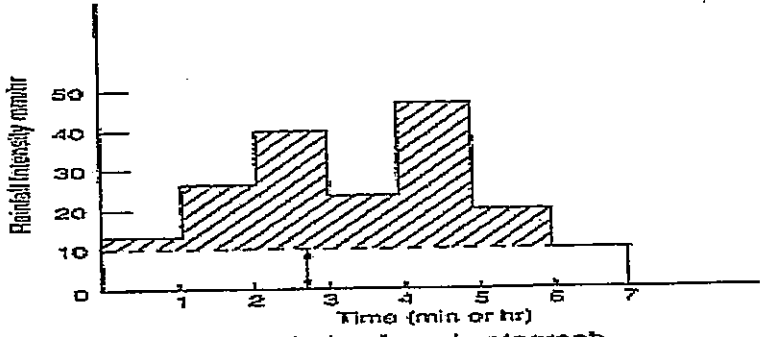# K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA

B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023

SUB: Hydrology & Irrigation (CE)

Time: 3 Hours   Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

	Questions	M	CO	BL

UNIT - I

1.		Explain hydrological cycle with the help of a diagram.	12M	CO1	L2

(OR)

| 2. | (a) | Explain the types and forms of precipitation. | 6M | CO1 | L2 |
| | (b) | Explain any two types of recording and non-recording rain gauges. | 6M | CO1 | L3 |

UNIT – II

| 3. | (a) | Discuss the factors affecting infiltration. | 6M | CO2 | L2 |
| | (b) | Explain the features of a hydrograph. | 6M | CO2 | L2 |

(OR)

| 4. | | A drainage basin has a catchment area of 0.5 km^2. A five hour storm has occurred on the basin with the following rainfall intensities: | 12M | CO2 | L4 |

Fig. 3.2. ϕ index from hyetograph

The volume of direct surface run-off observed as a result of this storm at the outlet of the basin was 0.232 cumec-day. Calculate ϕ index for the basin.

UNIT – III

| 5. | (a) | Discuss the necessity and importance of an Irrigation system. | 6M | CO3 | L2 |
| | (b) | What are the principal crops in India? | 6M | CO3 | L3 |

(OR)

| 6. | (a) | Write a note on crop rotation in India. | 6M | CO3 | L2 |
| | (b) | Design an irrigation channel in a non-erodible material to carry a discharge of 15 cumecs when the maximum permissible velocity is 0.8 m/s. Assume bed slope = 1 in 4000, side slope = 1:1 and Manning's N = 0.025. | 6M | CO3 | L4 |

UNIT – IV

| 7. | | Explain are the components of a diversion head work? | 12M | CO4 | L2 |

(OR)

| 8. | (a) | What are the two main causes of failure of hydraulic structures? | 6M | CO4 | L3 |
| | (b) | Explain the types of dams with relevant sketches. | 6M | CO4 | L3 |

UNIT-V

| 9. | (a) | Discuss the causes of failure of a gravity dam. | 6M | CO5 | L2 |
| | (b) | Explain the criteria for safe design of earth dam | 6M | CO5 | L2 |

(OR)

| 10. | | What do you mean by the elementary profile of a gravity dam? Derive expressions for determining base width of such a dam based on –
(i) No tension   (ii) No sliding. | 12M | CO5 | L3 |

