Q.P. Code: 2025401

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Business Economics &Accounting for Engineers (CE, ME, ECE, AI&ML)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.		Define Business Economics. Explain its Nature and Scope?	12M	CO1	L1
		(OR)			
2.	(a)	Explain types of Price elasticity of Demand	6M	CO1	L2
	(b)	Write Short note on Delhi Method	6M	CO1	L1
		UNIT – II			
3.	(a)	Define Production Function? Explain the Cobb Douglas Production function.	6M	CO2	L2
	(b)	What is ISO QUANT?	6M	CO2	L1
		(OR)			
4.		State the Assumptions and limitations of Break-Even analysis	12M	CO2	L3
		UNIT – III			
5.		Discuss Features of Perfect competition Market	12M	CO3	L2
		(OR)			
6.	(a)	Distinguish between Monopoly and Monopolistic competition	6M	CO3	L4
	(b)	Outline the Skimming Price and Penetration Price	6M	CO3	L3
		UNIT – IV			
7.		Define Accounting? Explain the objectives and importance of Accounting?	12M	CO4	L2
		(OR)			
8.	(a)	Distinguish Between Journal and Ledger	6M	CO4	L4
	(b)	Write Journal entries the following Transactions 1.1.2022 Business Started Rs.10,000 3.1.2022 Amount Deposited Rs.8,000 5.1.2022 Goods Purchased from Ramu Rs. 4,000 7. 1.2022 Goods sold to Venu Rs.8,000 10.1. 2022 Salaries paid Rs.00 11.1.2022 Good sold for cash Rs.5,000	6M	CO4	L2
		UNIT-V			
9.	(a)	Define Ratio. Explain Profitability Ratios in detail	6M	CO5	L2
	(b)	Illustrate the limitations of Ratio Analysis?	6M	CO5	L4
		(OR)			
10.		Calculate the following Ratios from The Financial statements of XYZ Company 1) Current Ratio 2) Liquidity Ratio 3) Stock Turnover Ratio 400 Debtors Ratio 5) Creditors Turnover Ratio. Opening stock 47,000, Debtors 42,000, Cash 10,000, Bank 8,000, Bills Receivable 15,000, Provision for Tax 15,000, loose tolls 4,000, purchases 1,80,000, Closing Stock 53,000 sales 2,50,000, Bills Payable.29,000, Marketable Securities 8,000, Provision for Doubtful debts 2,000, Creditors 32,000	12M	CO5	L3

Q.P. Code: 2001402 | SET – 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. IV Semester (R20UG) Regular & Supple Examinations of July – 2023
SUB: Hydraulics and Hydraulic Machinery (CE)

Time: 3 Hours | Max. Marks: 60

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

		M	CO	BL
	UNIT – I			
1.	Elaborately explain about the Boundary layer concepts ?	12M	CO1	L1
	(OR)			
2.	Discuss about Vonkarmen momentum integral equation ?	12M	CO1	L6
	UNIT – II			
3.	Explain about the Manning's and Bazin's formulae for uniform flow?	12M	CO2	L2
	(OR)			
4.	Summarize the Hydraulic jump and its applications?	12M	CO2	L2
	UNIT – III			
5.	Illustrate the Hydrodynamic force of jets?	12M	CO3	L2
	(OR)			
6.	A jet of water of diameter 50 mm strikes a fixed plate in such a way that the angle between the plate and the jet is 30^0 . The force exerted in the direction of the jet is 1471.5 N. Determine the rate of flow of water.	12M	CO3	L5
	UNIT – IV			
7.	Classify the turbines, in detail ?	12M	CO4	L4
	(OR)			
8.	Discuss the working of Kaplan turbine with neat sketch?	12M	CO4	L6
	UNIT-V			
9.	Define cavitation. What are the effects of cavitation? Give the necessary precautions against cavitation?	12M	CO5	L1
	(OR)			
10.	Discuss on Classification of hydropower plants?	12M	CO5	L6

Q.P. Code: 2001403 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August 2023

SUB: Soil Mechanics (CE)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Establish the relationship between void ratio, specific gravity of particles and moisture content at full saturation.	6M	CO1	L2
	(b)	The sieve analysis of soil gave the following results: % passing 75μ = 4, % retained on 4.75 mm sieve = 35, Coefficient of curvature = 2.5, Uniformity coefficient = 7. The fine fraction gave the following results: Plasticity Index = 3%, Liquid limit = 15%. Classify the soil according to ISC system.	6M	CO1	L3
		(OR)			
2.	(a)	Describe the method of determination of shrinkage limit of a soil in the laboratory.	6M	CO1	L2
	(b)	A sample of saturated soil has a water content of 25 % and bulk unit weight of 20 kN/m^3. Determine the dry unit weight, void ratio and specific gravity of solids. What would be the bulk unit weight of soil if it is compacted to the same void ratio, but has a degree of saturation of 90 %?	6M	CO1	L4
		UNIT – II			
3.	(a)	Derive an expression for coefficient of permeability used in falling head method.	6M	CO2	L3
	(b)	Determine the seepage discharge through the foundation of an earth dam if the flow net has 10 equipotential drops and 3.5 flow channels. The length of the dam is 300 m and the coefficient of permeability of the soil is 2.5 x 10^{-4} cm/s. The level of water above base of the dam is 12 m on upstream and 4 m on downstream.	6M	CO2	L4
		(OR)			
4.	(a)	Define total stress, neutral stress and effective stress. What is the importance of the effective stress?	6M	CO2	L2
	(b)	A falling head permeability test is to be conducted on a soil sample whose coefficient of permeability is 2 x 10^{-5} cm/s. What diameter of the standard pipe should be used if the head is to drop from 27 cm to 20 cm in 5 minutes and if the cross sectional area and length of the sample are respectively 15 cm^2 and 8.5 cm?	6M	CO2	L4
		UNIT – III			
5.	(a)	Explain Westergaard's theory for the determination of the vertical stress at a point.	6M	CO3	L2
	(b)	A load 1000 kN acts as a point load at the surface of a soil mass. Estimate the stress at a point 3 m below and 4 m away from the point of action of the load by Boussinesq's theory. Compare the value with the result from Westergaard's theory.	6M	CO3	L3
		(OR)			
6.	(a)	Discuss the basis of the construction of Newmark's influence chart.	6M	CO3	L2
	(b)	A long strip footing of width 2 m carries a load of 400 kN/m. Calculate the maximum stress at a depth of 5 m below the centre line of the footing. Compare the results with 2:1 distribution method.	6M	CO3	L3

UNIT – IV

7.	(a)	Describe the difference between standard and modified proctor compaction test.	6M	CO4	L2
	(b)	The time to reach 60% consolidation is 30 sec for a sample of 1 cm thick, tested in the laboratory under condition of double drainage. How many years will the corresponding layer in nature require to reach the same degree of saturation if it is 10 m thick and drained on one side only?	6M	CO4	L4

(OR)

8.	(a)	Explain the procedure to determine the coefficient of consolidation using Casagrande's logarithm of time fitting method.	6M	CO4	L2
	(b)	The maximum dry density of a sample by the light compaction test is 1.78 g/ml at an optimum water content of 15%. Find the % air voids and the degree of saturation. G = 2.67. What would be the corresponding value of dry density on the zero air void line at O.W.C?	6M	CO4	L4

UNIT-V

9.	(a)	Explain the Mohr-coulomb failure criterion.	6M	CO5	L2
	(b)	The following results were obtained from a triaxial test on two soil specimens:	6M	CO5	L4

Sample No	Confining pressure (kpa)	Deviator stress at failure (kpa)	Pore water 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.

(OR)

10.	(a)	What are the merits and demerits of tri axial test?	6M	CO5	L1
	(b)	A shear vane of 7.5 cm diameter and 11cm length was used to measure the shear strength of soft clay. If a torque of 600 N-m was required to shear the soil, calculate the shear strength. The vane was then rotated rapidly to cause remoulding of the soil. The torque required in the remoulded state was 200 N-m. Determine the sensitivity of the soil.	6M	CO5	L4

Q.P. Code: 2001404 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Structural Analysis (CE)

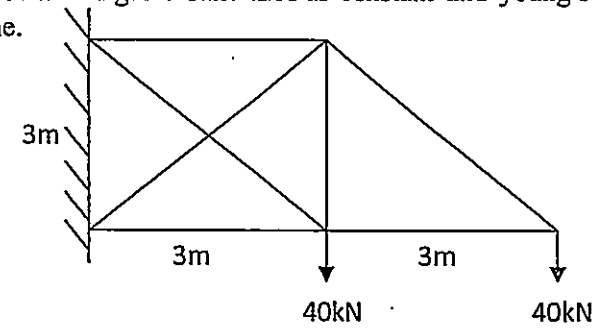
Time: 3 Hours **Max. Marks: 60**

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

		M	CO	BL

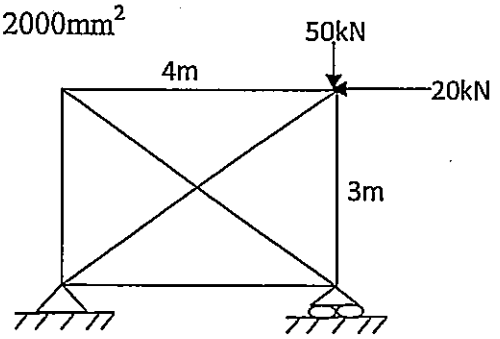
UNIT - I

1. Analyse the truss shown in figure. Take L/A as constant and young's modulus of all the members are the same. **12M CO1 L4**



(OR)

2. Determine the forces in all the members of a truss shown in Figure. Take the cross sectional areas of all members as $2000mm^2$ **12M CO1 L4**

