Q.P. Code: 2001601

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Environmental 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)	Explain the factors governing per capita demand.	6M	CO1	L2
	(b)	Explain the suitability of sources with reference to quantity and quality	6M	CO1	L2
		(OR)			
2.		Estimate the future population of town by Arithmetic Method, Geometric Increase Method and Incremental Increase Method for the year 2041.	12M	CO1	L5

Year	1951	1961	1971	1981	1991	2001	2011
Population	25000	27500	34100	41500	47050	54500	61000

		UNIT – II			
3.	(a)	Design a sedimentation tank to treat 10 MLD of water. Make suitable assumption where needed.	6M	CO2	L5
	(b)	Explain the theory of coagulation process	6M	CO2	L2
		(OR)			
4.	(a)	Compare slow sand filter and rapid sand filter	6M	CO2	L3
	(b)	Explain the various minor disinfection methods	6M	CO2	L2
		UNIT – III			
5.	(a)	Explain the layout of water distribution system	6M	CO3	L2
	(b)	Write a note on waste detection and prevention.	6M	CO3	L1
		(OR)			
6.	(a)	Explain briefly about Dry weather flow and Wet weather flow	6M	CO3	L2
	(b)	A city with a population of 100000 has an area of 80 Ha. Rate of water supply = 150 lpcd and average runoff coefficient for the entire area = 0.5, Time of concentration = 25 minutes. Assume 80 % of water supplied reaches the sewer. Find Dry Weather Flow and Wet Weather flow in m^3/sec will be.	6M	CO3	L3
		UNIT – IV			
7.		Explain the various types of sewerage systems with merits and demerits	12M	CO4	L2
		(OR)			
8.	(a)	Derive mathematical expression for BOD equation.	6M	CO4	L4
	(b)	Explain the significance of population equivalent	6M	CO4	L1
		UNIT – V			
9.	(a)	Write a note on i) Screens and ii) Grit Chamber	6M	CO5	L1
	(b)	Explain the working principle of Activated sludge process with neat sketch.	6M	CO5	L2
		(OR)			
10.	(a)	Describe briefly about Principle and operation of Oxidation Ponds	6M	CO5	L2
	(b)	Design a septic tank for 150 users. Make suitable assumption where needed.	6M	CO5	L5

Q.P. Code: 2001602 | SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Water Resources 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 is a spillway? What are its functions?	6M	CO1	L1
	(b)	Draw neat diagram of ogee spillway and discuss its design criteria	6M	CO1	L2
		(OR)			
2.	(a)	Describe the various types of energy dissipaters provided below spillway	6M	CO1	L1
	(b)	Write the necessity and Applications of Spillway	6M	CO1	L2
		UNIT – II			
3.	(a)	What is the necessity of the falls what are criteria for their locations	6M	CO2	L2
	(b)	Outline the procedure for designing trapezoidal type fall	6M	CO2	L2
		(OR)			
4.	(a)	Outline the procedure for designing sarda type fall.	6M	CO2	L1
	(b)	Discuss in brief the various types of falls. Give neat sketches	6M	CO2	L2
		UNIT – III			
5.	(a)	Discuss various types of canal regulations works	6M	CO3	L1
	(b)	Why are cross regulators required in a canal project?	6M	CO3	L2
		(OR)			
6.	(a)	Define an outlet. What are the requirements of a good outlet?	6M	CO3	L1
	(b)	Give the various types of outlets	6M	CO3	L2
		UNIT – IV			
7.	(a)	Name the various types of cross drainage works. Draw neat sketches to show the plan, cross section and elevation of an Aqueduct.	6M	CO4	L1
	(b)	Write a short note on (i)Super passage, (ii) Inlets and outlets	6M	CO4	L2
		(OR)			
8.	(a)	Describe different criteria for selecting a cross drainage works.	6M	CO4	L1
	(b)	Write a short note on Inlets and outlets	6M	CO4	L2
		UNIT – V			
9.	(a)	Describe the classification of Water Resources	6M	CO5	L1
	(b)	Explain the need for development of a Water Resource Project	6M	CO5	L2
		(OR)			
10.	(a)	Discuss various strategies for future water use	6M	CO5	L1
	(b)	Explain the objectives of Multipurpose irrigation Projects	6M	CO5	L2

Q.P. Code: 2001603

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Design of Reinforced Concrete Structures (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)	Explain about the characteristic load, characteristic strength and design values & partial safety factors in Limit State Method.	6M	CO1	L1
	(b)	Explain elaborately about stress strain curves of steel and concrete.	6M	CO1	L1
		(OR)			
2.	(a)	A simply supported RC beam of 300 mm x 500 mm overall size is reinforced with 2 - 20 mm dia. Fe415 grade steel bars in tension zone at an effective depth of 460 mm. Consider the grade of concrete as M25.Find the moment of resistance of the beam.	6M	CO1	L4
	(b)	Differentiate under reinforced, over-reinforced and balanced sections.	6M	CO1	L2
		UNIT – II			
3.		Design a simply supported RC rectangular beam having width of 300 mm and effect span of 6 m is carrying an imposed load of 15 kN/m. Consider the grade of Steel HYSD Fe 500 and grade of concrete as M25. Design the beam for moderate environment condition. (Use limit state method).	12M	CO2	L5
		(OR)			
4.		A simply supported RC rectangular beam of 300 mm x 600 mm overall size carries a u.d.l, of 20 kN/m over a span of 6 m. It is reinforced with 4 numbers of 20 mm diameter HYSD bars in tension with a clear cover of 30 mm throughout its length. The concrete is of M25 grade. Design the shear reinforcement in the form of vertical stirrups using 8 mm diameter HYSD steel bars.	12M	CO2	L5
		UNIT – III			
5.		Design a reinforced concrete slab for a room measuring 5,5 m x 6 m in size. The slab is simply supported on all 4 edges with corners held down and carries a super imposed load of 3000 N/m^2, inclusive of floor finishes etc. Use M25 mix & Fe415 grade steel & use IS code method.	12M	CO3	L5
		(OR)			
6.		Design a transversely spanning waist slab-type staircase with a straight flight supported by two stringer beams along the two sides. Assume an effective span of 1.35 m, a riser of 150 mm, and a tread of 300 mm. Assume imposed load of 4kN/m^2. Use M25 concrete and Fe 415 steel. Assume mild exposure.	12M	CO3	L5
		UNIT – IV			
7.		Design a reinforced concrete column 400 mm square to carry an ultimate load of 1000 kN at an eccentricity of 160 mm. Use M25 concrete & Fe415 grade steel.	12M	CO4	L5
		(OR)			
8.		Design a square column to carry an axial load of 1000 kN. Use M25 concrete & Fe415 grade steel.	12M	CO4	L5
		UNIT – V			
9.		Discuss about different types of footings and their importance. Draw neat diagrams.	12M	CO5	L1
		(OR)			
10.		Design an isolated footing for a square column of side 450 mm, supporting a service load of 2500 kN on a concentrically loaded square footing. Assume SBC of soil as 250kN/m^2 at a depth of 1.5 m below the ground. Use M30 concrete and Fe 415 steel for the footing and M25 concrete and Fe 415 steel for the column. Assume that the column is reinforced with eight 25 mm bars.	12M	CO5	L5

Q.P. Code: 2001604 | SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024
SUB: Prestressed Concrete Structures (PE – II)

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)**	List out any six major differences between PSC and RCC.	6M	CO1	L1
	(b)	Explain Magnel Blaton's System of prestressing with neat sketches	6M	CO1	L2
		(OR)			
2.	**(a)**	List out the different stages involved in the pre-tensioning and post-tensioning system.	6M	CO1	L1
	(b)	Explain Hoyer's system of prestressing, with neat sketches.	6M	CO1	L2
		UNIT – II			
3.	**(a)**	Explain how do you estimate the loss of prestressed due to the creep of concrete and relaxation of steel.	6M	CO2	L2
	(b)	A prestressed concrete beam, 200mm wide and 300mm deep, is prestressed with high tension wires of area 320 mm 2 located at a constant eccentricity of 50 mm. Initially, stress is 1000 N/mm 2 of span 10 m. While there is a relaxation of 5 percent of steel stress, estimate the final percentage loss of stress in the post-tensioned member using the IS 1343-1800 regulations, and the following data: E s = 210 KN/ mm 2 , E c = 35 KN/ mm 2, ϕ = 1.6, Total residual shrinkage strain =3 X 10 -4	6M	CO2	L3
		(OR)			
4.	**(a)**	What are the Wobble Frictional Losses? Explain	6M	CO2	L2
	(b)	A concrete beam of 200 mm wide and 350 mm deep is pre-tensioned by 8 wires of 5 mm diameter at an initial stress of 1000 N/mm 2 with an eccentricity of 60 mm. Find the loss due to elastic shortening of concrete, creep, shrinkage of concrete, and relaxation of 8%. M20 grade concrete, creep coefficient of 1.6; E s = 210 KN/ mm 2 , E c = 35 KN/ mm 2 , shrinkage strain = 3 X 10 -4 .	6M	CO2	L3
		UNIT – III			
5.	**(a)**	A rectangular concrete beam of cross section 30 cm deep and 20 cm wide is prestressed using 15 wires of 5mm diameter located 6.5 cm from the bottom of the beam and 3 wires of the diameter of 5mm, 2.5 cm from the top. Assuming the prestress in the steel is 840 MPa, calculate the stresses at the extreme fibers of the mid-span section when the beam is supporting its weight for 6m, if a UDL of 6 kN/m is imposed, evaluate the maximum working stress in concrete. The density of concrete is 24 kN/m ^{2} .	6M	CO3	L3
	(b)	What are the assumptions made in the analysis of PSC structures?	6M	CO3	L2
		(OR)			
6.	**(a)**	Write a short note on the Lever Arm Concept.	6M	CO3	L2
	(b)	A pre-stressed concrete beam, of cross-section 300 mm x 500 mm and 8 m span, is pre-stressed with a parabolic tendon having a pre-stressing force of 2000 kN. The tendon has a sag of 150 mm at the mid-span. The eccentricity of the tendon at the ends of the beam is zero. Find the extreme fiber stresses at the mid-span section of the beam using the load balancing concept if it is subjected to a total UDL of 350 kN.	6M	CO3	L3