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Foundation Engineering (CE)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1. (a)	What is meant by Site reconnaissance? List the guide rules for Depth of exploration at the start of the work?	6M	CO1	L1
(b)	Briefly explain about Plate load test, in detail?	6M	CO1	L5
	(OR)			
2.	Summarize the various Boring methods of site exploration, with neat sketches?	12M	CO1	L2
	UNIT – II			
3. (a)	Compute the intensities of active and passive earth pressure at depth of 8 meters in dry cohesion less sand with an angle of internal friction of 30° and unit weight of 18 KN/m^3 . What will be the intensities of active and passive earth pressure if the water level rises to the ground level ? Take standard unit weight of sand as 22 KN/m^3	6M	CO2	L6
(b)	Briefly explain types of retaining walls with neat sketches?	6M	CO2	L5
	(OR)			
4.	A retaining wall, 4 m high supports a backfill (c= 20 KN/m^2 ; ϕ=30° ; τ = 20 KN/m^3) with horizontal top, flush with the top of the wall. The backfill carries a surcharge of 20 KN/m^2. If the wall is pushed towards the backfill, compute the total passive pressure on the wall, and its point of application.	12M	CO2	L6
	UNIT – III			
5. (a)	What is the Effect of ground water table on bearing capacity?	6M	CO3	L1
(b)	Summarize the bearing capacity for various soils according to National Building Code?	6M	CO3	L2
	(OR)			
6.	Explain about the types of foundations with neat sketches?	12M	CO3	L2
	UNIT – IV			
7.	Classify the Piles based on function, with neat sketches?	12M	CO4	L2
	(OR)			
8.	Analyze the comments about the use of dynamic pile formulae?	12M	CO4	L4
	UNIT-V			
9.	Write short notes on Bishop's simplified method of stability analysis?	12M	CO5	L4
	(OR)			
10. (a)	Calculate the factor of safety with respect to cohesion, of a clay slope laid at 1 in 2 to a height of 10m, if the angle of internal friction ϕ=10° ; c = 25 KN/m^2 and τ = 19 KN/m^3 . What will be the critical height of the slope in this soil?	6M	CO5	L5
(b)	Summarize the Stability of slopes of earth dams under different conditions?	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Concrete Technology (CE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	What are BOGUE'S compounds? explain their contribution in developing the strength of concrete	6M	CO1	L2
	(b)	Describe briefly about the manufacture of cement by dry process?	6M	CO1	L1
		(OR)			
2.	(a)	List out various types of cements. Explain about any 4 of them in detail	6M	CO1	L2
	(b)	Classify the types of admixtures and write a short note on them	6M	CO1	L2
		UNIT – II			
3.	(a)	Discuss the Factors affecting the Workability of concrete?	6M	CO2	L1
	(b)	Explain alkali aggregate reaction	6M	CO2	L2
		(OR)			
4.	(a)	Distinguish between segregation and bleeding and explain in detail?	6M	CO2	L2
	(b)	How do you select a good aggregate and what are the factors to be examined during their selection?	6M	CO2	L2
		UNIT – III			
5.	(a)	Define creep and explain how creep is measured?	6M	CO3	L2
	(b)	What are the different Thermal properties of Concrete?	6M	CO3	L4
		(OR)			
6.	(a)	What are the factors affecting modulus of elasticity	6M	CO3	L2
	(b)	Explain How do you asses the durability of concrete?	6M	CO3	L1
		UNIT – IV			
7.	(a)	Discuss the criteria of High pressure steam curing for concrete	6M	CO4	L2
	(b)	Describe briefly about Rebound Hammer Test?	6M	CO4	L1
		(OR)			
8.	(a)	Explain How maturity concept of concrete is developed	6M	CO4	L1
	(b)	Write the testing procedure of determination of flexural strength.	6M	CO4	L2
		UNIT-V			
9.		What are the various steps while you are designing the IS method?	12M	CO5	L3
		(OR)			
10.		Design a concrete mix of M25 grade. Take standard deviation of 5MPa. The specific gravities of coarse aggregate and fine aggregate are 2.75 and 2.60 respectively. The bulk density of coarse aggregate is 1610kg/cu-m and fineness modulus of fine aggregate is 2.72. Design the concrete mix using IS code method. Assume any missing data suitably	12M	CO5	L5

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Remote Sensing & GIS (CE)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1. (a)	Explain the concept of EMR spectrum with neat sketch.	6M	CO1	L2
(b)	Discuss energy interaction with atmosphere	6M	CO1	L3
	(OR)			
2. (a)	Explain the energy interaction with earth surface features	6M	CO1	L2
(b)	Describe the spectral reflectance curves for soil, vegetation and water with neat diagram.	6M	CO1	L4
	UNIT – II			
3. (a)	Discuss various remote sensing platforms with examples.	6M	CO2	L4
(b)	Differentiate between spatial resolution and temporal resolution with examples.	6M	CO2	L2
	(OR)			
4. (a)	Explain the characteristics of any two IRS satellites along with their applications.	6M	CO2	L2
(b)	Differentiate between spectral resolution and radiometric resolution with examples.	6M	CO2	L2
	UNIT – III			
5. (a)	Explain the terms spatial filtering and edge enhancement.	6M	CO3	L3
(b)	What are visual image interpretation techniques? Explain.	6M	CO3	L2
	(OR)			
6. (a)	Write the detailed procedure of supervised classification.	6M	CO3	L2
(b)	Given detailed account on image processing techniques.	6M	CO3	L4
	UNIT – IV			
7. (a)	Discuss various fundamental operations of GIS.	6M	CO4	L4
(b)	What is data input? Write different input methods into GIS.	6M	CO4	L2
	(OR)			
8. (a)	Differentiate between Computational Analysis Methods and Visual Analysis Methods.	6M	CO4	L4
(b)	Explain basic principles and components of GIS.	6M	CO4	L2
	UNIT-V			
9.	Explain the applications of geospatial technologies in the water resource management along with flowchart.	12M	CO5	L4
	(OR)			
10. (a)	Discuss the role of RS & GIS in Environmental monitoring.	6M	CO5	L6
(b)	Give detailed account on applications of RS & GIS in Drought assessment.	6M	CO5	L1