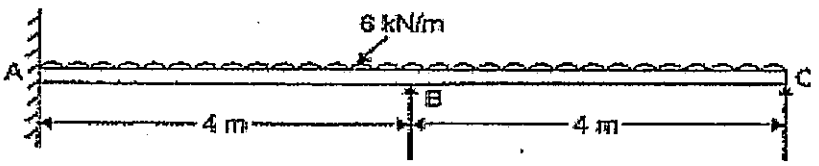


UNIT – II

3. A fixed beam of span 10 m is subjected a UDL of 25 kN/m over the entire span and a point load of 25 kN at the middle of the span. Draw the S.F. and B.M. diagrams. **12M CO2 L4**

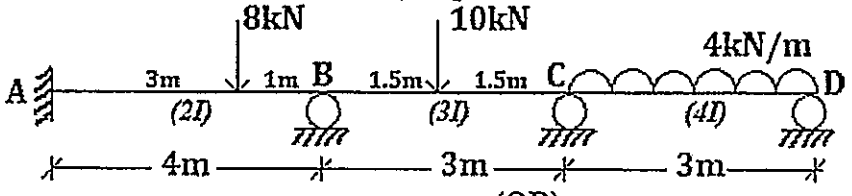
(OR)

4. Analyze the continuous beam shown in figure, using three-moment equation. Draw S.F and B.M diagrams. **12M CO2 L4**



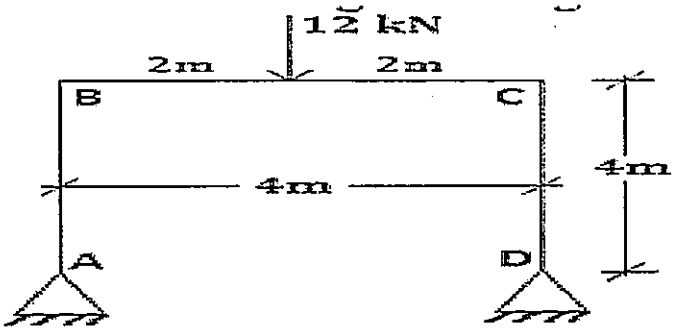
UNIT – III

5. Determine the support moments for the continuous beam as shown in the figure and draw the bending moment diagram using slope deflection method. **12M CO3 L4**



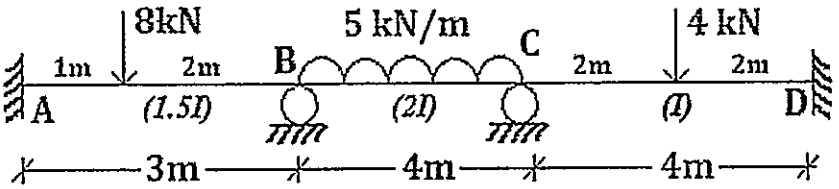
(OR)

6. Analyse the portal frame shown in the figure using Slope Deflection Method. 12M CO3 L4



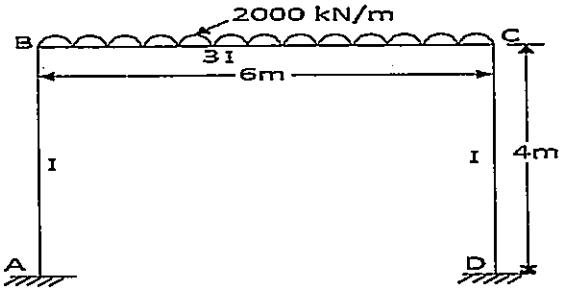
UNIT – IV

7. Determine the support moments at A, B, C and D for the continuous girder shown in the figure using moment distribution method. 12M CO4 L4



(OR)

8. Analyze the portal frame shown in Figure by **Moment distribution method** 12M CO4 L4



UNIT-V

9. A three-hinged segmental arch has a span of 50m and a rise of 7m. It is subjected to a load of 70KN acting at 12m from the left support. Find, 12M CO5 L4

(i) The horizontal thrust and vertical reaction at supports.

(ii) Normal thrust, radial shear and bending moment at 10m from the left support.

(OR)

10. A parabolic two hinged arch has a span of 50 m and a rise of 5 m. a concentrated load 25 kN acts at 15 m from the left support. The second moment of area varies as the secant of the inclination of the arch axis. Calculate the horizontal thrust and reactions at the hinge. Also calculate maximum bending moment at the section. 12M CO5 L4

Q.P. Code: 2001405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Transportation Engineering (CE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	What are Jayakar committee recommendations? Mention how this helped in road development in India?	6M	CO1	L1
	(b)	Explain, various engineering surveys to be conducted for proposing a new highway alignment.	6M	CO1	L2
		(OR)			
2.	(a)	Describe the Nagpur Road development plan?	6M	CO1	L1
	(b)	Explain the factors controlling highway alignment with neat sketches?	6M	CO1	L2
		UNIT – II			
3.	(a)	Derive the expression for safe stopping sight distance.	6M	CO2	L5
	(b)	The speeds of overtaking and overtaken vehicles are 85 and 65 kmph respectively. The acceleration of a overtaking vehicle is 0.91 m/s^2, calculate the overtaking sight distance for i) one way traffic ii) two way traffic?	6M	CO2	L3
		(OR)			
4.	(a)	Explain the various methods of attainment of superelevation in the field?	6M	CO2	L2
	(b)	Calculate the extra widening required for a pavement of width 7 m on a horizontal curve of radius 200 m, if the longest wheel base of vehicle expected on the road is 6.1 m and design speed is 60 kmph?	6M	CO2	L3
		UNIT – III			
5.	(a)	Explain the factors affecting Capacity.	6M	CO3	L2
	(b)	Explain Condition diagram and collision diagram with neat sketches?	6M	CO3	L2
		(OR)			
6.	(a)	Enumerate the classification of road markings?	6M	CO3	L4
	(b)	The average normal flow of traffic on two cross roads A and B are during design periods are 400 and 250 PCU /hr. The saturation flow values on these roads are estimated as 1250 and 1000 PCU/hr respectively. The all red time for pedestrian carrying is 12 seconds. Design the two phase traffic signal approach by Webster method and draw the phase diagram.	6M	CO3	L5
		UNIT – IV			
7.	(a)	Differentiate flexible pavements and rigid pavements?	6M	CO4	L2
	(b)	Calculate the wheel load stresses at interior, edge and corner regions of a concrete pavement using Westergaard's stress equation for the following data: Wheel load=5100 kg, tyre pressure=7 kg/cm^2 Modulus of elasticity of concrete=$3.0x10^5$ kg/cm^2 Pavement thickness=18cm, Modulus of subgrade reaction=$6.0kg/cm^3$ Diameter of loaded area =15cm, Poisson's ratio of concrete= 0.15	6M	CO4	L5
		(OR)			
8.	(a)	Explain the functions of pavement components?	6M	CO4	L2
	(b)	Explain the various types of joints to be provided in rigid pavements.	6M	CO4	L2
		UNIT-V			
9.	(a)	Explain the significance of crushing test in road aggregates.	6M	CO5	L1
	(b)	Mention the construction steps for laying of water bound macadam road.	6M	CO5	L1
		(OR)			
10.	(a)	List out the tests on bitumen. Explain procedure of any one test on bitumen in detail.	6M	CO5	L1
	(b)	Explain the construction of cement concrete pavements in brief.	6M	CO5	L2

Q.P. Code: 2024410

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Universal Human Values (CE, ME, CSE)

Time: 3 Hours

Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Illustrate the aspect of Spirituality at Work place and Corporate Excellence.	6M	CO1	L1
	(b)	Distinguish Morals and Ethics.	6M	CO1	L4
		(OR)			
2.	(a)	Define Service learning and discuss on its components.	6M	CO1	L1
	(b)	What do you understand by physical facility	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain Kohlberg's theory on moral autonomy.	6M	CO2	L1
	(b)	List out various situations when moral dilemmas arise.	6M	CO2	L1
		(OR)			
4.	(a)	Classify the types of Inquiries.	6M	CO2	L4
	(b)	Define Engineering Ethics	6M	CO2	L5
		UNIT – III			
5.	(a)	What are the factors that influence the risk benefit analysis?	6M	CO3	L1
	(b)	Engineering disaster- Explain Bhopal gas tragedy.	6M	CO3	L2
		(OR)			
6.	(a)	List out examples for reducing risk.	6M	CO3	L1
	(b)	Analyze Natural Acceptance	6M	CO3	L4
		UNIT – IV			
7.	(a)	What is the role of Education	6M	CO4	L1
	(b)	Define Prosperity	6M	CO4	L1
		(OR)			
8.	(a)	Natural acceptance is innate, invariant and universal. Explain this statement with an example.	6M	CO4	L5
	(b)	Define Self exploration. What is the content of Self exploration?	6M	CO4	L4
		UNIT-V			
9.	(a)	What is the importance of Harmony in the society?	6M	CO5	L1
	(b)	What do you mean by universal human order?	6M	CO5	L1
		(OR)			
10.	(a)	What is meaning of Justice in human relationships? How does it follow from family to world family?	6M	CO5	L1
	(b)	Define Trust. How Trust is the base of Values.	6M	CO5	L1

Q.P. Code: 2021401 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Special Functions and Complex Analysis (EEE)