UNIT – IV

7.	(a)	Explain how to compute shearing stress and principal stress due to transverse loads on an uncracked structural concrete member.	6M	CO4	L2
	(b)	A prestressed concrete beam of rectangular section has a 10m span, 120mm wide and 300 mm deep, and is axially prestressed by a cable carrying an effective force of 180 kN. The beam supports a total udl of 5 kN/m which includes the self-weight of the member. Compare the magnitude of the principal tension developed in the beam with and without the axial prestress.	6M	CO4	L3

(OR)

8.	(a)	The support section of a prestressed concrete beam, 120 mm wide and 250 mm deep, is required to support an ultimate shear force of 60 kN. The compressive prestress at the centroidal axis is 5 MPa. The characteristic cube strength of concrete is 40 MPa. The cover to the tension reinforcement is 50 mm. If the characteristic tensile strength of steel in stirrups is 250 MPa, design suitable reinforcements at the section using the IS Code 1343 recommendations.	6M	CO4	L3
	(b)	Explain the procedure for the design of shear reinforcement as per IS code.	6M	CO4	L2

UNIT – V

9.	(a)	A rectangular concrete beam of cross section 150 mm wide and 300 mm deep is simply supported throughout 8 m and is prestressed using a symmetric parabolic cable, at a distance of 75 mm from the bottom of the beam at mid-span and 125 mm from the top of the beam at support sections. If the force in the cable is 350 kN and the modulus of elasticity of concrete is 38 kN/mm 2 , Calculate the deflection at mid-span when the beam is supporting its own weight.	6M	CO5	L3
	(b)	What are the factors influencing deflections?	6M	CO5	L2

(OR)

10.	(a)	A simply supported beam with a uniform section spanning over 6 m is post-tensioned by two cables, both of which have an eccentricity of 100 mm below the centroid of the section at the mid-span. The first cable is parabolic and is anchored at an eccentricity of 100 mm above the centroid at each end, the second cable is straight and parallel to the line joining the supports. The cross-sectional area of each cable is 100 mm 2 and they carry an initial stress of 1200 N/mm 2. The concrete has a cross-section of 2 X 10 4 mm 2 and a radius of gyration of 120 mm. The beam supports two concentrated loads of 20 kN each at the third point of the span, E c = 38 kN/mm 2 . Calculate the deflection at the center of the span after 2 years, assuming a 20% loss in prestress and the effective modulus of elasticity to be one-third of the short-term modulus of elasticity using Lin's simplified method.	6M	CO5	L3
	(b)	How do you estimate short-term and long-term deflections in the prestressed concrete beam?	6M	CO5	L2

Q.P. Code: 2001605 | SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Bridge Engineering (CE) (PE – II)

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 primary functions of a bridge in transportation infrastructure?	6M	CO1	L2
	(b)	Describe the purpose of the impact factor in highway bridge loading standards?	6M	CO1	L1
		(OR)			
2.	(a)	List out the difference between B.G. (Broad Gauge) and M.G. (Meter Gauge) railway bridge loading standards?	6M	CO1	L1
	(b)	Describe briefly highway bridge loading standards, and why are they important?	6M	CO1	L1
		UNIT – II			
3.		Identify which specific design criteria's must be met for a box culvert that will be subjected to R C Class AA tracked vehicles?	12M	CO2	L3
		(OR)			
4.		Explain different types of design loads must be considered when designing a box culvert?	12M	CO2	L2
		UNIT – III			
5.		An RCC deck slab bridge is to be constructed over a trapezoidal channel of 9 m base width and side slopes 1: 1 laid at a bed slope of 0.25 m/ km. Design the slab bridge, chezys constant 60, bed level of stream 100 m, FSL 101.4 m, BSL 103 m, Loading IRC class AA tracked vehicles, Road width 7.5 m Footpath 600 mm on either side, wing wall are splayed type.	12M	CO3	L6
		(OR)			
6.		Define deck slab bridge? Explain the methods for analyzing the slabs subjected to concentrated loads.	12M	CO3	L1
		UNIT – IV			
7.		Design a RCC T-Beam and slab deck for the given specifications involves several key steps. First, considering an effective span of 16 meters and a clear roadway width of 7.5 meters with 600 mm wide kerbs, the structure must accommodate IRC Class AA tracked vehicle loading. Using M30 grade concrete and Fe 415 grade steel, the design focuses on flexure only for both the deck slab and exterior girders. The 4 main girders, spaced at 2.5 meters apart, and cross girders at 4 meters, provide the framework for distributing loads across the span, including considerations for the 80 mm thick wearing coat. Design the Deck slab and exterior girder for flexure only and sketch the details of reinforcement.	12M	CO4	L6
		(OR)			
8.	(a)	Explain specific considerations are there when designing a T-beam bridge for Class AA tracked vehicles?	6M	CO4	L2
	(b)	List out the factors need to be considered when designing the interior panel of a slab in a T-beam bridge?	6M	CO4	L1
		UNIT – V			
9.	(a)	Describe the various types of bridge bearings used and their specific applications.	6M	CO5	L1
	(b)	How is the stability of bridge piers assessed during the design phase?	6M	CO5	L1
		(OR)			
10.		How are elastomeric pad bearings designed and what advantages do they offer in bridge design?	12M	CO5	L1

Q.P. Code: 2001606

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Traffic Engineering (CE) (PEC – II)

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 traffic engineering and describe its scope.	8M	CO1	L1
	(b)	Discuss various resistances in vehicular movement	4M	CO1	L2
		(OR)			
2.		Briefly explain how different traffic management measure help in controlling the turning moments?	12M	CO1	L2
		UNIT – II			
3.		Write a quick note on the Motor Vehicles Act. How does this help with road safety?	12M	CO2	L1
		(OR)			
4.		What is the need and scope of traffic regulations in traffic engineering?	12M	CO2	L1
		UNIT – III			
5.		Define the terms basic capacity, possible capacity and practical capacity and its importance in traffic engineering.	12M	CO3	L1
		(OR)			
6.		Define passenger car units. What are the factors on which PCU values depend?	12M	CO3	L1
		UNIT – IV			
7.		What are the causes of road accidents and discuss how each of these factors leads to accident and its preventive measures	12M	CO4	L1
		(OR)			
8.		Explain, (i) Condition Diagram (ii) Collision Diagram, and its use in accident studies	12M	CO4	L2
		UNIT – V			
9.		Explain the fundamental diagrams of traffic flow and derive the expression for determining the maximum traffic flow	12M	CO5	L2
		(OR)			
10.		Explain the basic concepts of Light Hill-Whitham's theory of traffic flow theory	12M	CO5	L2

Q.P. Code: 2002601

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Microprocessors & Microcontrollers (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.		Explain in detail about the internal architecture of an 8086 Microprocessor with a block diagram.	12M	CO2	L2
		(OR)			
2.	(a)	Explain in detail about various registers in 8086 Microprocessor	6M	CO2	L2
	(b)	Explain different addressing modes supported by 8085 Microprocessor	6M	CO2	L2
		UNIT – II			
3.	(a)	Write an ALP to find the factorial of number using 8086	6M	CO3	L1
	(b)	Discuss the data movement and program control instruction of 8086	6M	CO3	L1
		(OR)			
4.	(a)	Write ALP to transfer the block of data to new location B001H to B008H	6M	CO3	L3
	(b)	Describe how memory is accessed in 8086 with suitable examples	6M	CO3	L3
		UNIT – III			
5.		Explain in detail about 8255 PPI with neat block diagram	12M	CO3	L3
		(OR)			
6.		Explain in detail about Programmable Interval Timer (8254) and its interfacing	12M	CO4	L2
		UNIT – IV			
7.		Explain in details about pin diagram of 8051 microcontroller	12M	CO4	L4
		(OR)			
8.	(a)	Explain the I/O ports and their functions of 8051 microcontroller	6M	CO5	L4
	(b)	Illustrate the different modes with which the timer/counter in 8051 can be programmed	6M	CO5	L3
		UNIT – V			
9.	(a)	Explain in detail about various register in ARM.	6M	CO5	L2
	(b)	Write short notes on various data processing instructions.	6M	CO5	L1
		(OR)			
10.	(a)	Explain multiple register load-store instructions of ARM.	6M	CO5	L5
	(b)	Explain in detail about interrupt and vector table	6M	CO5	L5

Q.P. Code: 2002602

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Fundamentals of Electrical Drives (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)	What is an Electric drive? What are the different parts of an electric drive? Describe the functions in brief?	6M	CO1	L1
	(b)	Derive the fundamental torque equation in an electric drive.	6M	CO1	L2
		(OR)			
2.	(a)	Discuss the advantages of an electric drive over mechanical drive.	6M	CO1	L1
	(b)	How can a motor be operated in four quadrants? Explain it with a hoist load?	6M	CO1	L4
		UNIT – II			
3.	(a)	Derive the speed torque characteristics of DC separately excited motor.	6M	CO2	L3
	(b)	Explain any one braking method of DC drive in brief with necessary diagrams.	6M	CO2	L1
		(OR)			
4.	(a)	Draw the 3-Φ fully controlled converter fed separately Excited D.C. Motor drive and hence explain it in both discontinuous and continuous mode.	8M	CO2	L2
	(b)	List the speed controlled methods of DC motor and hence draw the speed torque characteristic curves for DC shunt motor.	4M	CO2	L1
		UNIT – III			
5.	(a)	Draw and explain the speed torque characteristics of a variable stator voltage-controlled induction motor.	6M	CO3	L4
	(b)	Explain the closed loop operation of an Induction Motor drive with neat block diagram?	6M	CO3	L3
		(OR)			
6.	(a)	Draw the slip power recovery control schemes of induction motors?	6M	CO3	L1
	(b)	Explain how static Kramer drive is used to control the speed of induction motors?	6M	CO3	L2
		UNIT – IV			
7.	(a)	What is Self-controlled synchronous motor drive? Explain it employing cyclo-converter?	6M	CO4	L3
	(b)	Discuss the principle and operation of BLDC Motor?	6M	CO4	L2
		(OR)			
8.	(a)	Derive the torque equation of cylindrical wound field synchronous motor from basics.	6M	CO4	L3
	(b)	Discuss about self-controlled synchronous motors employing load commutated Thyristor inverter	6M	CO4	L2
		UNIT – V			
9.	(a)	What are the various losses in electrical drive system? Explain	8M	CO5	L2
	(b)	List the power factor improvement methods in electric drives	4M	CO5	L2
		(OR)			
10.	(a)	What are various methods used or maintenance of motors	6M	CO5	L1
	(b)	What are the measures of energy conservation in electrical drives?	6M	CO5	L1