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

B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023

SUB: Linear Digital IC Applications (EEE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	With neat block diagram explain the function of various building blocks of op-amp.	6M	CO1	L2
	(b)	Draw and explain the three open loop op-amp configurations with neat circuits.	6M	CO1	L2
		(OR)			
2.		Analyze in detail all the dc and ac characteristics of an ideal op-amp with relevant expressions.	12M	CO1	L4
		UNIT – II			
3.	(a)	Draw integrator circuit using op-amp and explain its operation.	6M	CO2	L5
	(b)	Design an op-amp differentiator to differentiate an input signal that varies in frequency from 10Hz to about 1 KHz.	6M	CO2	L6
		(OR)			
4.	(a)	Draw the circuit diagram of an antilogarithmic amplifier using Op-Amps and explain its operation.	6M	CO2	L5
	(b)	What is precision rectifier? Explain any one precision rectifier with neat circuit.	6M	CO2	L2
		UNIT – III			
5.	(a)	Draw the functional diagram of 555 timer and discuss its operation.	6M	CO3	L6
	(b)	Explain the operation of an astable multivibrator using 555 timer. Derive the expression for on and off state time periods.	6M	CO3	L5
		(OR)			
6.	(a)	Explain the operation of a Schmitt trigger using IC 555.	6M	CO3	L2
	(b)	Draw the block diagram of generation of FSK using a PLL. Explain its function.	6M	CO3	L3
		UNIT – IV			
7.	(a)	Explain the following terms with reference to CMOS logic (i) Logic levels (ii) DC Noise margin (iii) Propagation delay	6M	CO4	L3
	(b)	Draw the circuit for CMOS NAND gate and explain how the truth table is realized.	6M	CO4	L3
		(OR)			
8.	(a)	Give the interfacing circuit of TTL and CMOS logic families. Explain its working.	6M	CO4	L5
	(b)	Draw the circuit of an OR/NOR ECL gate and explain its operation.	6M	CO4	L5
		UNIT-V			
9.	(a)	Explain port Declaration with an example using Verilog code.	6M	CO5	L3
	(b)	Write verilog code using case statement for any one example.	6M	CO5	L3
		(OR)			
10.	(a)	Using example, explain about concurrent and procedural statement with syntaxes.	6M	CO5	L2
	(b)	Write Verilog code for 1 to 4 de-multiplexer module.	6M	CO5	L6

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Power Systems – II (EEE)

Time: 3 Hours

Max. Marks: 60

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

	Questions	M	CO	BL

UNIT - I

1. (a) Derive the approximate voltage regulation expression for short transmission line and also derive the condition for zero regulation. — 6M — CO1 — L1

   (b) Evaluate ABCD constants for short transmission line. — 6M — CO1 — L1

(OR)

2. Determine the relation between sending end parameters and receiving end parameters of a long transmission line using rigorous method. — 12M — CO1 — L1

UNIT – II

3. (a) Define per unit system and write an equation for new base impedance. — 6M — CO2 — L1

   (b) Draw the per unit equivalent network of a three-phase power system consisting of a generator: transmission line, transformer and motor. — 6M — CO2 — L1

(OR)

4. (a) What are the selection criteria for Base values? — 4M — CO2 — L1

   (b) A single-phase transformer of 11 kV/400 V, 50 Hz,150 kVA has primary resistance and reactances are 2 ohms and 10 ohms, the secondary resistance and reactances are 0.01 ohms and 0.05 ohms respectively. Determine the p.u. values of transformer. — 8M — CO2 — L3

UNIT – III

5. A 30MVA, 11 kV generator with solidly grounded neutral has a sub-transient reactance of 0.3 pu. The negative and zero sequence reactance are 0.4 and 0.1 pu respectively. A single line to ground fault occurs at the terminals of un-loaded alternator. Determine the fault current and the line-to-line voltages. — 12M — CO3 — L3

(OR)

6. (a) A 3-phase, 30 MVA, 33 kV alternator has internal reactance of 4% and negligible resistance. Find the external reactance per phase to be connected in series with the alternator so that steady current on short circuit does not exceed 10 times the full load current. — 8M — CO3 — L3