Time: 3 Hours | Max. Marks : 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Show that $J_{n-1}(x) = \frac{n}{x}J_n(x) + J_n'(x)$	6M	CO1	L1
	(b)	Show that $J_{\frac{1}{2}}(x) = \sqrt{\frac{2}{\pi x}}\ sinx$	6M	CO1	L2
		(OR)			
2.	(a)	State and prove Rodrigue's formula	8M	CO1	L2
	(b)	Find the Legendre's Polynomials $P_0(x)$, $P_1(x)$ and $P_2(x)$	4M	CO1	L1
		UNIT – II			
3.	(a)	Prove that the function $f(z)$ defined by $f(z) = \frac{x^5(1+i)-y^5(1-i)}{x^2+y^2}$, 0 and $f(0) = 0$ is continuous and Cauchy – Riemann equations are satisfied at the origin, yet $f'(0)$ does not exist	8M	CO2	L5
	(b)	Show that $f(z) = e^z$ is an entire function	4M	CO2	L5
		(OR)			
4.	(a)	Determine p such that the function f (z) $= \frac{1}{2}\log(x^2 + y^2) + itan^{-1}(\frac{px}{y})$ is analytic	6M	CO2	L5
	(b)	Prove that the function f(z) = $\bar{z}$ is not analytic at any point	6M	CO2	L5
		UNIT – III			
5.	(a)	Discuss the transformation W= cosz	6M	CO3	L6
	(b)	Under the transformation , $w = \frac{1}{z}$ find the image of $\lvert z-2i\rvert = 2$	6 M	CO3	L1
		(OR)			
6.	(a)	Find the bilinear transformation which maps the points z=-1, i, 1 onto the points w= 1, i, -1.	6M	CO3	L1
	(b)	Calculate the fixed points of the transformation $w = \frac{z+i}{z-i}$	6M	CO3	L2
		UNIT – IV			
7.	(a)	Verify Cauchy's theorem for the function f(z) = $3z^2 + iz - 4$ if C is the square with vertices at $1 \pm i$ and $-1 \pm i$	10M	CO4	L4
	(b)	Evaluate $\int_C \frac{2z}{z-4}dz$ where C is $\lvert z-2\rvert = 2$	2M	CO4	L3
		(OR)			
8.	(a)	Evaluate $\int_0^{2+i}(x^2 - iy)dz$, along the line $y = x$	8M	CO4	L3
	(b)	Evaluate $\oint_C \frac{sin^2 z}{(z-\frac{\pi}{6})^3}$ dz, where C is the circle $\lvert z\rvert$=1	4M	CO4	L5
		UNIT-V			
9.	(a)	State and prove Cauchy's Residue theorem	8M	CO5	L2
	(b)	Evaluate $\int_C \frac{z-1}{(z+1)^2(z-2)}dz$ where c is the circle $\lvert z-i\rvert = 2$	4M	CO5	L5
		(OR)			
10.		Show that $\int_0^{2\pi} \frac{d\theta}{a+b\cos\theta} = \frac{\pi}{\sqrt{a^2-b^2}}$, $(a > b > 0)$	12M	CO5	L2

Q.P. Code: 2025402

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Fundamentals of Management for Engineers (EEE)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.		Define Management? Explain the Functions of Management?	12M	CO1	L1
		(OR)			
2.	(a)	What is Classical Approach? Illustrate Classical Approach.	6M	CO1	L2
	(b)	Explain the contingency approach of management.	6M	CO1	L2
		UNIT – II			
3.	(a)	Planning is the essence of management – Elucidate	6M	CO2	L3
	(b)	Elaborate on the Steps in Problem Solving.	6M	CO2	L3
		(OR)			
4.		Discuss in detail about the process of planning.	10M	CO2	L2
		UNIT – III			
5.		Discuss different types of culture. How is organizational culture created and sustained?	10M	CO3	L2
		(OR)			
6.	(a)	Distinguish organizational culture and organizational Climate.	6M	CO3	L4
	(b)	Short note on Performance Appraisal.	6M	CO3	L2
		UNIT – IV			
7.		Define the term leadership. Explain Behavioral Leadership and Situational Leadership,	10M	CO4	L2
		(OR)			
8.	(a)	Describe the Handling Employee and Customer Complaints.	6M	CO4	L1
	(b)	Short note on Power and Authority.	6M	CO4	L1
		UNIT-V			
9.	(a)	What are the features of effective Control? Explain.	6M	CO5	L2
	(b)	Elaborate Non- Budgetary Controls.	6M	CO5	L5
		(OR)			
10.	(a)	Briefly discuss about establishing control systems,	6M	CO5	L3
	(b)	What are the Controls Methods in an organization?	6M	CO5	L2

Q.P. Code: 2002403 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Induction Motors and Synchronous Machines (EEE)

Time: 3 Hours **Max. Marks: 60**

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.		Describe in detail about the Production of rotating magnetic field.	12M	CO1	L2
		(OR)			
2.	(a)	Explain in detail about torque-slip and torque-speed characteristics.	6M	CO2	L3
	(b)	A 3-phase, 50Hz induction motor has full-load speed of 1500 rpm. For this motor, calculate (i) number of poles (ii) full load slip and rotor frequency (iii) speed of rotor field with respect to stator structure and rotor structure.	6M	CO1	L4
		UNIT – II			
3.		Explain double field revolving theory	12M	CO2	L3
		(OR)			
4.		Describe the operation of Shaded Pole induction motors with suitable diagrams.	12M	CO2	L3
		UNIT – III			
5.	(a)	Explain Constructional details of synchronous machines with neat diagram	6M	CO1	L2
	(b)	Calculate the EMF of a 4-pole, 3-Ø, Y-connected alternator running at 1500rpm from the following data: flux per pole = 0.1 wb; Total no.of slots is 48; conductors per slot (in two layers) = 4; coil span = 150 degrees.	6M	CO1	L4
		(OR)			
6.		Define voltage regulation. Explain how regulation can be determined by MMF method.	12M	CO3	L3
		UNIT – IV			
7.		Explain the procedure to determine Xd and Xq by using slip test	12M	CO4	L3
		(OR)			
8.	(a)	Explain power angle characteristics with neat Diagrams	6M	CO3	L2
	(b)	Discuss about the synchronizing and the load sharing between two alternators connected in parallel.	6M	CO3	L3
		UNIT-V			
9.	(a)	Explain the operation of synchronous motor with constant excitation and constant load	6M	CO1	L3
	(b)	Explain the starting methods of Synchronous motors?	6M	CO2	L2
		(OR)			
10.	(a)	Derive the expression for power delivered by a synchronous motor in terms of load angle (α). .	6M	CO3	L3
	(b)	A synchronous motor absorbing50kW is connected in parallel with a factory load of 200kW having a lagging power factor of 0.8. If the combination has a power factor of 0.9 lag. How many leading kVAR are to be supplied by the motor? At what power factor is it working.	6M	CO4	L4

Q.P. Code: 2002404 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August 2023

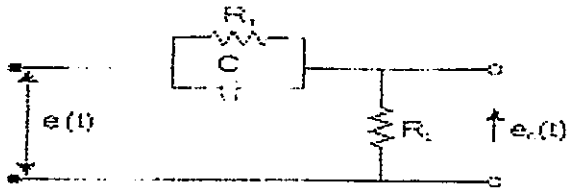
SUB: Linear Control Systems (EEE)

Time: 3 Hours | Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

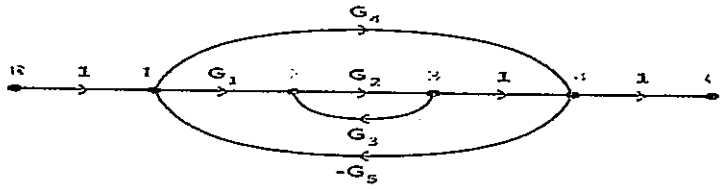
All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Discuss the classification of control systems with examples.	6M	CO1	L2
	(b)	Determine the transfer function for the network shown below:	6M	CO1	L3



(OR)

2.	(a)	Discuss the block diagram reduction rules in detail.	6M	CO3	L2
	(b)	Determine the transfer function using Mason's gain formula for the given signal flow graph.	6M	CO3	L3



UNIT – II

3.	(a)	Describe the response of the first order system with standard test input signals.	6M	CO2	L2
	(b)	Consider the unit step response of a unity feedback control system whose open loop transfer function is $G(S) = \frac{1}{S(S+2)}$. Obtain Rise time, Peak time, and Maximum peak overshoot.	6M	CO2	L3

(OR)

4.	(a)	Explain the steady state error and error constants of a closed loop control system.	6M	CO3	L2
	(b)	The forward path transfer function of a closed loop system is given by $G(S) = \frac{K}{S^2}$ and feedback function is given by H(S) = As+B. Determine steady state error(e_{ss}) and K_P, K_V, K_a when $r(t) = 1+2t+2t^2$.	6M	CO3	L3

UNIT – III

5.		The open loop transfer function of a unity negative feedback control system is given by $G(S) = \frac{K(S+2)}{S(S+4)(S+2)(S+6)}$ .Determine value of K for which the system is stable using R-H criterion.	12M	CO2	L3

(OR)

6.	Consider the open loop transfer function G(S).H(S) . Construct the root locus and comment on stability.	12M	CO2	L3

UNIT – IV

7.	The open loop transfer function of a unity feedback control system is given by $G(S) = \frac{1}{S(S+1)(2S+1)}$. Sketch the Bode plot and determine gain cross over frequency and phase cross over frequency.	12M	CO2	L3

(OR)

8.	Draw the polar plot for the given open loop transfer function $G(S) = \frac{10(S+2)}{S(S+1)(S+3)}$ and determine gain cross over frequency and phase cross over frequency.	12M	CO2	L3

UNIT-V

9.	Describe the design process and compensation technique of lag compensator.	12M	CO4	L2

(OR)

