling system and forced circulation cooling system. 7M
   (b) Briefly discuss the air-fuel ratio requirements of a petrol engine from no load to full load. 7M

UNIT – III

5. (a) Briefly explain the stages of combustion in SI engine elaborating the flame front propagation. 7M
   (b) What is delay period and what are the factors that affect the delay period. 7M

(OR)

6. Explain the phenomenon of knock in CI engines and compare it with SI engine knock. 14M

UNIT – IV

7. During the trial of a single-cylinder, four-stroke oil engine, the following results were obtained. Cylinder diameter = 20cm, Stroke = 40 cm, Mean effective pressure = 6 bar, Torque = 407 Nm, Speed = 250 rpm, Oil consumption = 4 kg/h, Calorific value of fuel = 43 MJ/kg, Cooling water flow rate = 4.5 kg/min, Air used per kg of fuel = 30kg, Rise in cooling water temperature = 45^0C , Temperature of exhaust gases = 420^0 C, Room temperature = 20^0 C, Mean specific heat of exhaust gas = 1 kJ/kg K, Specific heat of water = 4.18 kJ/kg K. Find the ip, bp, and draw up a heat balance sheet for the test in kJ/h. 14M

(OR)

8. A two-stroke diesel engine was motored when meter reading was 1.5 KW. Then the test on the engine was carried with following results: 14M

   Brake torque = 120 N-m, RPM=600, Fuel used = 2.5 kg, CV of fuel = 41KJ/Kg, cooling water used = 820 kg. Rise in the cooling water temperature is 10^0 C. Exhaust gas temperature = 350^0 C, Room temperature = 25^0 C, A:F = 32:1. Calculate BP, IP, mechanical and indicated thermal efficiencies and heat balance on percentage basis.

UNIT-V

9. A single acting two stage reciprocating air compressor compresses 4.5 kg of air per minute from 1.013 bar and 15^0 C through a pressure ratio of 9. The intercooling is 14M

perfect and the law of compression and expansion $pv^{1.3}$ = constant. Assuming the clearance volumes of both stages 5% of their swept volume and the speed of compressor 300 rpm, calculate the indicated power and the cylinder swept volume. Also calculate the heat loss to the cylinder jacket cooling water and the heat loss to the intercooler circulating water.

(OR)

10. Following particulars relate to a centrifugal compressor: 14M

Inlet diameter of impeller = 61.4 cm, Outlet diameter of impeller = 123 cm, Speed = 5000 rpm, velocity of flow = 61.6 m/s, free air delivered = 1000 m^3 /min, pressure ratio = 1.33, index of compression =16. Assuming that all pressure rise takes place in the impeller, find the angles at which air from impeller enters the casing, breadth of the impeller blade at inlet and outlet.

Q.P. Code: 558012 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Kinematics of Machinery (ME)

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

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

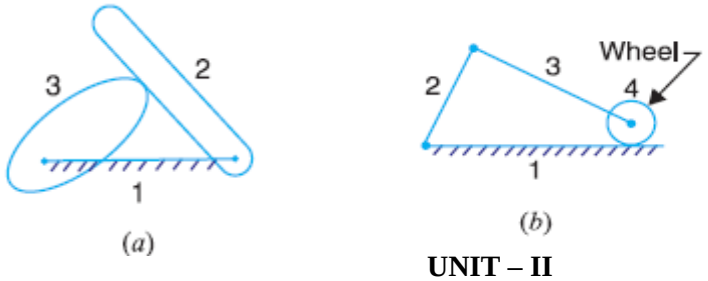
UNIT - I

1. Explain the inversions of single slider crank mechanism with a neat sketches. 14M

(OR)

2. (a) Differentiate between a machine and a structure? Mention any two examples of each one. 6M

   (b) Determine the DOF of the following mechanisms 8M



UNIT – II

3. Explain the Paucellier mechanism with a neat sketch and Prove that it produces an exact straight line motion. 14M

(OR)

4. Derive an expression for the ratio of shafts velocities for Hooke's joint and draw the polar diagram depicting the salient features of driven shaft speed? 14M