   (b) Explain the factors to be considered for selection of reactors? — 4M — CO3 — L1

UNIT – IV

7. (a) What do you understand by sequence networks? What is their importance in unsymmetrical fault calculations? — 4M — CO4 — L1

   (b) A 25 MVA, 13.2 kV alternators with solidly grounded neutral has a sub transient reactance of 0.25 p.u. The negative and zero sequence reactance are 0.35 and 0.1 p.u respectively. A single line to ground fault occurs at the terminals of an unloaded alternator. Determine the fault current and the line to line voltages. Neglect resistance. — 8M — CO4 — L3

(OR)

8. (a) Derive the expression for sequence components of fault currents for L-L-G fault at the terminals of an unloaded generator. How the sequence networks are connected to represent the fault. — 6M — CO4 — L1

   (b) A single-phase resistive load of 100 kVA is connected across lines of BC of a balanced supply of 3kV.Compute the symmetrical component of line currents. — 6M — CO4 — L3

UNIT-V

9. (a) Compare the Gauss-Seidel method, Newton Raphson method for load flow solution.   4M   CO5   L1

(b) The following is the system data for a load flow solution, Determine the voltage at the end of first iteration using Newton Raphson method.   8M   CO5   L3

Load Data					LINE DATA	
BUS code	P	Q	V	REMARKS	BUS CODE	Admittance
1	-	--	1.06	Slack	1-2	2-j8
2	0.5		1+j0	PQ	1-3	1-j4
3	0.4		1+j0	PQ	2-3	0.66-j2.66
4	0.1		1+j0	PQ	2-4	1-j4
					3-4	2-j8

(OR)

10.   Explain the algorithm for GS method of load flow solution. Also explain how to handle Q-limits in voltage-controlled buses?   12M   CO5   L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Power Electronics (EEE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain the principle and operation of SCR with its VI characteristics?	6M	CO1	L1
	(b)	Explain the turn On methods of a Thyristor?	6M	CO1,	L1
		(OR)			
2.	(a)	Draw and explain the dynamic turn on and turn off characteristics of SCR	6M	CO1	L3
	(b)	Differentiate between line commutation and forced commutation circuits.	6M	CO1	L3
		UNIT – II			
3.	(a)	Explain the working principle of single phase Semi controlled bridge rectifier with R L load. Derive the expression for average and RMS output voltage.	6M	CO2	L2
	(b)	Differentiate between single phase fully controlled and half controlled rectifier with the help of waveforms.	6M	CO2	L2
		(OR)			
4.		Explain the principle and operation of four quadrant converter with the relevant waveforms.	12M	CO2	L2
		UNIT – III			
5.		Analyze the waveforms of single phase ac voltage controller with R and RL loads. Also derive the expression for RMS output voltage with R load.	12M	CO3	L4
		(OR)			
6.	(a)	Analyze the waveforms of single phase step-up Cyclo-Converter with bridge configuration with R and RL loads	6M	CO3	L4
	(b)	Differentiate between the mid-point and bridge type Cyclco converters.	6M	CO3	L3
		UNIT – IV			
7.		Derive the load voltage and current expression of step-down chopper.	12M	CO4	L5
		(OR)			
8.	(a)	Explain about Time ratio control and Current limit control strategies	6M	CO4	L3
	(b)	Explain the principle and operation of four quadrant chopper	6M	CO4	L3
		UNIT-V			
9.	(a)	Explain the working principle of Full bridge inverter and derive the expression for output voltage.	6M	CO5	L3
	(b)	List out the applications of bridge inverters.	6M	CO5	L2
		(OR)			
10.	(a)	Explain briefly about the voltage control strategies in single phase inverters.	6M	CO5	L2
	(b)	Briefly explain about SPWM technique employed in inverters.	6M	CO5	L1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Energy Conversion Systems (EEE)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1. (a)	Reflection coefficients of Si =0.3 and CdTe = 0.21. Calculate the indices of refraction for them.	6M	CO1	L4
(b)	Explain the difference between band gap and barrier voltage in a solar cell.	6M	CO1	L2
	(OR)			
2. (a)	Explain the concept of photo current and load current.	6M	CO1	L2
(b)	A domestic solar array of 100 m² area generates an average of 10 kW power during an average duration of 12 hr/day. The cost of the array is Rs. 2,00,000/-. Calculate the unit cost of energy in Rs/kWh if the working life is 5 years.	6M	CO1	L4
	UNIT – II			
3. (a)	Derive the power developed by ideal turbine based on Rankine-Froudes-Betz theory.	6M	CO2	L3
(b)	Calculate the wind velocities at heights of 20, 60, and 120 m above ground if the velocity at H_1 = 10 m is v_1 = 10 m/s.	6M	CO2	L4
	(OR)			
4. (a)	Compare the coefficient of performance as a function of tip speed ration for different types of wind turbines.	6M	CO2	L4
(b)	Explain the types of wind turbines with neat diagrams.	6M	CO2	L3
	UNIT – III			
5. (a)	Explain the modes of operation of tidal project.	6M	CO3	L2
(b)	Describe the types of turbines used for tidal power schemes.	6M	CO3	L2
	(OR)			
6. (a)	Describe the working of open cycle OTEC system.	6M	CO3	L2
(b)	Explain the examples of OTEC systems.	6M	CO3	L2
	UNIT – IV			
7. (a)	Explain the thermos-chemical conversion of biomass into useable fuels.	6M	CO4	L2
(b)	Discuss the principles of EMF generation in a fuel cell.	6M	CO4	L2
	(OR)			
8. (a)	Explain the types of fuel cells.	6M	CO4	L2
(b)	Illustrate the battery applications for large powers.	6M	CO4	L2
	UNIT-V			
9. (a)	Describe the pollutants removed from coal by gasification and liquefaction.	6M	CO5	L2
(b)	Briefly explain the types of pollution created by steam stations.	6M	CO5	L2
	(OR)			
10. (a)	Explain the types of disposal of radioactive wastes in nuclear power station.	6M	CO5	L2
(b)	Discuss the beneficial and harmful effects on the environment and ecology posed by a hydro-electric power development.	6M	CO5	L4