10.	Consider a unity feedback system whose G(s)= 4 $s(s+2)$. It is desired to design a lead compensator for the system so that static velocity error constant (Kv) is 20 $sec{-}1$, the phase margin is at least 500 and the gain margin is at least 10 dB	12M	CO4	L3

Q.P. Code: 2002405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Power Systems – I (EEE)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the working principle of Thermal power plant with a neat Sketch?	6M	CO1	L1
	(b)	Explain with a neat sketch PWR nuclear reactor?	6M	CO1	L2
		(OR)			
2.	(a)	Draw the line diagram and explain the working principle of hydroelectric power station	6M	CO1	L3
	(b)	What is meant by chain reaction in nuclear power plant?	6M	CO1	L2
		UNIT – II			
3.	(a)	Define the following terms: (i) Load curve (ii) Diversity Factor (iii) Plant Capacity Factor	6M	CO2	L1
	(b)	Explain briefly about the types of tariff methods?	6M	CO2	L2
		(OR)			
4.	(a)	Define the following terms: (i) Load Factor (ii) Demand Factor (iii) Plant utilization Factor	6M	CO2	L1
	(b)	A generating station has the following daily load cycle : **Time (hours)** 0—4 4—10 10—16 16—18 18—20 20—24 **Load (MW)** 20 25 30 40 35 20	6M	CO2	L3
		UNIT – III			
5.	(a)	Explain briefly about types of insulators?	6M	CO3	L2
	(b)	Derive the expression for sag for unequal heights?	6M	CO3	L2
		(OR)			
6.	(a)	Explain the methods to improve string efficiency?	6M	CO3	L2
	(b)	An overhead transmission line conductor having a parabolic configuration weighs 1·925 kg per meter of length. The area of X-section of the conductor is 2·2 cm2 and the ultimate strength is 8000 kg/cm2. The supports are 600 m apart having 15 m difference of levels. Calculate the sag from the taller of the two supports which must be allowed so that the factor of safety shall be 5. Assume that ice load is 1 kg per meter run and there is no wind pressure.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Derive the expression for capacitance for three phase transposed line.	6M	CO4	L2
	(b)	Two conductors of a single-phase line, each of 1 cm diameters, are arranged in a vertical plane with one conductor mounted 1 m above the other. A second identical line is mounted at the same height as the first and spaced horizontally 0·25 m apart from it. The two upper and the two lower conductors are connected in parallel. Determine the inductance per km of the resulting double circuit line.	6M	CO4	L2
		(OR)			
8.	(a)	Derive the expression for an inductance for single phase line.	6M	CO4	L2
	(b)	A three phase 50Hz, 66KV overhead line conductors are placed in horizontal plane. The conductor diameter is 1.2 cm. If the line length is 150 km, Calculate the charging current per phase.	6M	CO4	L3

UNIT-V

9.	(a)	What is corona? Explain the factors effecting corona.	6M	CO5	L1
	(b)	What is meant by grading? What are the types of grading on cables?	6M	CO5	L1
		(OR)			
10.	(a)	Derive the expression for power loss due to corona?	6M	CO5	L2
	(b)	Write a short note on underground cables.	6M	CO5	L1

Q.P. Code: 2021402

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

Sub: Probability, Statistics and Numerical Methods (ME)

Time: 3 Hours Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Out of 800 families with 5 children each, how many would you expect to have (i) 3 boys (ii) 5 girls and (iii) either 2 or 3 boys ? Assume equal probabilities for boys and girls.	6M	CO1	L1
	(b)	Fit a Poisson distribution to the following data	6M	CO1	L2

x	0	1	2	3	4
f	109	65	22	3	1

(OR)

2.		The marks obtained in mathematics by 1000 students are normally distributed with mean 78% and standard deviation 11%. Determine **(i)** How many students got marks above 90% **(ii)** What was the highest mark obtained by the lower 10% of the students **(iii)** Within what did the middle of 90% of the students lie.	12M	CO1	L3
		UNIT – II			
3.	(a)	A sample of 64 students has a mean weight of 70kgs. Can this be regarded as a sample from a population with mean weight 56kgs and standard deviation 25 kgs.	6M	CO2	L2
	(b)	Explain the procedure generally followed in testing of Hypothesis.	6M	CO2	L1
		(OR)			
4.	(a)	The mean and Standard deviation of a Sample are 11795 and 14054 respectively. If $n = 50$; find the 95% Confidence interval for the Population means.	6M	CO2	L2
	(b)	In a big city 325 men out of 600 men were found to be smokers. Does this information support the conclusion that the majority of men in this city are smokers?	6M	CO2	L2
		UNIT – III			
5.		A random sample of 10 boys had the following I.Q's: 70,120, 110,101, 88,83, 95, 98, 107 and 100. (i) Do these data support the assumption of a population mean I.Q of 100? (ii) Find a reasonable range in which most of the mean I.Q values of samples of 10 boys.	12M	CO3	L2
		(OR)			
6.	(a)	A group of 5 patients treated with medicine A weight 42,39,48,60 and 41 kg. Second group of 7 patients from the same hospital treated with medicine B weight 38, 42, 56, 64, 68, 69 and 62kg. Do you agree with the claim that the medicine B increases the weight significantly?	6M	CO3	L2
	(b)	Two independent samples of 8 and 7 items respectively had the following values of the variables.	6M	CO3	L3

Sample-I	9	11	13	11	16	10	12	14
Sample-II	11	13	11	14	10	8	10	-

Do the estimates of the population variance differ significantly?

97

UNIT – IV

7.	(a)	Find a root of the equation $xe^x - cosx = 0$ using Newton Raphson method.	6M	CO4	L1
	(b)	Find out the square root of 25 given x_0=2 and x_1=7 using Inter halving method.	6M	CO4	L2

(OR)

8.		Apply Gauss Seidel method to solve the system of equations $20x + y - 2x = 17, 3x + 20y - z = -18$ *and* $2x - 3y + 20z = 25$	12M	CO4	L3

UNIT-V

9.	(a)	For x=0,1,2,3,4; f(x)=1,14,15,5,6. Find f(3) using Newton's Backward interpolation formula.	6M	CO5	L2
	(b)	From the given values, Find y (10), using Lagrange's interpolation formula.	6M	CO5	L2

x	5	6	9	11
y	12	13	14	16

(OR)

10.		The population of a town in the decimal census was given below. Estimate the population for the years 1895 and 1925.	12M	CO5	L3

Year (x)	1891	1901	1911	1921	1931
Population(y) (thousands)	46	66	81	93	101

Q.P. Code: 2003403

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Applied Thermodynamics (ME)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Show that the efficiency of the Otto cycle depends only on the compression ratio.	6M	CO1	L2
	(b)	The compression ratio of an Otto cycle is 8. At the beginning of compression, the pressure and temperature are 1 bar and 300 K respectively. The heat transfer to the air per cycle is 1900 kJ/kg of air. Calculate: (i) The pressure and temperature at the end of each process of the cycle (ii) Thermal efficiency. Assume C_p = 1.005 kJ/kg K, C_v = 0.718 kJ/kg K and R= 0.287 kJ/kg K	6M	CO1	L5
		(OR)			
2.	(a)	How do you classify I.C engines.	6M	CO1	L1
	(b)	Compare the relative advantages and disadvantages of four stroke and two stroke cycle engines.	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain the difference between pre-ignition, auto-ignition and detonation.	6M	CO2	L2
	(b)	What are causes of knock in C.I engines.	6M	CO2	L1
		(OR)			
4.	(a)	Discuss briefly the various factors that influences the flame speed in S.I engines.	6M	CO2	L3
	(b)	What is meant by ignition delay? Explain the factors that affect the delay period.	6M	CO2	L2
		UNIT – III			
5.	(a)	Discuss BS norms.	6M	CO3	L2
	(b)	Explain the following: (i) Indicated power and brake power (ii) Volumetric efficiency and fuel-air ratio	6M	CO3	L1
		(OR)			
6.	(a)	Explain about emissions which released by S.I engines.	6M	CO3	L2
	(b)	Discuss the performance of an engine in the form of heat balance sheet.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Explain the Rankine cycle with p-V and T-s diagrams.	6M	CO4	L2
	(b)	In a steam turbine steam at 20 bar, 360^0C is expanded to 0.08 bar. It then enters a condenser, where it is condensed to saturated liquid water. The pump feeds back the water into the boiler. Assume ideal processes; find per kg of steam the network and the cycle efficiency.	6M	CO4	L5
		(OR)			
8.	(a)	Discuss about Supercritical and ultra-super-critical Rankine cycle.	6M	CO4	L2
	(b)	What is regenerative Rankine cycle? Describe it with neat sketch.	6M	CO4	L3
		UNIT-V			
9.	(a)	What are steam nozzles? Explain them with neat diagrams.	6M	CO5	L1
	(b)	Dry saturated steam enters a steam nozzle at a pressure of 15 bar and discharged at a pressure of 2 bar. If the dryness fraction of discharge steam is 0.96, what will be the final velocity of steam, neglect initial velocity of steam? If 10% of heat drop is lost in friction, find the percentage reduction in the final velocity.	6M	CO5	L5
		(OR)			
10.	(a)	Describe the working of a multistage reciprocating air compressor.	6M	CO5	L2
	(b)	Explain the working principle of summer air conditioning system with suitable diagram.	6M	CO5	L3

Q.P. Code: 2003404 | SET - 1

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

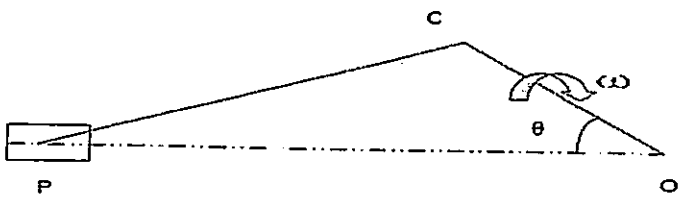
B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August 2023