Q.P. Code: 2002603

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024
SUB: Switch Gear & Protection (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)	What is Counterpoise? Explain in detail about its need and classifications.	6M	CO1	L1
	(b)	Discuss and compare the various methods of neutral earthing.	6M	CO1	L2
		(OR)			
2.	(a)	What are protective measures taken against lightning over voltages?	6M	CO1	L1
	(b)	Explain about insulation Co-Ordination?	6M	CO1	L2
		UNIT – II			
3.	(a)	Derive an expression for re-striking voltage, maximum value of re-striking Voltage and RRRV.	6M	CO2	L3
	(b)	Explain the operation of Minimum oil Circuit Breaker with diagram.	6M	CO2	L2
		(OR)			
4.	(a)	Explain the elementary principles of arc interruption and current chopping.	6M	CO2	L2
	(b)	In a 132 kV system, the inductance and capacitance up to the location of the circuit breaker are 0.4 H and 0.015 micro farads respectively. Determine the maximum value of the restriking voltage across the contacts of the circuit breaker and frequency of transient oscillation.	6M	CO2	L3
		UNIT – III			
5.		Explain the principle and operation of Differential and Percentage Differential relays with neat diagram?	12M	CO3	L2
		(OR)			
6.	(a)	Explain the operating characteristics of an reactance and admittance relay.	6M	CO3	L2
	(b)	Summarize the types of comparators in detail.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Explain the procedure to protect the generator against stator faults.	6M	CO4	L2
	(b)	Explain internal faults inside the transformer.	6M	CO4	L2
		(OR)			
8.	(a)	Explain the working principle of buch-holtz relay with neat diagram?	6M	CO4	L2
	(b)	Discuss the percentage differential protection scheme of a transformer?	6M	CO4	L2
		UNIT – V			
9.	(a)	Explain the protection of feeders using Over Current Relays?	6M	CO5	L2
	(b)	Explain the method of 3-Zone protection in case of transmission lines?	6M	CO5	L2
		(OR)			
10.	(a)	Explain about carrier current protection in transmission lines?	6M	CO5	L2
	(b)	Explain about the over current protection of bus bars with relevant connection diagram.	6M	CO5	L2

Q.P. Code: 2002606

SET – 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Signals & 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)	Explain the Dirchlet's conditions.	6M	CO2	L3
	(b)	Check whether the following systems are linear or not. (i) $y(t)=t^2x(t)$ (ii) $y(t)=e^{x(t)}$	6M	CO1	L2
		(OR)			
2.		Explain the procedure to represent Trigonometric Fourier series and Exponential Fourier Series.	12M	CO2	L3
		UNIT – II			
3.	(a)	State and prove Parseval's relation of Fourier Transform.	6M	CO2	L3
	(b)	Find the Fourier transform of x(t) = u(2t), where u(t) is the unit step function.	6M	CO1	L3
		(OR)			
4.		Find the Fourier Transform of the following signals (i) Unit step function (ii) Signum function (iii) $\cos\omega_0 t$	12M	CO2	L3
		UNIT – III			
5.	(a)	Explain the properties of additivity and homogeneity of a linear system.	6M	CO4	L2
	(b)	Given $y(t) = x(t)\cos(2\pi f_0 t)$. Is it Linear time invariant system? Given $y(t) = x(t)\cos(2\pi f_0 t)$. Is it Linear time invariant system?	6M	CO4	L4
		(OR)			
6.		Define BIBO Stability. Explain about classification of systems.	12M	CO3	L2
		UNIT – IV			
7.		How do you classify discrete time systems? Explain briefly.	12M	CO5	L3
		(OR)			
8.		Explain about the concepts of (i) Sampling (ii) Aliasing (iii) Reconstruction of a signal from its samples	12M	CO3	L3
		UNIT – V			
9.	(a)	State and prove properties of Laplace Transform.	6M	CO5	L3
	(b)	Determine the Laplace transform of the following continuous time signal and their ROC $X(t)=e^{-3t}U(t)$	6M	CO5	L3
		(OR)			
10.		Define Z-Transform and explain the following properties of Z-Transform: (i) Time Shifting (ii) Time Reversal (iii) Multiplication by n	12M	CO5	L3

Q.P. Code: 2003601

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Operations Research (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. Using graphical method, solve the following LPP. **12M CO1 L2**

Maximize $Z = 2x_1+3x_2$

Subject to the constraints:

$x_1 - x_2 \leq 2$,

$x_1 + x_2 \leq 4$,

$x_1, x_2 \geq 0$.

(OR)

2. Solve the flowing LPP by simplex method **12M CO1 L2**

Maximize $Z = 8x_1 + 6x_2$

Subject to the constraints:

$4x_1 + 2x_2 \leq 60$,

$2x_1 + 4x_2 \leq 48$,

and $x_1, x_2 \geq 0$.

UNIT – II

3. Find the initial solution by VAM method and Optimal solution by MODI method for the following transportation problem. **12M CO2 L4**

Origins	Destinations				Supply Capacity
	D1	D2	D3	D4	
Source 1	5	3	6	2	19
Source 2	4	7	9	1	37
Source 3	3	4	7	5	34
Demand Requirements	16	18	31	25	

(OR)

4. A department has 5 employees and five jobs are to be performed. The time each employee will take to perform each job is given in the table below. How the jobs should be allocated one per employee, so as to minimize the total man-hours? **12M CO2 L1**

JOBS	EMPLOYEE				
	A	B	C	D	E
1	9	3	10	13	4
2	8	17	13	20	5
3	5	14	8	11	6
4	11	13	9	12	3
5	12	8	14	16	7

UNIT – III

5. Find the saddle point for the following game. **12M CO3 L3**

Player A	Player B				
	I	II	III	IV	V
I	9	3	1	8	0
II	6	5	4	6	7
III	2	4	4	3	8
IV	5	6	2	2	1

(OR)

6. Find optimum sequence and minimum elapsed time and idle times for each machine of the following sequencing problem. Processing times for each machine in hours are given below: **12M CO3 L2**

Job	A	B	C	D	E	F	G	H	I	J
Machine-1	5	7	3	4	6	7	22	1	10	25
Machine-2	9	6	10	5	9	4	8	15	5	3

UNIT – IV

7. Consider a self-service store with one cashier. Assume Poisson's arrivals and exponential service times. Suppose that 9 customers arrive on an average every 5 minutes and the cashier can serve 10 customers in five minutes. Compute the following: **12M CO4 L3**

   (i) Average number of customers queuing for service.
   (ii) Probability of having more than 10 customers in the system.
   (iii) Probability that a customer has to queue for more than 2 minutes.

(OR)

8. An aircraft company uses rivets at a constant rate of 2,500 per year. Each unit costs Rs.30. The company personnel estimate that it costs Rs.130 to place an order, and that the carrying cost of inventory is 10 percent per year. How frequently should the orders be placed? Also determine the optimum size of each order. **12M CO4 L5**

UNIT – V

9. The following table gives the running costs per year and resale price of certain equipment whose purchase price is Rs.5000/-. Determine the replacement due year. **12M CO5 L5**

Year	1	2	3	4	5	6	7	8
Running cost (Rs)	1500	1600	1800	2100	2500	2900	3400	4000
Resale value (Rs)	3500	2500	1700	1200	800	500	500	500

(OR)

10. What sort of problems can be solved by using dynamic programming? Illustrate with a case study. **12M CO5 L2**

Q.P. Code: 2003602

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

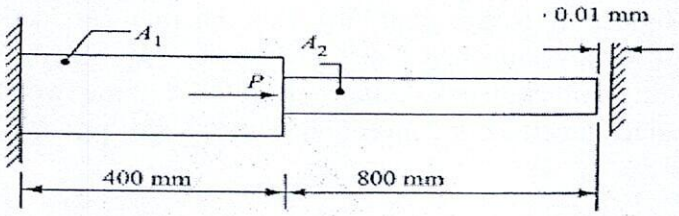
SUB: Finite Element Methods (ME)

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

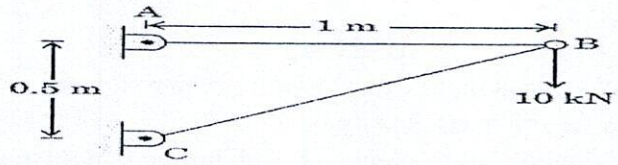
Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

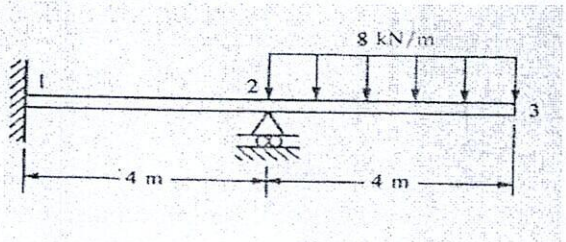
			M	CO	BL
		UNIT – I			
1.	(a)	Explain with a suitable example, the basic steps involved in Finite Element Method.	6M	CO1	L1
	(b)	Write a notes on Galerkin's Method.	6M	CO1	L2
		(OR)			
2.		Determine the nodal displacements and reaction at the supports in the bar shown in figure -1 (Stepped bar). Take E = 210 GPa; A_1 = 500 mm^2; A_2 = 250 mm^2; and P = 50 kN.	12M	CO1	L3