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Heat Transfer (ME)

Time: 3 Hours

Max. Marks: 60

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

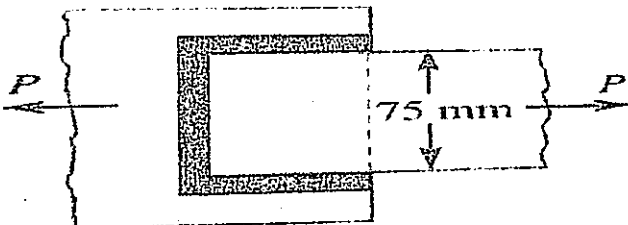|	Questions	M	CO	BL
	UNIT - I			
1.	Derive the expression for heat transfer and temperature distribution through infinitely long fin.	12M	CO1	L5
	(OR)			
2. (a)	Define Biot number and Fourier number, also explain their Significance.	6M	CO1	L1
(b)	Derive the expression for heat transfer under transient mode.	6M	CO1	L5
	UNIT – II			
3.	In a straight tube of 50 mm diameter, water is flowing at a velocity of 15 m/sec. The tube surface temperature is maintained at 60 °C and the flowing water is heated from the inlet temperature 15 °C to an outlet temperature of 45 °C. Calculate, (i) The heat transfer coefficient from the tube surface to water. (ii) The length of the tube.	12M	CO2	L5
	(OR)			
4.	Explain about the location and magnitude of maximum velocity in the boundary layer formed on a (i) Heated (ii) Cooled vertical plate	12M	CO2	L2
	UNIT – III			
5.	Explain the following: (i) Black body and grey body (ii) Irradiation (iii) Emissivity (iv) Monochromatic emissive power	12M	CO3	L2
	(OR)			
6.	A thin aluminum sheet with an emissivity of 0.1 on both side is placed between two very large parallel plates that are maintained at uniform temperature $T_1 = 800$ K and $T_2 = 500$ K and have emissivity's $\varepsilon_1 = 0.2$ and $\varepsilon_2 = 0.7$ respectively. Determine the net rate of radiation heat transfer between the two plates per unit surface area of the plates and compare the result to that without shield.	12M	CO3	L5
	UNIT – IV			
7.	Classify the heat exchangers based on (i) Design and Constructional future (ii) Physical state of fluid.	12M	CO4	L4
	(OR)			
8.	Derive the expression for LMTD of parallel flow heat exchanger	12M	CO4	L5
	UNIT-V			
9.	Saturated steam at 2 bar condenses on a cylindrical drum having outside diameter of 25 cm and temperature of 90 °C, calculate how long must the drum be to condense 50 kg of steam per hour. Also estimate the thickness of condensate layer.	12M	CO5	L5
	(OR)			
10.	Draw a labeled pool boiling curve and explain all stages?	12M	CO5	L6

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Design of Machine Members (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 the design process in design. — 6M CO1 L2

   (b) Explain Theories of failure. — 6M CO1 L2

(OR)