SUB: Kinematics of Machinery (ME)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Differentiate between closed and unclosed kinematic pair.	6M	CO1	L1
	(b)	Compare the inversion of two different slider crank mechanism	6M	CO1	L2
		(OR)			
2.	(a)	Sketch and explain Oldham's coupling.	6M	CO1	L2
	(b)	Enumerate the different types of kinematic pair when they are in relative motion between them.	6M	CO1	L2
		UNIT – II			
3.	(a)	Calculate the inclination of the slotted bar with the vertical in the extreme position and the time ratio of cutting stroke to the return stroke for a crank and slotted lever quick return motion mechanism where the distance between the fixed centers is 240 mm and the length of the driving crank is 120 mm. Illustrate the angles and extreme positions of the crank with a neat sketch.	6M	CO2	L3
	(b)	Explain with a neat sketch the construction and working of whitworth quick return motion mechanism. Mention its applications.	6M	CO2	L2
		(OR)			
4.	(a)	Discuss with a neat sketch the construction and working of Oldham coupling mechanism. Mention its applications	6M	CO2	L2
	(b)	Prove that the elliptical trammel traces the path of an ellipse with a neat sketch.	6M	CO2	L3
		UNIT – III			
5.	(a)	Apply Klein's method for constructing velocity diagram of planar mechanisms and explain with an example	6M	CO3	L3
	(b)	In a slider crank mechanism as shown in figure below, OC=50 mm, CP=126 mm. The crank rotates clockwise with an angular velocity of 10 rad/sec. The crank is inclined at an angle of 450. Locate all instantaneous centers; find the velocity of slider P and angular velocity of connecting rod PC.	6M	CO3	L3



(OR)

6.	(a)	Apply the condition of straight line motion mechanism and explain the Peaucellier mechanism with a neat sketch.	6M	CO3	L3
	(b)	Construct Klein's velocity diagram and calculate: 1. Velocity of the piston 2. Velocity and angular velocity of the connecting rod, at the instant when the crank is at 30° to I.D.C. (inner dead centre). The lengths of crank and connecting rod of a reciprocating engine are 200 mm and 700 mm respectively. The crank rotates in clockwise direction at 120 rad/s.	6M	CO3	L3

UNIT IV

7.	Construct the profile of a cam with knife edge follower given the following data : Lift is 40 mm during 90° of cam rotation with simple harmonic motion; Dwell for the next 30°; During the next 60° of cam rotation, the follower returns to its original position with simple harmonic motion; Dwell during the remaining is 180°. The line of stroke of the follower passes through the axis of the cam shaft, and the radius of the base circle of the cam is 40 mm. Consider the rotation of cam in clockwise direction	12M	CO4	L2

(OR)

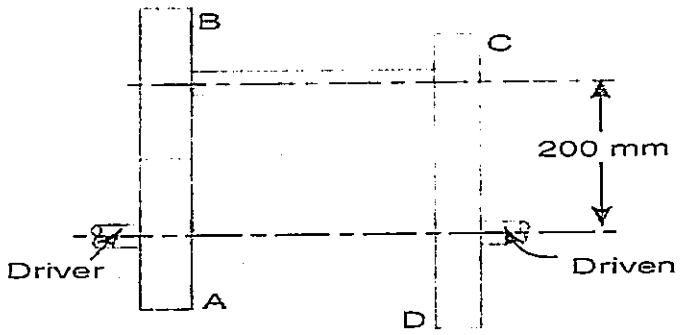
8.	Construct the profile of a cam with roller follower given the following data: Lift is 50 mm during 120° of cam rotation; Dwell for next 60° of cam rotation; Follower to return to its starting position during next 90° of cam rotation; Dwell during rest of the cam rotation. The minimum radius of the cam is 50 mm and the diameter of roller is 10 mm. The line of stroke of the follower is off-set by 20 mm from the axis of the cam shaft. The displacement of the follower takes place with uniform and equal acceleration and retardation on both the outward and return strokes. Consider the rotation of cam in clockwise direction.	12M	CO4	L2

UNIT-V

9.	Derive expressions for velocity ratio and train value of simple and compound gear trains with neat sketches.	12M	CO5	L2

(OR)

10.	Calculate the suitable numbers of teeth for the reverted gear train shown in Figure below, whose speed ratio is to be 12. The module pitch of gears A and B is 3.125 mm and of gears C and D is 2.5 mm. No gear is to have less than 24 teeth.	12M	CO5	L2



Q.P. Code: 2003405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Machine Tools (ME)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.		Summarize the operations performed on lathe? Explain any five operations that are performed on lathe with a neat sketch?	12M	CO1	L2
		(OR)			
2.		Interpret the nomenclature of a Single point cutting tool with a neat sketch?	12M	CO1	L5
		UNIT – II			
3.		Summarize how shapers are classified? Explain the parts of a shaper with a neat line diagram?	12M	CO2	L2
		(OR)			
4.		Analyze the working principle of ECM process with a neat sketch ? List out the pros and cons of ECM?	12M	CO2	L2
		UNIT – III			
5.		How are drilling machines classified? Explain about sensitive drilling machine with a neat line diagram?	12M	CO3	L2
		(OR)			
6.		How are boring machines classified? Explain the parts of a jig boring machine with a neat line sketch?	12M	CO3	L2
		UNIT – IV			
7.		Divide the periphery of a given work piece into 96 divisions by indexing method?	12M	CO4	L4
		(OR)			
8.		Elaborate the operations performed on a milling machine and explain any five operations with a neat sketch?	12M	CO4	L6
		UNIT-V			
9.	(a)	How are broaching machines classified and explain continuous broaching machine with neat sketch?	6M	CO5	L2
	(b)	With a neat sketch explain the working principle of Honing?	6M	CO5	L2
		(OR)			
10.		How do classify grinding machines? Explain the parts of a tool and cutter grinder with a neat sketch?	12M	CO5	L1

Q.P. Code: 2021403

SET - 1

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

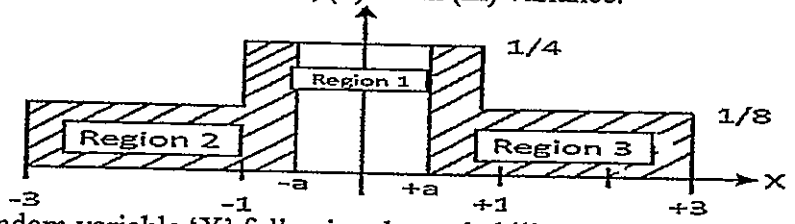
B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Probability Theory and Stochastic Processes (ECE)

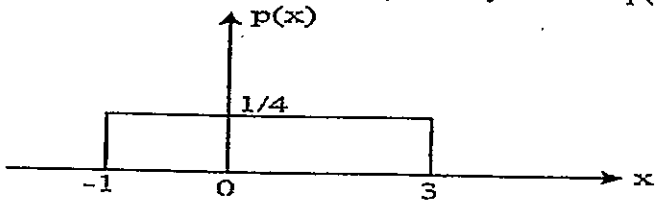
Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	If two events A and B are mutually exclusive and the joint events $A \cap C$ and $B \cap C$ are also mutually exclusive, then show $P((A \cup B)/C) = P(A/C) + P(B/C)$.	6M	CO1	L1
	(b)	A lot of 100 semiconductor chips has 20 defective chips. Two chips are selected at random without replacement from the lot. What is the probability that (i) first one selected is defective? and (ii) both are defective?	6M	CO1	L3
		(OR)			
2.	(a)	Define Cumulative Probability Distribution function and discuss its specific properties.	6M	CO1	L1
	(b)	The amplitude of the output signal of a radar, i.e., only noise is Rayleigh's random variable with 'a=0 and b=4V'. The system shows a false target deduction if the signal exceeds 'V' volts. What is the value of V if the probability of false detection is 0.001?	6M	CO1	L4
		UNIT – II			
3.	(a)	State Characteristic function (C.F) and find the n^{th} moment of a random variable X about the origin using C.F.	6M	CO2	L2
	(b)	Show that the linear transformation of a Gaussian random variable produces another Gaussian random variable.	6M	CO2	L3
		(OR)			
4.	(a)	If the probability density function is divided into three regions as shown in the figure, Find (i) the value of a, (ii) mean (iii) variance.	6M	CO2	L3



	(b)	For a random variable 'X' following the probability density function p(x), shown in figure, Find the mean and the variance.	6M	CO2	L4



		UNIT – III			
5.	(a)	Distinguish joint distribution and marginal distribution functions.	4M	CO3	L2
	(b)	Given the function $f_{XY}(x,y) = \begin{cases} b(x+y)^2 & -2 < x < 2 \text{ and } -3 < y < 3 \\ 0 & \text{elsewhere} \end{cases}$	8M	CO3	L5
		i) Find the constant 'b' such that this is a valid joint density function.			
		ii) Determine the marginal density functions $f_X(x)$ and $f_Y(y)$			
		(OR)			