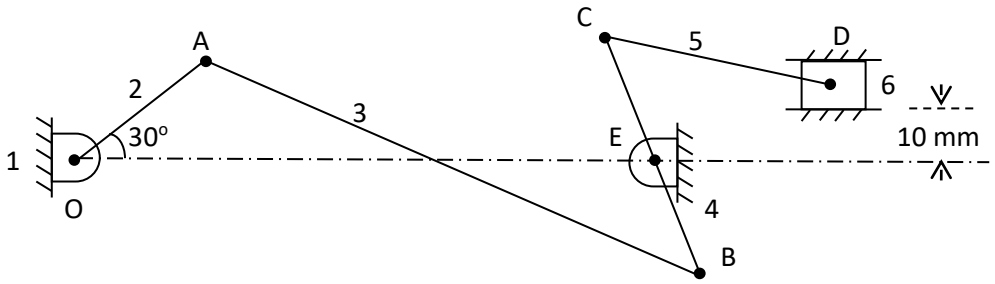
UNIT – III

5. What is the Coriolis acceleration component? In which cases does it occur? How is it determined? 14M

(OR)

6. For a mechanism in figure crank OA rotates at 100 rpm clockwise using I.C. method determine the linear velocities of points B, C, D and angular velocities of links AB, BC and CD. 14M

OA = 20 cm AB = 150 cm BC = 60 cm
CD = 50 cm BE = 40 cm OE = 135 cm



UNIT – IV

7. Discuss the displacement, velocity and acceleration diagrams when the follower moves with uniform acceleration and retardation. 14M

(OR)

8. Explain with sketches the different types of cams and followers. 14M

UNIT-V

9. Derive an expression for the condition of constant velocity ratio for transmission of motion with a neat sketch. 14M

(OR)

10. Derive an expression for the length of path of contact and arc of contact. 14M

Q.P. Code: 558212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Mechanics of Fluids (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) If the velocity distribution over a plate is given by $u = \frac{2}{3}y - y^2$ in which u is the velocity in meter per second at a distance y meter above the plate, determine the shear stress at y=0 and y=0.15m Take dynamic viscosity o the fluid as 8.63 poises. 6M

   (b) Explain the working of U-tube mano meter with neat sketch 8M

(OR)

2. (a) Determine the viscosity of a liquid having kinematic viscosity 6 stokes and specific gravity 1.9 6M

   (b) Explain the following? 8M
   (i) Mass density, (ii) Weight density, (iii) Kinematic viscosity, (iv) Dynamic viscosity

UNIT – II

3. State Bernoulli's theorem for steady flow of an incompressible fluid. Derive an expression for Bernoulli's theorem from first principle and state the assumptions made for such a derivation. 14M

(OR)

4. (a) Derive an expression for force in a pipe bend. 6M

   (b) A pipe of diameter 400 cm carries water at a velocity of 25 m/s. the pressure at the points A and B are given as 29.43 N/cm^2 and 22.563 N/cm^2 respectively while the datum head at A and B are 28 m and 30 m. Find the head loss between A and B. 8M

UNIT – III

5. (a) Explain the working principle of flow nozzle and obtain an expression for its discharge. 8M

   (b) In a pipe of diameter 350 mm and length 75 m water is flowing at a velocity of 2.8 m/s. Find the head lost due to friction using (i) Darcy-Weisbach formula, (ii) Chezy's formula for which C=55 assuming υ of water as 0.012 stokes. 6M

(OR)

6. Derive an expression for finding the major loss when the fluid flows through a pipe. Also give the formulae for various minor losses. 14M

UNIT – IV

7. (a) What are the different methods of preventing the separation of boundary layer? 5M

   (b) For the following velocity profile, determine whether the flow has separated or on the verge of separation or will attach with the surface: 9M

   i) $\frac{u}{U} = \frac{3}{2}\left(\frac{y}{\delta}\right) - \frac{1}{2}\left(\frac{y}{\delta}\right)^3$ ii) $\frac{u}{U} = 2\left(\frac{y}{\delta}\right)^2 - \left(\frac{y}{\delta}\right)^3$ iii) $\frac{u}{U} = -2\left(\frac{y}{\delta}\right) + \left(\frac{y}{\delta}\right)^2$

(OR)

8. (a) What do you mean by boundary layer separation? What is the effect of pressure gradient on boundary layer separation? 8M