2. A cantilever of span 500 mm carries a vertical downward load of 6 KN at its free end. Assume yield value of 350 MPa and factor of safety as 3. Solve the economical section for cantilever among (i) Circular cross-section of diameter d, (ii) rectangular cross-section of depth 'h' and width 't' with h/t=2, (iii) I-Section of depth 7t and flange width 5t where 't' is the thickness. — 12M CO1 L3

UNIT – II

3. A plate 75 mm wide and 12.5 mm thick is joined with another plate by a single transverse weld and a double parallel fillet weld as shown in Fig. The maximum tensile and shear stresses are 70 MPa and 56 MPa respectively. Find the length of each parallel fillet weld, if the joint is subjected to both static and fatigue loading. — 12M CO2 L1

(OR)

4. (a) Explain Bolted Joints. — 6M CO2 L2

   (b) A steam engine cylinder has an effective diameter of 350 mm and the maximum steam pressure acting on the cylinder cover is 1.25 N/mm2.Solve the number and size of studs required to fix the cylinder cover, assuming the permissible stress in the studs as 33 MPa. — 6M CO2 L3

UNIT – III

5. (a) Discuss the various types of clutches giving at least one practical application for each. — 6M CO3 L6

   (b) A helical spring is made from a wire of 6 mm diameter and has outside diameter of 75 mm. If the permissible shear stress is 350 MPa and modulus of rigidity 84 KN/mm2, find the axial load which the spring can carry and the deflection per active turn. — 6M CO3 L1

(OR)

6. (a) How does the function of a brake differ from that of a clutch. — 6M CO3 L1

   (b) A dry single plate clutch is to be designed for an automotive vehicle whose engine is rated to give 100 kW at 2400 rpm. and maximum torque 500 N-m. The outer radius of the friction plate is 25% more than the inner radius. The intensity of pressure between the plate is not to exceed 0.07 N/mm2. The coefficient of friction may be assumed equal to 0.3. The helical springs required by this clutch to provide axial force necessary to engage the clutch are eight. If each spring has stiffness equal to 40 N/mm, determine the dimensions of the friction plate and initial compression in the springs. — 6M CO3 L5

UNIT – IV

7. (a) A shaft is supported on bearings A and B, 800 mm between centers. A 20° straight tooth spur gear having 600 mm pitch diameter, is located 200 mm to the right of the left-hand bearing A, and a 700 mm diameter pulley is mounted 250 mm towards the left of bearing B. The gear is driven by a pinion with a downward tangential force while the pulley drives a horizontal belt having 180° angle of wrap. The pulley also serves as a flywheel and weighs 2000 N. The maximum belt tension is 3000 N and the tension ratio is 3:1. Determine the maximum bending moment and the necessary shaft diameter if the allowable shear stress of the material is 40 MPa.   6M   CO4   L6

(b) How are the keys classified? Draw neat sketches of different types of keys and state their applications.   6M   CO4   L1

(OR)

8. (a) Design and make a neat dimensioned sketch of a muff coupling which is used to connect two steel shafts transmitting 40 kW at 350 rpm. The material for the shafts and key is plain carbon steel for which allowable shear and crushing stresses may be taken as 40 MPa and 80 MPa respectively. The material for the muff is cast iron for which the allowable shear stress may be assumed as 15 MPa.   6M   CO4   L6

(b) Classify the shaft couplings and Requirements of a Good Shaft Coupling.   6M   CO4   L2

UNIT-V

9. (a) What are Babbitt and Classify Bearings?   6M   CO5   L1

(b) 7.5 kw is to be transmitted from a motor shaft rotating at 1440 rpm to another shaft with a speed reduction of 3:1. the starting torque may be taken as 50% higher than the mean torque. The gears should be made of heat rerated steel and the shaft of mild steel. The pinion should have a minimum of 20 teeth. Design the Spur gear.   6M   CO5   L6

(OR)

10. (a) Explain the Equations of Dynamic load, load rating and Equivalent static load of ball bearings.   6M   CO5   L2