6.	(a)	State and prove central limit theorem for equal distribution of a random variable X.	6M	CO3	L3
	(b)	The joint probability density function of a random variables X and Y is given by $f_{XY}(x,y) = \begin{cases} \frac{(x+y)^2}{40} & -1 < x < 1 \text{ and } -3 < y < 3 \\ 0 & \text{elsewhere.} \end{cases}$ Find (i) the variances of *X and Y* and (ii) the correlation coefficient.	6M	CO3	L5
		UNIT – IV			
7.	(a)	Define autocorrelation function of a random process. Write properties of auto correlation function of a WSS process and prove any three of them.	6M	CO4	L1
	(b)	Given a random process $X(t) = A\cos(\omega t + \theta)$, where A and ω are constants and θ is a random variable uniformly distributed on the interval $(-\pi, \pi)$.Define the new process $Y(t) = X^2(t)$. (i) Are X (t) and Y(t) WSS? (ii) Are X (t) and Y(t) Jointly WSS?	6M	CO4	L3
		(OR)			
8.	(a)	State and prove Wiener- Khintchine relation.	6M	CO4	L1
	(b)	The autocorrelation function of a stationary random process X (t) is given by $R_{XX}(\tau) = 36 + \frac{16}{1+8\tau^2}$ Find the mean, mean square and variance of the process	6M	CO4	L4
		UNIT-V			
9.	(a)	Derive the Expression for mean and mean square value of response of LTI system.	6M	CO5	L3
	(b)	A wide sense stationary random process X(t) with a mean value 5 and power spectral density $S_{XX}(\omega) = 50\pi\delta(\omega) + \frac{3}{1+\frac{\omega^2}{2^2}}$ is applied to a network with impulse response $h(t) = 4e^{-4\lvert\tau\rvert}$.Find i) $H(\omega)$ of the network and ii) Power spectrum of the response Y(t).	6M	CO5	L5
		(OR)			
10.	(a)	Derive an expression for the Noise Band Width.	6M	CO5	L3
	(b)	Explain System evaluation using Random noise.	6M	CO5	L1

Q.P. Code: 2004403

SET - 1

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

B. Tech. IV Semester (R20UG) Regular/Supply Examinations of July / August – 2023

SUB: Microprocessors & Microcontrollers (ECE, CSE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain the following instructions of 8086: i) AAM ii) DAS iii) CALL.	6M	CO1	L2
	(b)	Explain the interrupt structure of 8086 with proper diagrams.	6M	CO1	L2
		(OR)			
2.	(a)	List the salient features of 8086 microprocessor.	6M	CO1	L4
	(b)	Differentiate between minimum and maximum mode of operation of 8086 microprocessor and sketch the maximum mode configuration.	6M	CO1	L2
		UNIT – II			
3.	(a)	With a neat block diagram, explain in detail the internal architecture of 8255 and its registers.	6M	CO2	L3
	(b)	Explain Briefly sorting and searching with an example	6M	CO2	L2
		(OR)			
4.	(a)	Explain about the DMA data transfer method.	6M	CO2	L4
	(b)	Write an assembly language program to multiply two –bit Hexa decimal numbers in 8086?	6M	CO2	L5
		UNIT – III			
5.	(a)	Explain master and slave mode of 8259 and draw the block diagram of an 8259 with 16 slaves which are interfaced with 8086.	6M	CO3	L2
	(b)	Draw and discuss architecture of USART and explain different status and control formats in detail.	6M	CO3	L5
		(OR)			
6.	(a)	Describe the operating modes and control words of Programmable Peripheral Interface (8255). Also specify the handshaking signals and their functions if port A of 8255 is setup as input port in mode 1	6M	CO3	L5
	(b)	Draw Programmable DMA controller (8257)and explain the operation of each block on it	6M	CO3	L4
		UNIT – IV			
7.	(a)	Discuss on the different types of addressing modes supported by the 8051 microcontroller with examples.	6M	CO4	L5
	(b)	Explain the different assembly programming tools used in 8051 microcontroller in detail.	6M	CO4	L2
		(OR)			
8.	(a)	Explain the different types of timers in 8051.	6M	CO4	L2
	(b)	Discuss the register set of 8051.	6M	CO4	L5
		UNIT-V			
9.	(a)	Explain PSR instructions of ARM.	6M	CO5	L2
	(b)	Explain the timer mode operation in ARM.	6M	CO5	L2
		(OR)			
10.	(a)	Explain the following ARM instructions with examples: i. MVN ii. ORR iii. MLA	6M	CO5	L2
	(b)	Describe load multiple and store multiple instructions of ARM processor with example.	6M	CO5	L3

Q.P. Code: 2004404

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Electromagnetic Waves and Transmission Lines (ECE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	State Coulomb's Law. Find the force on charge Q_1 = 30 μc due to a charge Q_2 = -200 μc, where Q_1 and Q_2 are located at (0, 0, 2) m and (2, 1, 0) m.	6M	CO1	L2
	(b)	Derive Poisson's and Laplace's equations from fundamentals.	6M	CO1	L3
		(OR)			
2.	(a)	Define the Continuity equation and derive it from the fundamentals.	6M	CO1	L3
	(b)	In a medium with a conduction current density given by $\vec{J}$=3Sin$(\omega t - 10z)\overrightarrow{a_x}$+Cos$(\omega t - 10z)\,\overrightarrow{a_z}$ mA/m^2. Find the volume charge density (ρ_v).	6M	CO1	L3
		UNIT – II			
3.	(a)	State Biot-savart's law and derive the expression for magnetic field intensity at a point P due to a finite-length current carrying conductor.	6M	CO2	L2
	(b)	Derive the Two Maxwell's Equations related to the Magnetic Field.	6M	CO2	L3
		(OR)			
4.	(a)	State Ampere's Circuit law and explain its application for an infinite current sheet.	6M	CO2	L1
	(b)	For a current distribution in free space, magnetic vector potential $\vec{A}$ =$(2x^2y + yz)\overrightarrow{a_x}$+$(xy^2 - xz^3)\overrightarrow{a_y} - (6xyz - 2x^2y^2)\overrightarrow{a_z}$Wb/m. Calculate the magnetic flux density *(B)*.	6M	CO2	L3
		UNIT – III			
5.	(a)	State Faraday's Law of Electromagnetic Induction and derive the equation for EMF.	6M	CO3	L2
	(b)	Derive the boundary conditions at the Dielectric-Dielectric interface.	6M	CO3	L3
		(OR)			
6.	(a)	Write Maxwell's equations in differential and integral forms and in word Statements.	6M	CO3	L1
	(b)	In free space, $\vec{E}$= 20Cos$(wt - 50x)\,\overrightarrow{a_y}$V/m, Calculate, J_d, $\vec{H}$ and ω.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Derive the relationship between $\vec{E}$ and $\vec{H}$ in a Uniform plane wave.	6M	CO4	L3
	(b)	Derive the wave equation for conducting medium?	6M	CO4	L3
		(OR)			
8.	(a)	Derive an Expression for the Reflection coefficient (Γ) of an EM wave when it is incident normally on a dielectric surface.	6M	CO4	L2
	(b)	State and explain the concept of the Poynting Theorem with relevant Mathematical equations.	6M	CO4	L1
		UNIT-V			
9.	(a)	Derive the equation for input impedance (Z_i) of a transmission line.	6M	CO5	L2
	(b)	Explain the basis for the construction of the Smith chart and mention its applications.	6M	CO5	L1
		(OR)			
10.	(a)	Starting from the equivalent circuit, derive the transmission line equations for V and I in terms of the source parameters.	6M	CO5	L2
	(b)	A transmission line in which no distortion is present has the following parameters: $Z_o = 50\,\Omega$, α =0.02 Np/m, $v_p = 0.6C$. Determine R, L, G, C, and wavelength (λ) at 0.1 GHz.	6M	CO5	L1

Q.P. Code: 2004405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Linear and Digital IC Applications (ECE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Sketch the circuit diagram of differential amplifier with single input and unbalanced output.	6M	CO1	L2
	(b)	Describe the working operation of non-inverting amplifier and drive the voltage gain.	6M	CO1	L2
		(OR)			
2.	(a)	Outline the functional block diagram of Op-Amp and list out the ideal characteristics.	6M	CO1	L2
	(b)	Recall the DC characteristics of OP-Amp and give in detail explanation.	6M	CO1	L2
		UNIT – II			
3.	(a)	With a neat diagram explain voltage to current converter.	6M	CO2	L2
	(b)	Discuss the operation of instrumentation amplifier with neat sketches.	6M	CO2	L2
		(OR)			
4.	(a)	How do you generate triangular wave using OP-Amp? Discuss in brief.	6M	CO2	L2
	(b)	Draw and explain the OP-Amp based precision rectifier circuit.	6M	CO2	L3
		UNIT – III			
5.	(a)	Illustrate the block diagram of PLL and explain importance of each block.	6M	CO3	L2
	(b)	Describe the operation of parallel comparator type ADC with necessary diagrams.	6M	CO3	L3
		(OR)			
6.	(a)	Explain with a neat circuit diagram the working of a binary weighted resistor DAC.	6M	CO3	L2
	(b)	Draw the block diagram of Astable multivibrator using IC555 and derive its time constant.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Construct a two input CMOS NAND gate and verify truth table.	6M	CO4	L3
	(b)	Sketch the CMOS transmission gate and realize a 2x1 Multiplexer.	6M	CO4	L3
		(OR)			
8.	(a)	Draw the two-level logic implementation of CMOS AND OR INVERTER circuit and explain the operation.	6M	CO4	L3
	(b)	Describe the low voltage CMOS logic and interfacing.	6M	CO4	L2
		UNIT-V			
9.		Design a Mod-10 counter using JK flip-flops and develop the Verilog module.	12M	CO5	L4
		(OR)			
10.	(a)	Develop a Verilog module for 4-bit right to left shift register.	6M	CO5	L3
	(b)	Realize a 3x8 decoder using logic gates.	6M	CO5	L3