   (b) Oil with free-stream velocity of 2 m/s flows over a thin plate 2 m wide and 2 m long. Calculate the boundary layer thickness and shear stress at the trailing end point and determine the total surface resistance of the plate. Take sp.gr. as 0.86 and kinematic viscosity as 10^{-5} m^2/s. 6M

UNIT-V

9.	(a)	A metallic sphere of specific gravity 7 falls in oil of density 800 kg/m^3. The diameter of the sphere is 8 mm and it attains a terminal velocity of 40 mm/s. Find the viscosity of oil in poise.	8M
	(b)	Explain the flow pattern around the cylinder when a constant circulation Γ is impacted to the cylinder	6M
		(OR)	
10.	(a)	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 1.5 m in diameter and 10 m long. Assuming ideal fluid theory, find (i) the circulation, (ii) lift force and (iii) position of stagnation points. Take density of air as 1.25 kg/m^3	10M
	(b)	What is the drag force acting on a rotating cylinder	4M

Q.P. Code: 558412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Composite and Nano Materials (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. What is the role of interface in composite performance and durability? Explain about Fiber reinforced composites. 14M

(OR)

2. a) Explain Prepreg production process. 7M
   b) List applications of various types of composites. 7M

UNIT – II

3. What are the essential requirements of good matrix material? Write the properties governed by matrix phase. 14M

(OR)

4. Explain properties and applications of ceramic matrix composites and metal matrix composites. 14M

UNIT – III

5. What are the various types of ceramic composite materials? Describe about Portland cement concretes (PCC) and pre stressed concrete (PC). 14M

(OR)

6. Explain briefly about post tensioning in reinforced concrete. Write about properties and applications of hybrid composites. 14M

UNIT – IV

7. What are ceramic materials? Explain properties and application of ceramic materials. 14M

(OR)

8. What are the types of glasses? Explain about fabrication of glass by blowing process. 14M

UNIT-V

9. Describe characteristics, properties and applications of nano phase materials. 14M

(OR)

10. Describe properties and applications of shape memory alloys and smart materials alloys. 14M

Q.P. Code: 558612 | **SET - 2**

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

B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021

SUB: **PROBABILITY AND STATISTICS (ME & CSE)**

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

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

UNIT - I

1. The random variable X has the following probability function 14M

x	0	1	2	3	4	5	6	7
$f(x)$	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2+k$

Find $(i)\ k\ (ii)\ P(X<6), P(X\geq 6)$ and $(iii)\ P(0<X<5)$

(OR)

2. Let X denote the minimum of the two numbers that appear when a pair of fair dices is thrown once. Determine the (i) Determine Discrete probability distribution, (ii) Expectation, (iii) Variance. 14M

UNIT – II

3. (a) Find the mean and variance of Poisson distribution. 7M

   (b) 4 buses arrive at a specified stop at 15 minute intervals starting at 7 a.m. That is, they arrive at 7.00, 7.15, 7.30, 7.45 a.m. and so on. If a passenger arrives at the stop at a time that is uniformly distributed between 7.00 and 7.30a.m., find the probability that he waits (i) less than 5 minutes for a bus, (ii) more than 10 minutes for a bus. 7M

(OR)

4. Find the mean and standard deviation of a normal distribution in which 7% of items are under 35 and 89% are under 63. 14M

UNIT – III

5. The nine items of a sample having the following values: 45, 47, 50, 52, 48, 47, 49, 52, 51. Does the mean of these differ significantly from the assumed mean of 47.5. 14M

(OR)

6. In a sample of 1000 people in Karnataka 540 are rice eaters and the rest are wheat eaters. Can we assume that both rice and wheat are equally popular in this state at 1% level of significance? 14M

UNIT – IV

7. (a) Find the coefficient of correlation for the following table: 7M

x	10	14	18	22	26	30
y	18	12	24	6	30	36

   (b) In a partially destroyed laboratory record, only the lines of regression of y on x and x on y **are** available as $4x-5y+33=0$ and $20x-9y-107=0$. Calculate $\bar{x}, \bar{y}$ and the coefficient of correlation between x and y. 7M

(OR)