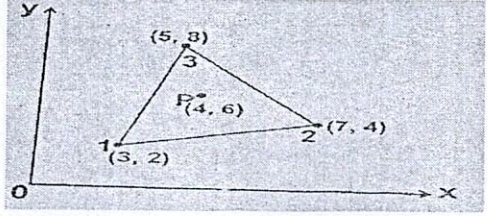
		UNIT – II			
3.		Determine the nodal displacements and stresses in the elements for the plane truss given in the figure – 2 (Plan Truss). Take E = 200 GPa. Area of cross section of each element = 1000 mm^2.	12M	CO2	L4



		(OR)			
4.		Determine the nodal deflections and slopes, the forces in each element and the reactions for the beam shown in figure – 3 (Beam Element). Take E = 70 GPa and I = 3 x 10^{-4} m^4.	12M	CO2	L5

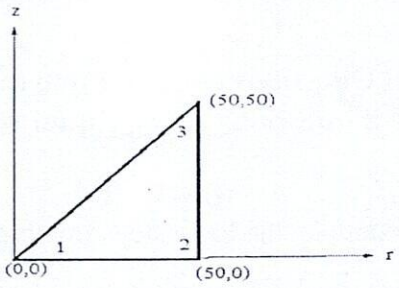


		UNIT – III			
5.	(a)	Write a notes on two-dimensional CST element.	4M	CO3	L2
	(b)	Evaluate the shape functions N_1, N_2 *and* N_3 at the interior point 'P' for the triangular element shown in figure -4 (Triangular Element).	8M	CO3	L3



(OR)

6.	Evaluate the stiffness matrix for the axi-symmetric element (Coordinates are in mm) shown in figure – 5 (Axi-Symmetric Element). Take Modulus of Elasticity, E = 210 GPa and Poisson's ratio, μ = 0.25. Assume thickness = 10 mm.	12M	CO3	L4

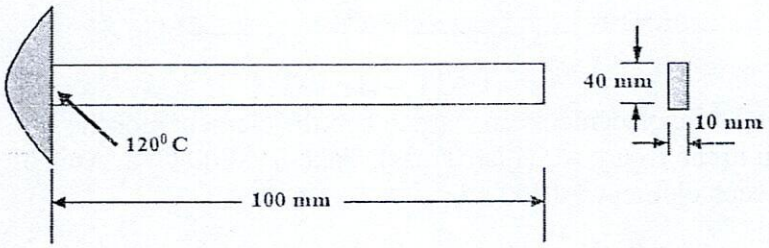


UNIT – IV

7.	(a) Explain Iso-parametric, sub-parametric and super-parametric elements.	6M	CO4	L3
	(b) Explain in brief about "Gaussian - quadrature" method of integration.	6M	CO4	L3

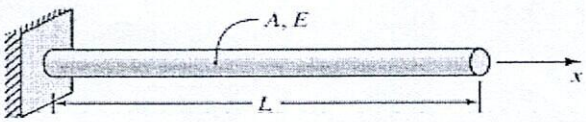
(OR)

8.	Calculate the temperature distribution in a one-dimensional rectangular fin as shown in figure – 6 (Rectangular Fin). Take Thermal conductivity, k = 0.3 W/mm ^{0}C; Convective heat transfer coefficient, h=1 x 10^{-3} W/mm^2 ^{0}C and Surrounding ambient temperature, $T_\infty = 20^0$C. Assume two elements and neglect the effect of convection from the end surface.	12M	CO4	L5



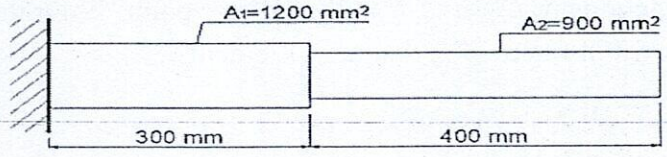
UNIT – V

9.	(a) Develop the consistent – mass matrix for a two node bar element of length L, cross-sectional area A, and mass density ρ.	4M	CO5	L3
	(b) Choosing two equal -length finite elements and lumped mass matrices, determine the natural frequencies of the circular solid shaft as shown in figure – 7 (Cantilever Shaft – Rod).	8M	CO5	L4



(OR)

10.	Determine the first two natural frequencies of longitudinal vibrations of a stepped steel bar as shown in figure – 8 (Stepped bar) and plot the mode shapes. All dimensions are in mm. Take E = 200 Gpa and ρ = 7800 kg/m^3.	12M	CO5	L6



Q.P. Code: 2003603

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Introduction to CAD / CAM (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.		Explain the computer aided design process with help of block diagram?	12M	CO1	L1
		(OR)			
2.	(a)	Enumerate different computer peripherals used for Computer-Aided Design.	6M	CO1	L1
	(b)	Describe Design Workstation and Graphics Terminals in CAD	6M	CO1	L1
		UNIT – II			
3.		Define Transformation and list out various 2D Transformation with an Example	12M	CO2	L2
		(OR)			
4.	(a)	Discuss Windowing and Clipping with an appropriate example	8M	CO2	L2
	(b)	Write 3D translation and rotation transformations with an example	4M	CO2	L2
		UNIT – III			
5.	(a)	Distinguishing wireframe modeling, surface modeling and solid modeling	6M	CO3	L3
	(b)	Write applications of plane and space curves	6M	CO3	L3
		(OR)			
6.		Explain B-rep solid modeling in detail with neat sketch	12M	CO3	L3
		UNIT – IV			
7.	(a)	Define CAM. And discuss about group technology in detail	6M	CO4	L4
	(b)	List out various advantages of FMS	6M	CO4	L4
		(OR)			
8.	(a)	How do you handle materials using robots. Explain in detail	6M	CO4	L4
	(b)	Briefly explain about material handling system in FMS	6M	CO4	L4
		UNIT – V			
9.		What you mean by CAPP. Explain variant CAPP with suitable flowchart	12M	CO5	L5
		(OR)			
10.		Write short notes on: (i) MRP (ii) Capacity Planning (iii) Shop floor	12M	CO5	L5

Q.P. Code: 2003605

SET – 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Solar and Wind Energy Systems (ME) (PE – II)

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

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

			M	CO	BL
1.		Write short notes on the following terms: (i) Solar radiation (ii) Incident angle, (iii) beam and diffuse radiation (iv) Zenith angle	12M	CO1	L2
		(OR)			
2.	(a)	What are the advantages and disadvantages of concentrating collectors compared to flat-plate collectors?	6M	CO1	L2
	(b)	List out various main components of a flat-plate solar collector, and what are the function of each component?	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain in detail how a solar photovoltaic cell generates electricity?	6M	CO2	L2
	(b)	What are factors affecting the electricity generated by a solar PV module?	6M	CO2	L3
		(OR)			
4.	(a)	Describe the working principle of standalone SPV system with only AC/DC load, electronics control circuit and battery.	6M	CO2	L3
	(b)	Describe the design methodology for SPV system	6M	CO2	L3
		UNIT – III			
5.	(a)	Write an overview of the current status of wind power generation in India?	6M	CO3	L2
	(b)	What are the wind characteristics?	6M	CO3	L2
		(OR)			
6.		What are the different types of anemometers. Based on the working principle, list out and explain Sonic anemometer and Pressure plate anemometer with suitable diagram.	12M	CO3	L3
		UNIT – IV			
7.		List out the various components of a wind electric generator. And explain with suitable diagram.	12M	CO4	L3
		(OR)			
8.	(a)	Describe with neat sketch horizontal axis wind turbine construction and working?	6M	CO4	L3
	(b)	What are the safety precautions of a wind turbine?	6M	CO4	L2
		UNIT – V			
9.		What are the various steps involved in the successful planning and development of a wind farm? Explain each step in detail.	12M	CO5	L3
		(OR)			
10.	(a)	What is the process of wind project development?	6M	CO5	L2
	(b)	What is the site selection of wind power plants?	6M	CO5	L2

Q.P. Code: 2004601 | **SET - 1**

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

B. Tech. VI Semester (R20UG) Regular/Supply Examinations of July – 2024

SUB: Digital Signal Processing (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 and prove any three properties of DFT.	6M	CO1	L1
	(b)	Determine the 8-point DFT of the sequence x[n]={1,1,1,1,1,1,1,0}.	6M	CO1	L5
		(OR)			
2.	(a)	Discuss the use of FFT algorithm in linear filtering.	6M	CO1	L6
	(b)	Explain the steps in decimation in time FFT algorithm with necessary diagram.	6M	CO1	L2
		UNIT – II			
3.	(a)	Compare Direct form -I and Direct form-II realizations.	6M	CO2	L4
	(b)	Explain the different types of IIR filter realization with suitable example.	6M	CO2	L5
		(OR)			
4.	(a)	Give the Lattice structure for all pole IIR filter along with the governing equations.	6M	CO2	L1
	(b)	Construct the cascade form structure of the system with difference equation $y(n) = ¾\ y(n-1) - 1/8\ \ y(n-2) + x(n) + 1/3\ \ x(n-1)$	6M	CO2	L3
		UNIT – III			
5.	(a)	Explain the steps in the design of analog Butterworth filter.	6M	CO3	L2
	(b)	Estimate the order of analog Butterworth filter that has 2 dB pass band attenuation at a frequency of 20 rad/sec and at least 10 dB stop band attenuation at 30 rad/sec.	6M	CO3	L5
		(OR)			
6.	(a)	What is frequency transformation? Discuss the types of frequency transformations in brief.	6M	CO3	L6
	(b)	Compare and Contrast Butterworth and Chebyshev approximations.	6M	CO3	L4
		UNIT – IV			
7.	(a)	Distinguish between FIR and IIR Filter.	6M	CO4	L4
	(b)	Explain the design steps of FIR filters using windows.	6M	CO4	L2
		(OR)			
8.		Determine the coefficients h(n) of a linear phase FIR filter of length M = 15 which has a symmetric unit sample response and a frequency response that satisfies the condition $H(2\pi k/15) = 1\ for\ k=0,1,2,3\ 1\ 5$ $= 0.4\ for\ k = 4$ $= 0\ for\ k = 5,6,7$	12M	CO4	L5
		UNIT – V			
9.		Discuss sampling rate conversion by a rational factor I/D With help of equation.	12M	CO5	L6
		(OR)			
10.		Explain Decimation and Interpolation with examples.	12M	CO5	L2