(b) A suitable bearing which is to operate at 1500 rpm and is acted up on by a8000 N radial load and 5000N thrust load. (i)The inner ring rotates the load is steady and continuous. The safest shaft diameter from strength condition is 45 mm and the life expected is 500 hrs. (ii) If the Outer ring is rotating and is subjected to a lighter shock, how the life of bearing changes.   6M   CO5   L1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Metrology & Measurements (ME)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain whole basis system and shaft basis system with a neat sketch?	6M	CO1	L2
	(b)	Describe the systems of tolerances with suitable examples?	6M	CO1	L2
		(OR)			
2.		Draw the conventional diagram of limits and fits and explain its terms?	12M	CO1	L1
		UNIT – II			
3.	(a)	Illustrate the assessment of average roughness by considering statistical criteria in evaluation of surface finish?	6M	CO2	L2
	(b)	Determine CLA and RMS values of the surface in the measurement of surface roughness, heights of 10 successive peaks and valleys were measured from a data as follows 20,29,27,18,19,22,30,33,25 Microns over a length of 10MM?	6M	CO2	L2
		(OR)			
4.		Describe the principle and operation of Taylor-Hobson Talysurf surface roughness instrument?	12M	CO2	L2
		UNIT – III			
5.		Describe how you would perform alignment test on lathe at any four positions with a neat sketch?	12M	CO3	L2
		(OR)			
6.		Explain the working principle of Parkinson Gear Tester with a neat sketch?	12M	CO3	L2
		UNIT – IV			
7.		Explain the construction and working of LVDT by stating its advantages and disadvantages with a neat sketch?	12M	CO4	L2
		(OR)			
8.		Explain about any two types of strain gauges with a neat Sketch?	12M	CO4	L2
		UNIT-V			
9.		Identify the limitations of force measurement. Explain the construction and working of a proving ring with a neat sketch by stating its advantages?	12M	CO5	L2
		(OR)			
10.		Predict the various types of elastic pressure transducers. Explain briefly about metallic diaphragm gauge and slack diaphragm gauge by stating the advantages and disadvantages of diaphragm elements?	12M	CO5	L3

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

B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023

SUB: Power Plant Engineering (ME)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1.	Draw a general layout of steam power plant with neat sketch and describe the working of different elements?	12M	CO1	L2
	(OR)			
2. (a)	A power generating station has a maximum demand of 30MW, a load factor of 65% ,and plant capacity of 52 % and a plant use factor of 0.7.Evaluate the energy generated and reserve capacity of the plant?	6M	CO1	L5
(b)	Distinguish the demand factor, load factor and diversity factor?	6M	CO1	L4
	UNIT – II			
3.	Describe the coal handling and ash handling system of the steam power plant?	12M	CO2	L2
	(OR)			
4.	Discuss the dust collection and pollution control system of the steam power plant?	12M	CO2	L2
	UNIT – III			
5.	Draw a general layout of diesel power plant and explain function of each element?	12M	CO3	L2
	(OR)			
6.	How an open cycle gas turbine is differed from closed cycle gas turbine with respect to principle and working?	12M	CO3	L4
	UNIT – IV			
7.	Describe the various flow measurement and control system of hydroelectric power plant with suitable sketch?	12M	CO4	L2
	(OR)			
8.	Classify the layouts of hydro power plant and explain the auxiliaries of any one layout?	12M	CO4	L2
	UNIT-V			
9.	Sketch and explain the function of solar collector and how to improve its efficiency?	12M	CO5	L2
	(OR)			
10.	Distinguish the pressurized water reactor and boiling water reactor?	12M	CO5	L4

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Embedded Systems & IOT (ECE)

Time: 3 Hours

Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Define an Embedded System. Explain the characteristics of Embedded system	6M	CO1	L1
	(b)	Compare CISC and RISC design philosophy	6M	CO1	L4
		(OR)			
2.	(a)	Draw the architecture of Embedded system and explain the function of each block	6M	CO1	L2
	(b)	What is the significance of Address and data buses and types of memory in Embedded systems	6M	CO1	L1
		UNIT – II			
3.	(a)	Define the term IoT, brief its impact on the society	6M	CO2	L1
	(b)	List the characteristics of IoT and explain it in detail	6M	CO2	L4
		(OR)			
4.	(a)	Draw IoT architecture outline and explain about each block in detail	6M	CO2	L2
	(b)	Emphasize the different challenges for developing an IOT application	6M	CO2	L2
		UNIT – III			
5.	(a)	What are the functions of TCP/IP Layers and their relative Protocols	6M	CO3	L1
	(b)	Demonstrate the IPv4 addressing format.	6M	CO3	L2
		(OR)			
6.	(a)	Explain in detail about Energia Wi-Fi Library	6M	CO3	L5
	(b)	Establish the connection between server and client using TCP and UDP communication.	6M	CO3	L5
		UNIT – IV			
7.	(a)	Draw the architecture of a MSP 432 processor and explain it in detail	6M	CO4	L2
	(b)	Explain about sensor hub booster pack	6M	CO4	L5
		(OR)			
8.	(a)	List the different fundamental programming concepts of the MSP432 processor?	6M	CO4	L2
	(b)	Explain the functional modules of CC3220 SF launch pad.	6M	CO4	L5
		UNIT-V			
9.	(a)	Define cloud data processing, explain in detail	6M	CO5	L1
	(b)	List out some IoT applications in Home and security and infrastructure	6M	CO5	L2
		(OR)			
10.	(a)	Evaluate the different challenges faced by IOT Industrial Applications ?	6M	CO5	L5
	(b)	Model the working of temboo cloud app	6M	CO5	L3