8. (a) Find the coefficient of correlation for the following table: 7M

x	10	14	18	22	26	30
y	18	12	24	6	30	36

   (b) By the method of least squares, find the straight line that best fits the following data: 7M

x	12	15	21	25
y	50	70	100	120

UNIT-V

9. Each telephone call is consider a product and the time to answer the call indicates the quality of service. Five calls chosen at random and times recorded at a busy hour. Results for the last 10 hours shown below (in seconds) 14M

Sample	1	2	3	4	5	6	7	8	9	10
Mean	20	34	45	39	26	29	13	34	37	23
Range	13	9	15	5	20	17	21	11	10	10

Construct $\bar{X}$ and R chart and determine whether the product is under control.

(OR)

10. The following data provides the number of defective apples which were found in an inspection of 10 samples of 100 apples each. 14M

Sample no	1	2	3	4	5	6	7	8	9	10
No of defectives	10	8	5	3	5	7	3	5	8	10

Construct a suitable control chart for the above data and state your conclusions.

Q.P. Code: 657612 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Computer Organization (CSE)

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 briefly the operation of 'load' in Pentium microprocessor?	7M
	(b)	Define conditional branch in computer organization?	7M
		(OR)	
2.	(a)	Explain different types of addressing modes in branch instructions?	5M
	(b)	Write a short notes on performance of a computer?	9M

UNIT – II

3.	(a)	Distinguish between a synchronous and an asynchronous data transfer mechanisms?	7M
	(b)	Discuss in detail instruction formats with various examples?	7M
		(OR)	
4.	(a)	Distinguish between memory mapped I/O and I/O mapped I/O?	7M
	(b)	Explain a procedure to handle an interrupt?	7M

UNIT – III

5.	(a)	Explain Binary addition-subtraction logic network and An n-bit ripple-carry adder with neat diagrams	7M
	(b)	Explain the design of hardwired control unit	7M
		(OR)	
6.	(a)	Explain about micro program sequencer with its neat diagram	7M
	(b)	Explain about Booth Multiplication Algorithm	7M

UNIT – IV

7.	(a)	Explain cache memory to reduce the execution time?	7M
	(b)	Explain about cache memory mapping procedures	7M
		(OR)	
8.		Explain the following I) Virtual Memory II) DMA Transfer	14M

UNIT-V

9.	(a)	Define pipelining concept and Explain instruction and RISC pipeline in detail	7M
	(b)	Explain in detail about Inter-Process Communication and Synchronization	7M
		(OR)	
10.	(a)	Explain briefly about Arithmetic pipeline	7M
	(b)	Explain about Pipeline organization of the Ultra SPARC II Processor with neat diagram	7M

Q.P. Code: 657812 **SET - 2**

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

B.Tech. IV Sem (R15) Supplementary Examinations of March 2021

SUB: Java Programming (CSE)

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 briefly about any six keywords of Java	6 M
	(b)	Explain briefly about constructor overloading with an example program.	8 M
(OR)			
2.	(a)	Explain the concept of class and object with an example program.	7 M
	(b)	Define constructor. Demonstrate constructor with an example program.	7 M
UNIT – II			
3.	(a)	Write a java program for multilevel inheritance.	7 M
	(b)	Distinguish between classes and interfaces with examples	7 M
(OR)			
4.	(a)	Explain in detail various types if Inheritances with syntaxes	7 M
	(b)	Demonstrate Method overriding with a suitable example program	7 M
UNIT – III			
5.	(a)	Define Exception. Explain various keywords used in Exception handling with syntaxes	7 M
	(b)	Explain join() and alive() methods with suitable example programs	7 M
(OR)			
6.	(a)	Write a java program to implement threads using Runnable interface	7 M
	(b)	Explain finally keyword in exceptions with suitable example	7 M
UNIT – IV			
7.	(a)	Define Adapter class. Explain it with a suitable example program	7 M
	(b)	Explain check boxes by means of a program	7 M
(OR)			
8.	(a)	Explain border layout with an example program	7 M
	(b)	Write a java program to implement keyboard events	7 M
UNIT-V			
9.	(a)	Define Applet. Explain various methods used in it.	7 M
	(b)	Explain the significance of Jbutton class with an example	7 M
(OR)			
10.	(a)	Explain passing parameters to an applet with an example	7 M
	(b)	Explain how to apply check boxes with an example	7 M