Q.P. Code: 2004602 | SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024
SUB: Microwave Engineering (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)	Identify the frequency ranges associated with microwave frequencies and hence distinguish between the different types of standard microwave band designations.	6M	CO1	L2
	(b)	An air filled rectangular waveguide has dimensions of a = 6 cm and b = 4 cm. The signal frequency is 3 GHZ. Compute the following for the TE10. (i) Cut off frequency. (ii) Wavelength in the waveguide. (iii) Phase constant and phase velocity in the waveguide. (iv) wave impedance in the waveguide.	6M	CO5	L4
		(OR)			
2.	(a)	(i) With a schematic diagram, explain the construction of a micro strip line. (ii) Mention the advantages of strip lines over other transmission lines.	6M	CO3	L2
	(b)	Explain about dielectric and ohmic losses in microstrip lines.	6M	CO3	L2
		UNIT – II			
3.	(a)	Explain the velocity modulation principle of a two-cavity klystron amplifier with necessary expressions and Applegate diagram.	6M	CO2	L3
	(b)	Explain Limitations of conventional tubes at microwave frequencies.	6M	CO2	L2
		(OR)			
4.	(a)	Derive the expression for bunching parameter of reflex klystron.	6M	CO5	L3
	(b)	Explain the construction and operation of reflex klystron oscillator using applegate diagram.	6M	CO2	L2
		UNIT – III			
5.	(a)	What is a slow wave structure? List the different slow wave structures.	4M	CO2	L1
	(b)	Explain the construction and working principle of Helix Traveling Wave Tube with suitable diagrams.	8M	CO2	L2
		(OR)			
6.	(a)	What is mode jumping in magnetron? Explain any one method to avoid mode jumping.	5M	CO2	L3
	(b)	Derive Hull cut off magnetic equation and Hull cut off voltage equation for a magnetron.	7M	CO5	L4
		UNIT – IV			
7.	(a)	(i) Explain coupling probes and coupling loops. (ii) Write a note on different types of attenuators used in microwave frequency range.	3M 3M	CO2	L2
	(b)	What are different types of attenuators? Explain Construction and operation of fixed attenuator.	6M	CO2	L2
		(OR)			
8.	(a)	With a neat sketch explain about Magic Tee. Derive S matrix of it.	6M	CO4	L3
	(b)	What is Faraday rotation? Explain construction and principle of gyrator.	6M	CO2	2
		UNIT – V			
9.	(a)	Explain how double minima method can be used to measure high VSWR	6M	CO3	L3
	(b)	What are Avalanche transit time devices? Explain the principle of operation of IMPATT diode with neat sketches?	6M	CO2	L2
		(OR)			
10.	(a)	Explain how variable capacitance is obtained using varactor diode and also explain its construction details.	6M	CO2	L3
	(b)	Explain microwave power measurement using bolometer.	6M	CO3	L2

Q.P. Code: 2004603 | SET - 1

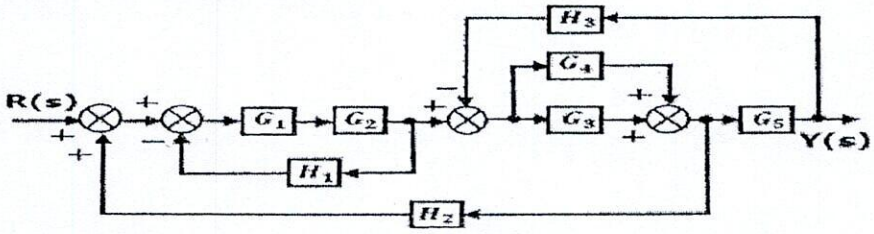
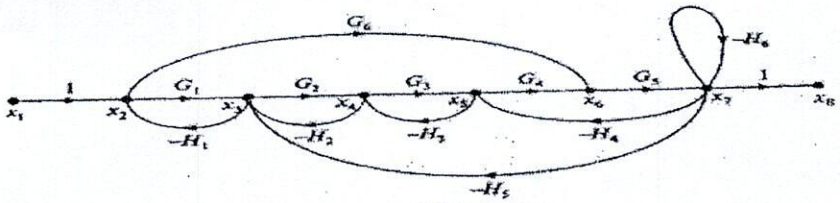
K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Control Systems (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.		Explain the block diagram reduction techniques and also Obtain the transfer function of below block diagram. 	12M	CO1	L3
		(OR)			
2.		Obtain the transfer function for the signal flow graph given in figure below, using Mason's gain formula. 	12M	CO1	L3
		UNIT – II			
3.		A unity feedback control system has the forward transfer function, $G(S) = \frac{25}{S^2+8S+25}$. Find the response, rise time, peak time, maximum peak over shoot and settling time at 5% for unit step input.	12M	CO2	L2
		(OR)			
4.		Derive the time domain specifications of second order system for unit step input.	12M	CO2	L3
		UNIT – III			
5.		The open loop transfer function of a unity feedback control system is given by $G(S) = \frac{K(S+3)}{S(S^2+4s+11)}$. Sketch the root locus for the system.	12M	CO3	L3
		(OR)			
6.	(a)	Find the stability of the system whose characteristics equation is $s^6 + 2s^5 + 8s^4 + 12s^3 + 20s^2 + 16S + 16 = 0$	6M	CO3	L4
	(b)	With the help of Routh's stability criterion find the stability of the following systems represented by the characteristic equations: $S^4 + 8s^3 + 18s^2 + 16s + 5 = 0$.	6M	CO3	L4
		UNIT – IV			
7.		Draw Bode plot for transfer function $G(S) = \frac{5(1+2S)}{(1+4S)(1+0.25S)}$	12M	CO4	L6
		(OR)			
8.		The open loop transfer function of a system is given by: $G(s) = \frac{40}{(S+4)(S^2+2S+1)}$. Sketch the Nyquist plot and comment on the stability of the system.	12M	CO4	L3
		UNIT – V			
9.		Draw a network of lag, lag-lead compensator consisting of resistors and capacitors and derive its transfer function.	12M	CO5	L6
		(OR)			
10.	(a)	What is meant by state transition matrix give its properties?	6M	CO5	L2
	(b)	Construct the state model for a system characterized by the differential equation $\dddot{y} + 6\ddot{y} + 11\dot{y} + 6y = u$	6M	CO5	L3

Q.P. Code: 2004604

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: CMOS VLSI Design (ECE) (PE – II)

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 step-by-step fabrication process of pMOS device with neat sketches.	6M	CO1	L3
	(b)	Analyze the alternative forms of Pull-Up.	6M	CO1	L4
		(OR)			
2.	(a)	Draw and explain the working of BiCMOS inverter.	6M	CO1	L4
	(b)	Conclude the pull-up to pull-down ratio for nMOS inverter driven by another nMOS inverter.	6M	CO1	L3
		UNIT – II			
3.	(a)	Discuss about design rules for contacts.	6M	CO2	L2
	(b)	Draw the stick diagram and layout for 2-input CMOS NOR logic.	6M	CO2	L4
		(OR)			
4.	(a)	Draw the stick and layout diagram for nMOS inverter.	6M	CO2	L4
	(b)	Discuss the Lambda based design rules for MOS transistors.	6M	CO2	L2
		UNIT – III			
5.	(a)	Illustrate the concept of Pseudo NMOS logic and mention its merits and demerits.	6M	CO3	L2
	(b)	With suitable example explain the working operation of pass transistor logic.	6M	CO3	L4
		(OR)			
6.	(a)	Write the importance of scaling and scaling factors for device parameters.	6M	CO3	L2
	(b)	With suitable example explain the working of dynamic CMOS logic.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Summarize the design flow of FPGA.	6M	CO4	L2
	(b)	Give detail explanation on RTL synthesis.	6M	CO4	L2
		(OR)			
8.	(a)	Write a short note on Xilinx Vertex FPGA.	6M	CO4	L2
	(b)	Elaborate on high level Synthesis.	6M	CO4	L2
		UNIT – V			
9.	(a)	Explain about the need for low-power VLSI design.	6M	CO5	L2
	(b)	Describe the short-circuit power dissipation.	6M	CO5	L2
		(OR)			
10.	(a)	Evaluate dynamic power dissipation.	6M	CO5	L3
	(b)	Compare VTCMOS and MTCMOS techniques.	6M	CO5	L4

Q.P. Code: 2005601 | SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Internet of Things (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)	List and explain characteristics of IOT	6M	CO1	L2
	(b)	Illustrate IOT enabling technologies.	6M	CO1	L3
		(OR)			
2.		What are the different development models discuss them in detail	12M	CO1	L2
		UNIT – II			
3.	(a)	Explain IOT application for Home automation	6M	CO2	L2
	(b)	Discuss about the IOT application for cities	6M	CO2	L2
		(OR)			
4.		List various application of IOT explain in detail Health and life style.	12M	CO2	L3
		UNIT – III			
5.	(a)	Differentiate between IOT and M2M	6M	CO3	L2
	(b)	Discuss about Software defined networks in IOT	6M	CO3	L2
		(OR)			
6.		Explain IoT Design Methodology with example	12M	CO3	L2
		UNIT – IV			
7.		Explain The Arduino Platform &Getting started with Arduino .	12M	CO4	L2
		(OR)			
8.		Discuss about Transducer & Sensors characteristics	12M	CO4	L2
		UNIT – V			
9.		Discuss about Raspberry Pi, and about the board	12M	CO5	L2
		(OR)			
10.		Explain Raspberry Pi installation of Linux	12M	CO5	L2