Q.P. Code: 2005403 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Principles of Operating Systems (CSE)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.	(a)	Briefly discuss the functions of an Operating System.	6M	CO1	L1
	(b)	What is the purpose of System Call? Discuss the purpose of System calls in process management.	6M	CO1	L2
		(OR)			
2.	(a)	What is a file system. How do we represent file system for your college and department?	6M	CO1	L3
	(b)	Discuss client-server model in a network.	6M	CO1	L2
		UNIT – II			
3.	(a)	Define a process. With a Block diagram discuss the structure of a process in memory.	6M	CO2	L2
	(b)	With an example illustrate FCFS Scheduling algorithm.	6M	CO2	L2
		(OR)			
4.	(a)	What is a Semaphore? How Mutual Exclusion can be implemented with a Semaphore? Discuss.	6M	CO2	L3
	(b)	What is Dining Philosophers Problem? How to provide solution for this through monitors? Discuss.	6M	CO2	L3
		UNIT – III			
5.	(a)	Define swapping. Illustrate with a diagram the swapping of two processes using disk as a backup storage.	6M	CO3	L4
	(b)	What is the difference between hashed page tables and inverted page tables? Discuss.	6M	CO3	L2
		(OR)			
6.	(a)	Define Segmentation. Explain Segmentation hardware with a diagram.	6M	CO3	L3
	(b)	List the steps involved in handling a page fault.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Discuss the necessary conditions when deadlock situation occurs.	6M	CO4	L4
	(b)	How to recover from Deadlock? Discuss.	6M	CO4	L3
		(OR)			
8.	(a)	What is a file? Discuss the attributes of a file and the various operations performed on file.	6M	CO4	L2
	(b)	What is a directory? Discuss the different ways of representing directory structure.	6M	CO4	L2
		UNIT-V			
9.	(a)	Discuss briefly the different domains of Protection.	6M	CO5	L2
	(b)	What are the program threats that we usually encounter. Discuss briefly their impact on programs.	6M	CO5	L4
		(OR)			
10.	(a)	Pictorially represent the working of a boot virus.	6M	CO5	L4
	(b)	With an example represent access matrix showing owner rights.	6M	CO5	L3

Q.P. Code: 2005402

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Computer Organization (CSE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain different functional units of computers.	6M	CO1	L2
	(b)	With the help of a neat diagram, explain the interconnection of processor and main memory.	6M	CO1	L2
		(OR)			
2.	(a)	Explain in detail about fixed point representation with suitable example.	6M	CO1	L2
	(b)	Explain in detail about floating point representation with suitable example.	6M	CO1	L2
		UNIT – II			
3.	(a)	What is microoperation? Write about memory read and memory write operations.	6M	CO2	L1
	(b)	Explain the hardware implementation of arithmetic logic shift unit.	6M	CO2	L2
		(OR)			
4.	(a)	With the help of block diagrams, explain a 4-bit binary adder.	6M	CO2	L2
	(b)	Describe various arithmetic micro operations.	6M	CO2	L4
		UNIT – III			
5.	(a)	List various registers in a computer along with their purpose.	6M	CO3	L1
	(b)	List and explain different types of computer instructions. Also provide their formats.	6M	CO3	L1
		(OR)			
6.	(a)	Discuss the two techniques to design the control unit.	6M	CO3	L5
	(b)	Explain the addition and subtraction of binary numbers in 2's complement notations.	6M	CO3	L2
		UNIT – IV			
7.	(a)	What is parallel processing and its advantages? How parallelism can be achieved.	6M	CO4	L1
	(b)	Explain how the instruction pipeline works.	6M	CO4	L2
		(OR)			
8.	(a)	What is cache memory? Explain set associative mapping technique in cache memory.	6M	CO4	L2
	(b)	What do you mean by virtual memory? Also explain about virtual memory organization.	6M	CO4	L2
		UNIT-V			
9.	(a)	Explain the strobe control method of asynchronous data transfer.	6M	CO5	L2
	(b)	Explain the operation of DMA controller along with its block diagram.	6M	CO5	L2
		(OR)			
10.	(a)	Explain time shared common bus and system bus structure for multiprocessors.	6M	CO5	L2
	(b)	What are the different types interconnection structures? What is the functioning of crossbar switch network? Explain with neat diagram.	6M	CO5	L2

Q.P. Code: 2005404

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/Augu st – 2023

SUB: Digital Logic Circuits &Design (CSE)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Convert the (101101.1101)2 number into Decimal, Hexadecimal and octal form.	6M	CO1	L1
	(b)	State De Morgan's Theorems? Explain with example and logic.	6M	CO1	L2
		(OR)			
2.	(a)	Explain about classification of any four binary codes	6M	CO1	L2
	(b)	The Hamming code 101101101 is received, correct it if any errors- four parity bits and odd parity is used.	6M	CO1	L3,L4
		UNIT – II			
3.	(a)	Simplify the following Boolean function for minimal SOP form using k – Map method. F(A,B,C,D)=∑m(0,1,2,3,5,7,8,9,11,14)	6M	CO2	L3
	(b)	Obtain the simplified expression in sum of products for the following Boolean function BDE+B'C'D+CDE+A'B'CE+A'B'C+B'C'D'E'.	6M	CO2	L3
		(OR)			
4.	(a)	Simplify the following Boolean function with the don't conditions using K-map method f(A, B, C, D) = Σm(1,3,8,10,15) +Σd(0, 2, 9)	6M	CO2	L3,L4
	(b)	Realize the following expressions using NAND and NOR logic separately Y = PQ' + QS + Q'RS	6M	CO2	L2
		UNIT – III			
5.	(a)	Write the steps involved in designing a combinational circuit with example.	6M	CO3	L1,L2
	(b)	Define a multiplexer? Design a multiplexer for the function f(x,y,z) = Σm(0,2,3,5,7).	6M	CO3	L1,L4
		(OR)			
6.	(a)	Design a circuit which convert given 4-bit gray code to binary code.	6M	CO3	L5
	(b)	with a neat diagram explain operation of 2-bit magnitude comparator	6M	CO3	L2,L3
		UNIT – IV			
7.	(a)	Summarize the SR, JK, D & T flip-flops with characteristic table.	6M	CO4	L2
	(b)	What is race around condition in JK flip flop and how it is eliminated?	6M	CO4	L1,L2
		(OR)			
8.	(a)	Compare synchronous and asynchronous sequential circuits.	6M	CO4	L4
	(b)	Draw the logic diagram of LATCH using NOR and NAND gates	6M	CO4	L3
		UNIT-V			
9.	(a)	Draw and explain the working of 3-bit synchronous up/down counter	6M	CO5	L2,L3
	(b)	Make a comparison between PLA and PAL.	6M	CO5	L4
		(OR)			
10.	(a)	With a neat diagrams explain the operation of Ring counter	6M	CO5	L3
	(b)	Design a combinational circuit using a ROM. The circuit accepts a 3- bit number and generates an output binary number equal to the square of the input number.	6M	CO5	L5

Q.P. Code: 2021405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Probability Theory and Statistical Methods (CSE)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.		The following probability distribution function of a random variable X is given by | x | 0 | 1 | 2 | 3 | 4 | 5 | 6 | | P(x) | k | 3k | 5k | 7k | 9k | 11k | 13k | Find: (i) The value of k (ii) P(x<4), (iii) P(x≥5), (iv) $P(3<x\leq 6)$, (v) what will be the minimum value so that p(x≤k)>0.3	12M	CO1	L1
		(OR)			
2.		A Continuous random variable X has a density function $f(x)=Kx^2e^{-x}$ where $x \geq 0$, Find (i) K, (ii) mean and (iii)variance of X.	12M	CO1	L1
		UNIT – II			
3.	(a)	In 256 sets of 12 tosses of a coin, in how many cases one can expect 8 heads and 4 tails.	6M	CO2	L1
	(b)	Evaluate the expected frequencies to the following data, by using Poisson distribution | x | 0 | 1 | 2 | 3 | 4 | | f(x) | 109 | 65 | 22 | 3 | 1 |	6M	CO2	L5
		(OR)			
4.	(a)	Define Uniform distribution and evaluate its mean and variance.	6M	CO2	L5
	(b)	In a normal distribution 31 % of items are under 45 and 8 % are over 64. Find the mean and S.D of the distribution.	6M	CO2	L1
		UNIT – III			
5.	(a)	A sample of 900 members is found to have a mean of 3.4 cm. Test whether a truly random sample taken from a large population with mean 3.25 cm and S.D is 1.61cm.	6M	CO3	L4
	(b)	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% of level of significance.	6M	CO3	L4
		(OR)			
6.	(a)	A die was thrown 9000 times and of these 3220 yielded a 3 or 4. Is this consistent with the hypothesis that the die was unbiased? Use LOS is 1%.	6M	CO3	L5
	(b)	The mean life of a sample of 100 tube lights produced by a company is found to be 1560 hours with a population standard deviation of 90 hours, Test the hypothesis that the mean life time of the tube lights producted by the company is 1580 hours (Take $\alpha = 0.05$).	6M	CO3	L4
		UNIT – IV			
7.	(a)	Two horses A and B were tested according to the time (in seconds) to run a particular track with the following results. | Horse A | 28 | 30 | 32 | 33 | 33 | 29 | 34 | | Horse B | 29 | 30 | 30 | 24 | 27 | 29 | -- | Test whether the two horses have the same running capacity.	6M	CO4	L4
	(b)	Two samples of sizes 9 and 8 gave the sums of squares of deviations from their respective means equal to 160 inches^2 and 91inches^2 respectively. Can they be regarded as drawn from the same normal population?	6M	CO4	L4
		(OR)			

8. 10 Soldiers participated in a shooting competition in the first week. After intensive training they participated in competition in the second week. Their scores before and after training are given as follows. **12M CO4 L4**