Q.P. Code: 658012 | **SET - 2**

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

B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021

SUB: Formal Languages & Automata Theory (CSE)

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

Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

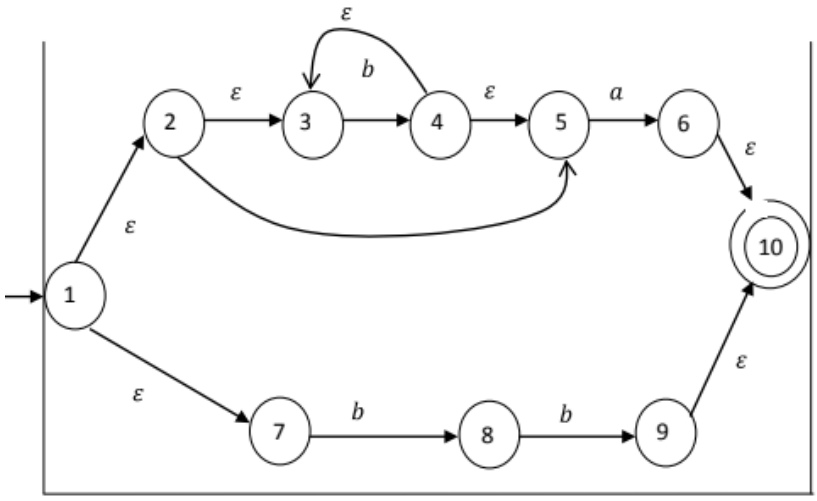
UNIT – I

1. (a) Let Σ ={a, b} 6M
   a) Give DFA that accepts any string with **"aababb"** as a substring.

   (b) What is relationship between finite automata and regular expression? Explain the process of converting DFA to regular expression. 8M

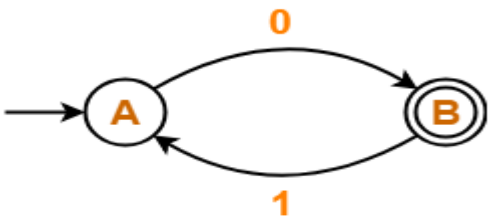
(OR)

2. (a) Differentiate between NFA and DFA? 7M
   (b) Convert the following NFA with ε moves to NFA without ε moves. 7M



UNIT – II

3. (a) Convert the following regular expression into NFA with ε transition. 7M
   i) 1*0+1101 ii) (0+1)*
   (b) Find regular expression for the following DFA 7M



(OR)

4. (a) Prove that L = { $a^i b^i \mid i \geq 0$} is not regular. 6M
   (b) Give the properties of regular expressions and state and prove Arden's theorem 8M

UNIT – III

5.	(a)	Derive the string“ aabbabba” for leftmost derivation using a CFG given by S → aB ǀ bA A → a	aS	bAA B → b	bS	aBB	7M
	(b)	By using above CFG construct rightmost derivation for the string “aabbabba “.	7M
		(OR)	
6.	(a)	Consider a = ({S,A},{a,b},P,S) where P consists of S → aAS	a A → SbA	SS	ba Convert it to its equivalent CNF	8M
	(b)	Write properties of context free languages?	6M
		UNIT – IV	
7.	(a)	Explain the difference between deterministic and non-deterministic push down automata, give an example of each?	8M
	(b)	Write a short note on PDA with two stacks with diagram?	6M
		(OR)	
8.	(a)	Differentiate acceptance by final state and acceptance by empty stack in PDA.	6M
	(b)	Construct PDA for the following grammar S → AB A → CD B → b C → a D → a	8M
		UNIT-V	
9.	(a)	Design a Turing machine which recognizes the input language having a substring as 101 and replaces every occurrence of 101 by 110	7M
	(b)	Write short note on two way infinite tape?	7M
		(OR)	
10.	(a)	Define kruskal’s algorithm? Explain with an example?	7M
	(b)	What do u mean by P and NP class problem?	7M

Q.P. Code: 658212 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Database Management Systems (CSE)

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 History of Database systems?	7M
	(b)	Explain Database schema?	7M
		(OR)	
2.	(a)	What is E R model?	4M
	(b)	State and explain various features of E-R Models.	10M