Q.P. Code: 2005602

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Data Mining (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)	Discuss the Data Mining as the Evolution of Information Technology?	6M	CO1	L1
	(b)	Identify the major ethical concerns associated with data mining.	6M	CO1	L2
		(OR)			
2.	(a)	Compare and contrast Characterization and Discrimination in data mining?	6M	CO1	L3
	(b)	Explain the concept of association rules in the context of market basket analysis.	6M	CO1	L2
		UNIT – II			
3.	(a)	What are the main objectives of data preprocessing in data mining?	6M	CO2	L2
	(b)	Demonstrate the concept hierarchy generation with suitable example?	6M	CO2	L3
		(OR)			
4.	(a)	What is data cleaning? How to handle missing data? Explain with examples.	6M	CO2	L2
	(b)	What is descriptive data summarization and why is it important in data preprocessing?	6M	CO2	L2
		UNIT – III			
5.		Apply the following pruning strategies in pattern generation of data mining (i) Pruning Pattern Space (ii) Pruning Data Space	12M	CO3	L4
		(OR)			
6.		Briefly explain the difference between association and correlation analysis in data mining.	12M	CO3	L3
		UNIT – IV			
7.		Demonstrate the algorithm for construction of decision trees. Apply the ID3 algorithm over an example data set to find out (i) Entropy of data set Entropy and (ii) Information gain of any one attribute.	12M	CO4	L3
		(OR)			
8.	(a)	Formulate and describe the following model evaluation metrics (i)Accuracy (ii) Sensitivity (iii)Specificity (iv) Precision	8M	CO4	L4
	(b)	What is rule-based classification?	4M	CO4	L2
		UNIT – V			
9.		What is hierarchical clustering? Explain Agglomerative and Divisive clustering with suitable examples.	12M	CO5	L2
		(OR)			
10.	(a)	What is an outlier? List and explain the different types of outliers.	6M	CO5	L2
	(b)	Compare and contrast the following grid based clustering methods (i) STING (ii) CLIQUE	6M	CO5	L3

Q.P. Code: 2005603

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Cryptography & Network Security (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 Various Computer Security Concepts in Detail?	6M	CO1	L1
	(b)	Describe A Model for Network Security?	6M	CO1	L2
		(OR)			
2.	(a)	With An Example Describe Substitution Cipher?	6M	CO1	L1
	(b)	Describe Play fair Cipher (KEYWORD) with an Example?	6M	CO1	L2
		UNIT – II			
3.		Describe Data Encryption Standard Algorithm in Detail with an Example?	12M	CO2	L2
		(OR)			
4.	(a)	Write a short note on Linear Congruence?	6M	CO2	L1
	(b)	Explain Euclidean and extended Euclidean algorithm and find gcd & S,T of given numbers: (i) 234,42 (ii) 225,135	6M	CO2	L3
		UNIT – III			
5.	(a)	Apply RSA algorithm if p = 7, q = 11 and e = 13 then what will be the value of d?	6M	CO3	L2
	(b)	Write principles of Public Key Cryptography?	6M	CO3	L1
		(OR)			
6.	(a)	Explain usage of Cipher Block Chaining in Hash Functions?	6M	CO3	L3
	(b)	Describe Various Requirements of Cryptographic Hash Functions?	6M	CO3	L2
		UNIT – IV			
7.	(a)	Compare Message Authentication codes and Authentication Functions?	6M	CO4	L4
	(b)	Write the Security of MAC and HMAC?	6M	CO4	L1
		(OR)			
8.	(a)	Describe the Schnorr Digital Signature Scheme with Examples?	6M	CO4	L2
	(b)	State and Explain Digital Signature Standard (DSS)?	6M	CO4	L3
		UNIT – V			
9.		Describe the Principles of Remote User Authentication Method and Write Limitations of RUA?	12M	CO5	L2
		(OR)			
10.	(a)	Write in detail about Pretty Good Privacy with example?	6M	CO5	L1
	(b)	Describe Various Firewalls used in a Network?	6M	CO5	L2

Q.P. Code: 2005604

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Artificial Intelligence (CSE) (PE – II)

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 AI technique and illustrate with an example.	6M	CO1	L2
	(b)	Discuss the Heuristic Search Techniques.	6M	CO1	L3
		(OR)			
2.	(a)	What is meant by AI? Explain the AI tasks.	6M	CO1	L4
	(b)	Describe the Problem Space and Search.	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain the Conflict Resolution.	6M	CO2	L3
	(b)	List and explain the issues in knowledge representation in AI.	6M	CO2	L2
		(OR)			
4.	(a)	Describe the limitations of knowledge representation.	6M	CO2	L4
	(b)	Discuss the Predicate Logic.	6M	CO2	L2
		UNIT – III			
5.	(a)	Explain the symbolic reasoning under uncertainty.	6M	CO3	L3
	(b)	Elaborate the Bayesian networks in AI.	6M	CO3	L2
		(OR)			
6.		Describe the reasoning under uncertainty in AI.	12M	CO3	L4
		UNIT – IV			
7.	(a)	Difference between Inductive and Deductive reasoning.	6M	CO4	L2
	(b)	Explain the slot filter knowledge representation.	6M	CO4	L3
		(OR)			
8.		Describe the Primitive Acts of Conceptual Dependency Theory.	12M	CO4	L2
		UNIT – V			
9.	(a)	Explain the Minimax search procedure in game playing.	6M	CO5	L3
	(b)	How is AI used in gaming? Explain	6M	CO5	L4
		(OR)			
10.	(a)	What is natural language processing in AI? Explain	6M	CO5	L2
	(b)	Describe the Discourse and Pragmatic processing in NLP	6M	CO5	L3

Q.P. Code: 2039601

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 202 4

SUB: Deep Learning (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 the variants of gradient descent?	6M	CO1	L1
	(b)	Write short notes on different types of errors	6M	CO1	L2
		(OR)			
2.		Define the following terms (i) Scalar (ii) Vector (iii) Matrix (iv) Tensor (v) Over fitting (vi) Under fitting	12M	CO1	L3
		UNIT – II			
3	(a)	Define the terms regression and classification.	6M	CO2	L1
	(b)	Explain in detail about various types linear models.	6M	CO2	L1
		(OR)			
4		What are the types of linear regression? Explain briefly about linear neural network for regression and classification.	12M	CO2	L2
		UNIT – III			
5		What is an activation function? Briefly explain about various types of activation functions	12M	CO3	L2
		(OR)			
6.	(a)	Explain about feed forward neural network.	6M	CO3	L1
	(b)	Write short notes on the SoftMax cross loss function	6M	CO3	L2
		UNIT – IV			
7	(a)	What is TensorFlow and briefly explain about TensorFlow	6M	CO4	L2
	(b)	Explain vertical and horizontal edge detection with an example.	6M	CO4	L1
		(OR)			
8		Explain the following terms: (i) Regularization (ii) Dropout (iii) Batch norm (iv) RCNN architecture	12M	CO4	L1
		UNIT – V			
9		What is RNNs? Clearly explain about RNNs.	12M	CO5	L2
		(OR)			
10	(a)	Explain about sparse auto encoders	6M	CO5	L1
	(b)	Explain about Recurrent Neural Network.	6M	CO5	L1

Q.P. Code: 2039602

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Software Engineering (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 are the five generic process frame work activities in software development process? Explain them in detail.	6M	CO1	L2
	(b)	Describe the Unified Process (UP) model and its phases. How does it facilitate iterative development?	6M	CO1	L4
		(OR)			
2.	(a)	What is a Myth? Explain about various Software Myths in detail.	6M	CO1	L2
	(b)	Explain about the role of umbrella activities in software development process.	6M	CO1	L2
		UNIT – II			
3.	(a)	Develop a use case diagram for a simple ATM system based on given requirements.	6M	CO2	L2
	(b)	Explain data modeling concepts in detail.	6M	CO2	L2
		(OR)			
4.	(a)	Analyze the challenges associated with requirements elicitation in requirements engineering.	6M	CO2	L4
	(b)	Explain the Scenario-Based Modeling with suitable example.	6M	CO2	L3
		UNIT – III			
5.	(a)	Write briefly about any five Design concepts used in Software Design.	6M	CO3	L2
	(b)	Define Software Architecture and Write a short notes on Architectural Genres.	6M	CO3	L2
		(OR)			
6.	(a)	Assess the impact of design decisions on the overall performance and reliability of a software system.	6M	CO3	L5
	(b)	Explain about Architectural Design with the help of a neat sketch.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Explain about the significance of Golden rules while creating a User Interface.	6M	CO4	L2
	(b)	Explain Top Down integration testing briefly and list out the steps in Top Down integration testing.	6M	CO4	L2
		(OR)			
8.	(a)	Explain about Interface Design steps in detail.	6M	CO4	L2
	(b)	Compare the Testing in the Large versus Testing in the Small.	6M	CO4	L4
		UNIT – V			
9.	(a)	Write about Metrics for Project Size Estimation.	6M	CO4	L2
	(b)	What are the various categories of risks? Give an overview about Risk Management.	6M	CO4	L2
		(OR)			
10.	(a)	Discuss about Product Metrics and Process Metrics in detail with suitable examples.	6M	CO4	L3
	(b)	Explain about COCOMO-A Heuristic Estimation Technique in detail.	6M	CO4	L2

Q.P. Code: 2039603 | SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VI Semester (R20UG) Regular/Supply Examinations of JULY – 2024
***SUB:* Predicative Analysis Modeler (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.		Explain Data mining with an example	12M	CO1	L3
		(OR)			
2.	(a)	Write history of analytics	6M	CO1	L2
	(b)	Explain any business analytics example	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain Descriptive, Predictive and Prescriptive analysis	6M	CO2	L3
	(b)	Explain Meta data modeling and draw maturity model diagram	6M	CO2	L3
		(OR)			
4.		Explain ETL process	12M	CO2	L2
		UNIT – III			
5.	(a)	Explain BI security use case with an example	6M	CO3	L3
	(b)	Define Dataset and explain with an example	6M	CO3	L2
		(OR)			
6.	(a)	Explain data mining applications	6M	CO3	L2
	(b)	Define CRISP-DM and list stages in it.	6M	CO3	L4
		UNIT – IV			
7.	(a)	Define Node and stream and draw a sample stream diagram	6M	CO4	L3
	(b)	Explain rules to be followed to create a stream	6M	CO4	L3
		(OR)			
8.	(a)	Define Super Node and draw a sample diagram	6M	CO4	L3
	(b)	Explain distinct, aggregate and transform nodes	6M	CO4	L3
		UNIT-V			
9.	(a)	Explain classification, segmentation and association	6M	CO5	L3
	(b)	Explain types of classification	6M	CO5	L2
		(OR)			
10.	(a)	Define Neural Network and draw architecture of Neural Network	6M	CO5	L3
	(b)	Explain how do Neural Networks work	6M	CO5	L2