Before	67	24	57	55	63	54	56	68	33	43
After	70	38	58	58	56	67	68	75	42	38

Do the data indicate that the soldiers have been benefited by the training (Use α as 0.05)

UNIT-V

9. The following table gives the sample means and ranges for 10 samples, each of size 6. Construct mean ($\bar{X}$) and Range (R) charts and determine whether the product is under control. **12M CO5 L3**

Sample No.	1	2	3	4	5	6	7	8	9	10
Mean $(\bar{x})$	43	49	37	44	45	37	51	46	43	47
Range (R)	5	6	5	7	7	4	8	6	4	6

(OR)

10. (a) Construct a control chart for defectives for the following data: **6M CO5 L3**

Sample No.	1	2	3	4	5	6	7	8	9	10
No. inspected	90	65	85	70	80	80	70	95	90	75
No. of defectives	9	7	3	2	9	5	3	9	6	7

(b) Construct a suitable control chart for the following data and state your conclusions: **6M CO5 L3**

Sample No. (i)	1	2	3	4	5	6	7	8	9	10
No. of defects (c)	12	10	6	8	9	9	7	10	11	8

Q.P. Code: 2039402 | SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Design and Analysis of Algorithms (AI&ML)

Time: 3 Hours | Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	What is an algorithm? Explain its characteristics in detail.	6M	CO1	L1
	(b)	Define a time complexity? Explain best, average and worst case complexities.	6M	CO1	L2
		(OR)			
2.	(a)	What is an asymptotic notation? Write different types of notations with an example.	6M	CO1	L1
	(b)	List out the differences between Sets and Disjoint Sets.	6M	CO1	L4
		UNIT – II			
3.	(a)	Design the Binary Search Algorithm and Analyze the performance of Binary Search by using divide-and-conquer approach..	6M	CO2	L4
	(b)	Discuss Strassen's matrix multiplication by using divide-and-conquer approach.	6M	CO2	L1
		(OR)			
4.	(a)	Solve the knapsack problem by using greedy method with an example.	6M	CO2	L3
	(b)	What is Minimum Cost Spanning Tree? Develop a Minimum Spanning tree for the weighted connected graph using kruskal's algorithm	6M	CO2	L2
		UNIT – III			
5.	(a)	Solve 0/1 Knapsack Problem using Dynamic Programming	6M	CO3	L3
	(b)	Differentiate between Dynamic Programming and Greedy Method	6M	CO3	L4
		(OR)			
6.		Explain the multistage graphs with backward approach with an example	12M	CO3	L2
		UNIT – IV			
7.	(a)	Develop an algorithm for connected components and spanning trees	6M	CO4	L6
	(b)	Summarize the procedure to identify the connected components	6M	CO4	L2
		(OR)			
8.	(a)	Explain subset-sum problem and discuss the possible solution strategies using backtracking.	6M	CO4	L2
	(b)	Describe graph coloring problem and write an algorithm for m-coloring problem	6M	CO4	L1
		UNIT-V			
9.	(a)	Explain the general method of Branch and Bound	6M	CO5	L2
	(b)	Describe the 0/1 Knapsack Problem and discuss how to solve it using Branch Bound Technique	6M	CO5	L1
		(OR)			
10.	(a)	Discuss in detail about non-deterministic algorithms.	6M	CO5	L6
	(b)	Explain the relevance of NP, NP-HARD and NP-complete problem.	6M	CO5	L2

Q.P. Code: 2039403

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Operating Systems (AI&ML)

Time: 3 Hours Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
		UNIT - I			
1.	(a)	Define an operating system. State and explain the basic functions or services of an operating system?	6M	CO1	L1
	(b)	Describe the operating system structures in detail.	6M	CO1	L2
		(OR)			
2.	(a)	Discuss the view of an operating system as a resource manager.	6M	CO1	L2
	(b)	Explain the different categories of system programs in detail.	6M	CO1	L2
		UNIT – II			
3.		Suppose that the following processes arrive for execution at the times indicated. Each process will run the listed amount of time. In answering the questions, use non-preemptive scheduling and base all decisions on the information you have at the time the decision must be made.	12M	CO2	L3

Process	Arrival Time	Burst Time
P1	0.0	8
P2	0.4	4
P3	1.0	1

(i) Find the average turnaround time for these processes with the FCFS scheduling algorithm. **(ii)** Find the average turnaround time for these processes with the SJF scheduling algorithm. **(iii)** The SJF algorithm is supposed to improve performance, but notice that we chose to run process P1 at time 0 because we did not know that two shorter processes would arrive soon. Find what is the average turnaround time will be if the CPU is left idle for the first 1 unit and then SJF scheduling is used.

Remembering that processes P1 and P2 are waiting during this idle time, so their waiting time may increase. This algorithm could be known as future-knowledge scheduling.

		(OR)			
4.	(a)	State critical section problem? Discuss three solutions to solve the critical section problem.	6M	CO2	L2
	(b)	Describe dining-philosophers problem? Device an algorithm to solve the problem using semaphores.	6M	CO2	L3
		UNIT – III			
5.	(a)	Explain about the difference between internal fragmentation and external fragmentation with suitable example.	6M	CO3	L2
	(b)	Explain why sharing a reentrant module is easier when segmentation is used than when pure paging is used with example.	6M	CO3	L3
		(OR)			
6.	(a)	Explain why the "principle of locality" is crucial to the use of virtual memory? What is accomplished by page buffering?	6M	CO3	L2
	(b)	Discuss briefly the swapping concept with necessary examples.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Describe resource-allocation graph. Explain how resource-allocation graph can be used for detecting deadlocks?	6M	CO4	L2
	(b)	What are files and explain the access methods for files?	6M	CO4	L2
		(OR)			
8.	(a)	State and explain the methods involved in recovery from deadlocks.	6M	CO4	L2
	(b)	Explain about file system mounting in detail.	6M	CO4	L2
		UNIT-V			
9.	(a)	Discuss the access matrix implementation techniques in detail.	6M	CO5	L2
	(b)	Briefly explain the various kinds of program threats and system threats.	6M	CO5	L2
		(OR)			
10.	(a)	Compare the various access matrix implementation techniques.	6M	CO5	L4
	(b)	Explain different methods used to solve the problem of security at the operating system level	6M	CO5	L2

Q.P. Code: 2039404

SET - 1

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

B. Tech. IV Semester (R20UG) Regular & Supple. Examinations of July/August – 2023

SUB: Data Science (AI&ML)

Time: 3 Hours | Max. Marks: 60

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

			M	CO	BL
		UNIT - I			
1.		What is the datafication Discuss in detail about Drew Conway's Venn diagram of data science	12M	CO1	L1
		(OR)			
2.	(a)	What are the goals of data science	6M	CO1	L2
	(b)	Compare Big Data with Data Science	6M	CO1	L3
		UNIT – II			
3.		Explain about linear and logistic regression with examples	12M	CO2	L2
		(OR)			
4.	(a)	illustrate with an example of k-means Nearest Neighbor (KNN) algorithm	6M	CO2	L3
	(b)	Discuss in brief about Naive Bayes algorithm	6M	CO2	L2
		UNIT – III			
5.	(a)	What is data science Redux? Explain Data Visualization Project in detail	6M	CO3	L2
	(b)	Explain about the risk challenge with example	6M	CO3	L2
		(OR)			
6.		Discuss about the data visualization at square with example	12M	CO3	L2
		UNIT – IV			
7.		Illustrate in detail installation steps of R-software	12M	CO4	L3
		(OR)			
8.	(a)	Explain about the matrix with an example	6M	CO4	L2
	(b)	Discuss data frame with suitable examples	6M	CO4	L2
		UNIT-V			
9.	(a)	what is social network analysis explain about Centrality Measures	6M	CO5	L2
	(b)	Explain about the representations of Networks and Eigenvalue Centrality	6M	CO5	L2
		(OR)			
10.		Explain about the representations of Networks and Eigenvalue Centrality	12M	CO5	L2

Q.P. Code: 2039405

SET - 1

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

B. Tech. IV Semester (R20UG) Regular Examinations of June – 2023

SUB: Business Intelligence Analyst (AI&ML)

Time: 3 Hours **Max. Marks: 60**

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

			M	CO	BL
		UNIT - I			
1.	(a)	Explain challenges of Business Analytics	6M	CO1	L1
	(b)	Write steps to create a List using sales dataset	6M	CO1	L1
		(OR)			
2.		Explain components of Business Analytics	12M	CO1	L2
		UNIT – II			
3.	(a)	Explain how to add page header and group header	6M	CO2	L1
	(b)	Write steps to summarize column data	6M	CO2	L1
		(OR)			
4.	(a)	Explain significance and usage of Business Analytics	6M	CO2	L2
	(b)	Draw Business Analytics process diagram.	6M	CO2	L2
		UNIT – III			
5.	(a)	Write expression to display "TEA" sales data using advanced filters	6M	CO3	L1
	(b)	Write steps to section/un section columns	6M	CO3	L1
		(OR)			
6.	(a)	Write steps to format and sort column data	6M	CO3	L2
	(b)	Write steps to create Line chart in visualization	6M	CO3	L2
		UNIT – IV			
7.	(a)	Explain how to add page header and group header	6M	CO4	L5
	(b)	Write steps to create a bar chart	6M	CO4	L5
		(OR)			
8.	(a)	Create a report with filters to show the revenue generated by the top sales representatives for 2012 in Southern Europe from sales dataset.	6M	CO4	L4
	(b)	Write steps to create a cross tab report	6M	CO4	L4
		UNIT-V			
9.		Define DATA MART and explain types of DATA MART	12M	CO5	L2
		(OR)			
10.		Define Meta data and explain types of Meta data	12M	CO5	L2