UNIT – II

3.	(a)	Describe about different types joins with examples?	7M
	(b)	Explain Tuple relational calculus.	7M
		(OR)	
4.	(a)	How Functions and Procedures are implemented in Database explain with example?	7M
	(b)	Explain Tuple Relational Calculus with any example?	7M

UNIT – III

5.	(a)	Describe the inclusion dependencies.	6M
	(b)	Explain fourth normal form and BCNF.	8M
		(OR)	
6.	(a)	Explain Lossless join Decomposition?	6M
	(b)	What is meant by functional dependencies? Discuss about second normal form.	8M

UNIT – IV

7.	(a)	What are basic steps in query processing?	7M
	(b)	What is meant by Serializability? And Explain.	7M
		(OR)	
8.	(a)	What is meant by isolation explain with example?	7M
	(b)	How will you measure the cost of a query?	7M

UNIT-V

9.	(a)	What is meant by concurrency control?	7M
	(b)	What is meant by buffer management?	7M
		(OR)	
10.	(a)	What are the Two-Phase Locking Protocol?	6M
	(b)	What are the recovery techniques?	8M

Q.P. Code: 658412 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supplementary Examinations of March – 2021
SUB: Operating Systems (CSE)

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)	Define Operating Systems? Explain the basic functions of Operating System.	7M
	(b)	Write Short notes on Distributed Systems.	7M
		(OR)	
2.		What is a System Calls? Mention the different types of System Calls?	14M

UNIT – II

3.	(a)	Why Process Synchronization is required in Operating System? Explain the requirements for critical section problem.	8M
	(b)	Discuss about the Peterson's Solution.	6M
		(OR)	
4.	(a)	Write Short notes on a) Processor Affinity ii)Load Balancing	7M
	(b)	Define Process? Explain the different states of process.	7M

UNIT – III

5.	(a)	Explain in detail about the Swapping.	7M
	(b)	Explain the Optimal Page Replacement algorithm with an example?	7M
		(OR)	
6.		Explain in detail about Demand Paging.	14M

UNIT – IV

7.	(a)	Discuss about Deadlock Avoidance	7M
	(b)	Discuss about the File System Mounting.	7M
		(OR)	
8.		Explain in detail about the Deadlock Characterization.	14M

UNIT-V

9.		Briefly Explain about the Access Matrix.	14M
		(OR)	
10.	(a)	Mention the Different types of Security Problems	6M
	(b)	Write Short notes on i) Password Vulnerabilities ii) Encrypted Passwords.	8M

Q.P. Code: 697421 | **SET - 2**

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Sem. (R15) Supple. Examinations of September/October 2020
SUB: Java Programming (CSE)

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 briefly about any six keywords of Java	7M
	(b)	Explain briefly about constructor overloading with an example program.	7M
		(OR)	
2.	(a)	Explain the concept of class and object with an example program	7M
	(b)	Define constructor. Demonstrate constructor with an example program	7M
		UNIT – II	
3.	(a)	Write a java program for multilevel inheritance.	7M
	(b)	Distinguish between classes and interfaces with examples	7M
		(OR)	
4.	(a)	Explain in detail various types if Inheritances with syntaxes	7M
	(b)	Demonstrate Method overriding with a suitable example program	7M
		UNIT – III	
5.	(a)	Define Exception. Explain various keywords used in Exception handling with syntaxes	7M
	(b)	Explain join( ) and alive( ) methods with suitable example programs	7M
		(OR)	
6.	(a)	Write a java program to implement threads using Runnable interface	7M
	(b)	Explain finally keyword in exceptions with suitable example	7M
		UNIT – IV	
7.	(a)	Define Adapter class. Explain it with a suitable example program	7M
	(b)	Explain check boxes by means of a program	7M
		(OR)	
8.	(a)	Explain border layout with an example program	7M
	(b)	Write a java program to implement keyboard events	7M
		UNIT-V	
9.	(a)	Define Applet. Explain various methods used in it	7M
	(b)	Explain the significance of Jbutton class with an example	7M
		(OR)	
10.	(a)	Explain passing parameters to an applet with an example	7M
	(b)	Explain how to apply check boxes with an example	7M