Q.P. Code: 2039605

SET – 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Cloud Computing (AI&ML) (PE – II)

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)	Outline the basic principles of quantum computing and its potential impact.	6M	CO1	L2
	(b)	What are the principles of cloud computing?	6M	CO1	L2
		(OR)			
2.	(a)	List requirements for Cloud Services and explain.	6M	CO1	L1
	(b)	Explain Cloud Ecosystem with a neat diagram.	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain the evolution of cloud applications.	6M	CO2	L2
	(b)	Discuss Cloud architecture with appropriate diagram.	6M	CO2	L2
		(OR)			
4.	(a)	Provide examples of different types of applications that can be deployed on the cloud and their benefits.	6M	CO2	L2
	(b)	Explain the concept of a hybrid cloud and its advantages.	6M	CO2	L2
		UNIT – III			
5.	(a)	Write short notes on Platform as a Service.	6M	CO3	L2
	(b)	Explain about various types of Hypervisors.	6M	CO3	L2
		(OR)			
6.	(a)	Discuss the suitability of IaaS.	6M	CO3	L2
	(b)	Explain different approaches to Virtualization.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Discuss the different perspectives on Software as a Service (SaaS) development and the new challenges that arise.	6M	CO4	L2
	(b)	Explain the features and advantages of Windows Azure and Google App Engine.	6M	CO4	L3
		(OR)			
8.	(a)	Discuss different perspectives on SaaS development.	6M	CO4	L2
	(b)	What are the new challenges of software development in cloud?	6M	CO4	L2
		UNIT – V			
9.		Discuss the overview of Data center environment.	12M	CO5	L2
		(OR)			
10.	(a)	Explain the fundamental concepts of networking in cloud computing, including its importance and basic components.	6M	CO5	L2
	(b)	Explain the role of cloud service providers and the types of cloud services they offer.	6M	CO5	L2

Q.P. Code: 2006602

SET - 1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024
SUB: Digital Marketing (OE)

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 Components of Digital Marketing.	6M	CO1	L2
	(b)	List out the Benefits of Digital Marketing.	6M	CO1	L1
		(OR)			
2.	(a)	Discuss about Digital Marketing Platforms.	6M	CO1	L6
	(b)	Explain Digital Marketing Trends.	6M	CO1	L2
		UNIT – II			
3.	(a)	Demonstrate about Email Marketing and Social Media Marketing.	6M	CO2	L2
	(b)	Elaborate on the significance for Migrating from Traditional Channels to Digital Channels.	6M	CO2	L6
		(OR)			
4.	(a)	Discuss the role of Digital Media in sustaining Customer Loyalty.	6M	CO2	L6
	(b)	Design 4 P's for Mobile Marketing.	6M	CO2	L6
		UNIT – III			
5.	(a)	Identify the Elements of a Digital Marketing Plan.	6M	CO3	L3
	(b)	Explain Marketing Strategy in Marketing Plan.	6M	CO3	L2
		(OR)			
6.	(a)	Explain the Steps involved in Planning Implementation.	6M	CO3	L2
	(b)	Discuss the Opportunities and Issues in Marketing Plan.	6M	CO3	L6
		UNIT – IV			
7.	(a)	Discuss about Display Ads.	6M	CO4	L6
	(b)	Explain the importance of Search Engine Optimization.	6M	CO4	L2
		(OR)			
8.	(a)	Explain importance of Traditional Advertising.	6M	CO4	L2
	(b)	Discuss about CPM (Cost-per-Thousand) and CPC (Cost-per-Click).	6M	CO4	L6
		UNIT – V			
9.	(a)	Explain How to Analyze Advertising Performance.	6M	CO5	L2
	(b)	Discuss about the importance of Understanding Social Media.	6M	CO5	L6
		(OR)			
10.	(a)	"Career advancement with LinkedIn is way ahead"-Criticize.	6M	CO5	L5
	(b)	Explain How to Measure Digital Media Performance.	6M	CO5	L2

Q.P. Code: 20OE304

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Non - Conventional Sources of Energy (OE)

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 role and potential of renewable energy sources, and what is the environmental impact of solar power?	6M	CO1	L1
	(b)	How do you explain the sunshine recorder and solar radiation data?	6M	CO1	L2
		(OR)			
2.	(a)	Discuss the concept of Terrestrial and Extraterrestrial Solar Radiation using a neat sketch.	6M	CO1	L2
	(b)	Explain in detail, using clear drawings, the instruments used to measure solar radiation.	6M	CO1	L2
		UNIT – II			
3.	(a)	Explain The applications of solar water heating and solar distillation & drying?	6M	CO2	L2
	(b)	Explain The Solar Photovoltaic Energy Conversion With Neat Sketch?	6M	CO2	L1
		(OR)			
4.	(a)	Explain about Solar collectors , its types with neat sketches ?	6M	CO2	L2
	(b)	Express heat lost from collector in terms of overall loss coefficient? Explain top loss coefficients in detail?	6M	CO2	L1
		UNIT – III			
5.	(a)	Brief discuss about tidal and wave energy with neat sketches?	6M	CO3	L2
	(b)	Explain in detail about anaerobic digestion and the different phases involved in this process?	6M	CO3	L2
		(OR)			
6.	(a)	Discuss about the principle of OTEC , its utilization and working with neat sketch?	6M	CO3	L1
	(b)	Describe salient features of horizontal axis and vertical axis wind turbines?	6M	CO3	L2
		UNIT – IV			
7.	(a)	What are the advantages of geothermal energy over traditional energy sources, & what is its environmental impact?	6M	CO4	L1
	(b)	Explain the methods for preserving energy from geothermal sources and their potential in India.	6M	CO4	L2
		(OR)			
8.	(a)	Explain The Thermodynamic Cycle By Using Ocean Energy Method Of Energy?	6M	CO4	L2
	(b)	What is the source of tidal energy? What is the minimum tidal range required for the working of tidal plat. How much is the potential in tides?	6M	CO4	L2
		UNIT – V			
9.	(a)	Describe the need of Direct energy conversion system?	6M	CO5	L2
	(b)	What Are The Applications Of Direct Energy Conversion Methods?	6M	CO5	L1
		(OR)			
10.	(a)	Explain the Principle of MHD Power Generation & MDH system With Neat Sketch?	6M	CO5	L2
	(b)	Describe the types of fuel cells and explain any one with neat sketch?	6M	CO5	L1

Q.P. Code: 20OE611

SET – 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Basic Financial Management for Engineers (OE)

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 Financial Management? Discuss the nature and scope of Financial Management.	6M	CO1	L1
	(b)	Write a brief note on the objectives of Financial Management.	6M	CO1	L2
		(OR)			
2.	(a)	Discuss the role of financial manager in an organization.	6M	CO1	L3
	(b)	What are the goals of financial Management? Explain in brief?	6M	CO1	L2
		UNIT – II			
3.	(a)	Discuss the various long term sources of Finance?	6M	CO2	L2
	(b)	Explain the meaning and importance of Cost of Capital?	6M	CO2	L2
		(OR)			
4.	(a)	Write a note on weighted average cost of capital?	6M	CO2	L1
	(b)	What are the factors effecting cost of capital?	6M	CO2	L2
		UNIT – III			
5.	(a)	Define Budgeting? What is the purpose of Budgeting?	6M	CO3	L3
	(b)	Explain the need for Budgetary control.	6M	CO3	L3
		(OR)			
6.	(a)	Write about the Fixed Budget and Master Budget.	6M	CO3	L2
	(b)	Discuss the process of preparation of Budgets.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Define Working Capital? Discuss the concept of Working Capital.	6M	CO4	L3
	(b)	Explain the significance of Working Capital in any business?	6M	CO4	L3
		(OR)			
8.	(a)	What are the different types of Working Capital? Discuss.	6M	CO4	L2
	(b)	Explain the financing approaches for Working Capital?	6M	CO4	L2
		UNIT – V			
9.		Define Capital Budgeting? What are the various techniques of Capital Budgeting?	12M	CO5	L3
		(OR)			
10.		A project requires an investment of Rs. 5,00,000 and has a scrap value of Rs. 20,000 after five years. It is expected to yield profits after depreciation and taxes during the five years amounting to Rs. 40,000, Rs. 50,000, Rs.70,000, Rs.60,000, Rs. 20,000. Calculate the average rate of return on the investment.	12M	CO5	L4

Q.P. Code: 20OE612 | SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Transforms & Applications (OE)

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)	Determine the Laplace transform of $e^{-3t}(2cos5t - 3sin5t)$.	6M	CO1	L5
	(b)	If $L[f(t)] = \bar{f}(s)$ then prove that $L[(sinhat)f(t)] = \frac{1}{2}[\bar{f}(s-a) - \bar{f}(s+a)]$. Hence evaluate $L[sinh2t\ sin3t]$	6M	CO1	L5
		(OR)			
2.	(a)	Evaluate $L\left[\frac{e^{-at} - e^{-bt}}{t}\right]$	6M	CO1	L5
	(b)	Evaluate $\int_0^\infty \frac{sin2t}{t}dt$	6M	CO1	L5
		UNIT – II			
3.		Apply convolution theorem to evaluate $L^{-1}\left[\frac{s}{(s^2+a^2)^2}\right]$	12M	CO2	L3
		(OR)			
4.		Solve $\frac{d^2x}{dt^2} + 9x = cos2t, if\ x(0) = 1, x\left(\frac{\pi}{2}\right) =$ 1by the method of Laplace transforms	12M	CO2	L3
		UNIT – III			
5.		Determine the Fourier transform of the function $f(x) = \begin{cases} 1-x^2, & if\ \|x\| < 1 \\ 0, & \|x\| > 1 \end{cases}$ and use it to evaluate $\int_0^\infty \left(\frac{x\cos x - \sin x}{x^3}\right)\cos\frac{x}{2}dx$	12M	CO3	L5
		(OR)			
6.		Evaluate the Fourier sine and cosine transforms of x^{n-1}	12M	CO3	L5
		UNIT – IV			
7.		Find the inverse Fourier sine transform of f(x) of $F_s(p) = \frac{p}{1+p^2}$	12M	CO4	L5
		(OR)			
8.		Find the Fourier cosine transform of e^{-4x} and hence evaluate $\int_0^\infty \frac{cos2x}{x^2+16}dx = \frac{\pi}{8}e^{-8}$	12M	CO4	L5
		UNIT – V			
9.	(a)	Determine the Z-transform of $\cosh n\theta$.	6M	CO5	L5
	(b)	Determine the inverse Z-transform of $\frac{2z^2+3z}{(z+2)(z-4)}$.	6M	CO5	L5
		(OR)			
10.	(a)	Apply Convolution theorem to find $Z^{-1}\left[\frac{z^2}{(z-1)(z-3)}\right]$	6M	CO5	L3
	(b)	Solve $u_{n+2} - 5u_{n+1} - 6u_n = 2^n$	6M	CO5	L3

Q.P. Code: 20OE615

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Academic Writing (OE)

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 Academic Writing? Compare and contrast academic and non-academic writing.	12M	CO1	L3
		(OR)			
2.	(a)	What are the four C's of academic writing? Explain them briefly.	6M	CO1	L1
	(b)	Explain the essentials of a well-structured academic writing.	6M	CO1	L2
		UNIT – II			
3.		Construct your own examples on each of the basic rhetorical modes of paragraph.	12M	CO2	L6
		(OR)			
4.	(a)	Explain the structure of a paragraph.	6M	CO2	L2
	(b)	Evaluate the following idea. "Artificial Intelligence is already replacing many jobs."	6M	CO2	L5
		UNIT – III			
5.	(a)	Elaborate the process involved in academic writing.	6M	CO3	L2
	(b)	"Planning plays a key role in the process of writing." Justify the given statement with reasons.	6M	CO3	L5
		(OR)			
6.	(a)	List out the strategies that help in building a good academic writing.	6M	CO3	L1
	(b)	Demonstrate the role of research in improving academic writing.	6M	CO3	L2
		UNIT – IV			
7.		Develop a research paper on Traditional Learning Vs Electronic Learning.	12M	CO4	L6
		(OR)			
8.	(a)	Examine the importance of research paper.	6M	CO4	L4
	(b)	Explain the structure of a research paper.	6M	CO4	L2
		UNIT – V			
9.	(a)	"One day I will find the right words, and they will be simple." Justify the statement with illustrations.	6M	CO5	L5
	(b)	Write short notes on precision, clarity, conciseness and word choice.	6M	CO5	L1
		(OR)			
10.	(a)	Evaluate the role of vocabulary in learning a good language.	6M	CO5	L5
	(b)	Develop examples for academic vocabulary and use each in a sentence.	6M	CO5	L6

Q.P. Code: 2006603

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Project Management (OE)

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 project management? Explain various types of project management.	6M	CO1	L1
	(b)	Discuss various stages in project management life cycle.	6M	CO1	L2
		(OR)			
2.		What are 12 principles of project management?	12M	CO1	L1
		UNIT – II			
3.	(a)	What is project financing? Explain different means of long-term project financing.	6M	CO2	L1
	(b)	Explain the following methods of financial evaluation of projects: (i) Payback Period (PBP). (ii) Accounting Rate of Return (ARR).	6M	CO2	L2
		(OR)			
4.		Assume that ABC Ltd. is considering two projects namely Project-X and Project-Y and wants to calculate the NPV for each project. Both project X and project Y is four-year project and cash flows of both the projects for four years are given below:	12M	CO2	L4

Year	Project-X Cash Inflows (Rs.)	Project-Y Cash Inflows
1	5,000	1,000
2	4,000	3,000
3	3,000	4,000
4	1,000	6,750

The firm's cost of capital is 10% for each project and the initial investment amount is Rs.10,000. Calculate the NPV of each project and determine in which project the firm should invest.

		UNIT – III			
5.	(a)	What is sensitivity analysis? Explain with a numerical example.	6M	CO3	L1
	(b)	What is simulation? Why is it important in project management?	6M	CO3	L1
		(OR)			
6.	(a)	What do you mean by decision tree? Write the steps in decision tree analysis.	6M	CO3	L1
	(b)	Explain the goals of value engineering in project management.	6M	CO3	L2
		UNIT – IV			
7.		The following details are available regarding a project.	12M	CO4	L3

Activity	A	B	C	D	E	F
Predecessor Activity	-	A	A	B	C	D, E
Duration (Weeks)	3	5	7	10	5	4

Determine the critical path, the critical activities and the project completion time.

		(OR)			
8.		What do you mean by project crashing? Explain the project crashing procedure.	12M	CO4	L2
		UNIT – V			
9.	(a)	What is a project management information system (PMIS)? Explain the advantages of PMIS.	6M	CO5	L2
	(b)	Explain the process of project execution and control.	6M	CO5	L2
		(OR)			
10.	(a)	Discuss the common features generally available in project management software.	6M	CO5	L2
	(b)	What are the essential requirements of good project management software?	6M	CO5	L1

Q.P. Code: 2006601 | **SET -1**

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

B. Tech. VI Semester (R20UG) Regular/Supply Examinations of July – 2024

SUB: Human Resource Development (OE)

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 HRD? Explain the significance of Human Resource Development	6M	CO1	L1
	(b)	State the objectives of Human Resource Development	6M	CO1	L3
		(OR)			
2.	(a)	Distinguish between HRM and HRD	6M	CO1	L3
	(b)	Explain in detail Human Resource Development functions	6M	CO1	L1
		UNIT – II			
3.	(a)	Define HRD Need Assessment? Explain the procedure in HRD Need assessment	6M	CO2	L1
	(b)	Write about organizational analysis	6M	CO2	L2
		(OR)			
4.	(a)	"Selecting the trainer and Training Methods" – Explain it	6M	CO2	L4
	(b)	Describe the process of scheduling an HRD program.	6M	CO2	L2
		UNIT – III			
5.		Explain about the On-the-job and Off-the-job Training Methods	12M	CO3	L2
		(OR)			
6.	(a)	What are the data collection methods HRD evaluation	6M	CO3	L1
	(b)	How to assess the impact of HRD programs in Money terms?	6M	CO3	L3
		UNIT – IV			
7.	(a)	Illustrate Element of Career Management in brief	6M	CO4	L4
	(b)	Explain the benefits of Career Development	6M	CO4	L1
		(OR)			
8		Elucidate the process of Career Development	12M	CO4	L3
		UNIT – V			
9.	(a)	How can diversity enhance organization Performance and innovation	6M	CO5	L3
	(b)	What are the qualities of a great organization culture	6M	CO5	L1
		(OR)			
10.	(a)	Explain the Labor Market changes?	6M	CO5	L2
	(b)	What are the challenges faced by labour markets and explain it briefly?	6M	CO5	L1

Q.P. Code: 20OE104 | SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Solid Waste Management (OE)

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 solid waste and explain various types of solid wastes?	12M	CO1	L1
	(OR)			
2.	Illustrate various properties of solid waste ?	12M	CO1	L2
	UNIT – II			
3.	Analyze the factors affecting solid waste generation rate?	12M	CO2	L4
	(OR)			
4.	Compare between haul container system and stationary container system of solid waste collection?	12M	CO2	L2
	UNIT – III			
5.	Outline the various basic techniques of energy recovery from solid waste?	12M	CO3	L2
	(OR)			
6.	Evaluate problems associated with composting?	12M	CO3	L5
	UNIT – IV			
7.	Demonstrate the Design considerations of Land fill?	12M	CO4	L2
	(OR)			
8.	Evaluate the importance of lining in landfills?	12M	CO4	L5
	UNIT – V			
9.	Discuss various sources of hazardous waste?	12M	CO5	L6
	(OR)			
10.	Elaborately formulate the functional requirements of secured landfills?	12M	CO5	L6

Q.P. Code: 20OE503

SET - 1

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

B. Tech. VI Semester (R20UG) Regular & Supple. Examinations of July – 2024

SUB: Java Programming (OE)

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 about the oops Concepts?	6M	CO1	L4
	(b)	Define Method? Explain the concept of constructor with example?	6M	CO1	L2
		(OR)			
2.	(a)	Explain about Java Buzzwords.	6M	CO1	L2
	(b)	What is a method? Explain method overloading with example.	6M	CO2	L2
		UNIT – II			
3.		What is meant by Inheritance? Illustrate different types of inheritance in Java with one example each.	12M	CO2	L1
		(OR)			
4.	(a)	How would you compare classes and interfaces with examples	6M	CO3	L1
	(b)	Explain about creating and accessing a package with one example.	6M	CO2	L2
		UNIT – III			
5.		Explain the various exception handling mechanisms	12M	CO2	L4
		(OR)			
6.	(a)	Write a Difference between the Throws and Throw keywords.	6M	CO2	L2
	(b)	Write a Difference between the final, finalize(), finally Block	6M	CO2	L2
		UNIT – IV			
7.		Write about mouse and key events in java with example program	12M	CO4	L1
		(OR)			
8.		Write and Explain labels, buttons, text box, check box and scrollbars with example program.	12M	CO4	L4
		UNIT – V			
9.	(a)	What is an applet? Explain in detail about applet life cycle with suitable diagram	6M	CO4 5	L2
	(b)	Develop applet program draw circle and rectangle filled with red color	6M	CO4	L3
		(OR)			
10.	(a)	Write about JFrames and JComponents in swings.	6M	CO4	L1
	(b)	Explain Checkboxes and Radio button in swings with example program.	6M	CO4	L2