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Communication Systems (ECE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Draw and explain the Phase discrimination method of SSB generation	6M	CO1	L3
	(b)	Explain the Balanced Slope detector method of FM detection	6M	CO1	L2
		(OR)			
2.	(a)	Derive the power relations for single tone AM wave	6M	CO1	L4
	(b)	Draw the block diagram of FDM and explain the operation	6M	CO1	L3
		UNIT – II			
3.	(a)	Draw and explain the Armstrong FM Transmitter	6M	CO2	L3
	(b)	Explain Thermal Noise and Shot Noise	6M	CO2	L2
		(OR)			
4.	(a)	Explain the major factors influencing the choice of intermediate frequency	6M	CO2	L2
	(b)	Derive an expression Noise Figure in terms of noise temperature	6M	CO2	L4
		UNIT – III			
5.	(a)	Discuss the generation and detection of PAM	6M	CO3	L2
	(b)	Draw the block diagram of a regenerative repeater and explain	6M	CO3	L3
		(OR)			
6.	(a)	Illustrate the process of multiplexing in TDM	6M	CO3	L3
	(b)	Discuss the two major sources of quantizing error in DM system	6M	CO3	L2
		UNIT – IV			
7.	(a)	Derive the expression for ISI with the help of Baseband binary data transmission block diagram	6M	CO4	L4
	(b)	Explain the generation and detection of coherent BFSK	6M	CO4	L2
		(OR)			
8.	(a)	Draw and Explain M-ary Signalling scheme	6M	CO4	L3
	(b)	Explain DPSK modulation and demodulation with neat diagrams	6M	CO4	L2
		UNIT-V			
9.	(a)	Define entropy of a source and write its properties	6M	CO5	L1
	(b)	Design an LBC encoder for the generator matrix given and write all possible code words.	6M	CO5	L6

$$G = \begin{bmatrix} 1 & 1 & 0 & 1 & 0 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 1 & 0 & 0 & 1 & 0 \\ 1 & 0 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$$

		(OR)			
10.	(a)	Discuss Mutual Information and its properties	6M	CO5	L2
	(b)	Explain the time domain approach in convolutional coding	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Antenna and Wave Propagation (ECE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL

UNIT - I

1. (a) Write short note on the following with regard to antenna. — 6M CO1 L2
   i) Power Gain ii) Radiation Intensity iii) Beam width and iv) Antenna temperature
   (b) An antenna has a radiation resistance of 72-ohm, loss resistance of 8 ohm and a power gain of 12dB.Determine the antenna efficiency and directive gain. — 6M CO1 L3

(OR)

2. (a) Show that the electric field intensity of field radiated by a quarter wave length monopole is — 6M CO1 L2

$$E_\theta = \frac{60 I_m}{r}\left[\frac{cos\left(\frac{\pi}{2}cos\theta\right)}{sin\,\theta}\right] V/m$$

   (b) Explain with neat sketches the current distribution on thin linear wire antennas. — 6M CO1 L3

UNIT – II

3. (a) Develop the expression for field intensity and draw the radiation pattern for an array of two isotropic point sources of i) equal amplitude and equal phase and ii) equal amplitude and opposite phase. — 6M CO2 L6
   (b) What are linear arrays? Compare Broadside array and End fire array. — 6M CO2 L2

(OR)

4. (a) What is the principle of pattern multiplication? Apply this principle to obtain the radiation pattern for an array of 4 isotropic point sources fed in phase and spaced each λ/2 apart. — 6M CO2 L3
   (b) Explain how the side lobes are not present in radiation pattern of Binomial Array. — 6M CO2 L2

UNIT – III

5. (a) Describe the construction and operation of helical antenna in axial mode. — 6M CO3 L5
   (b) Explain the working operation of parabolic reflector antenna in detail. — 6M CO3 L2

(OR)

6. (a) Explain any two techniques for antenna gain measurement. — 6M CO3 L3
   (b) List the characteristics of a Microstrip antenna. — 6M CO3 L1

UNIT – IV

7. (a) As related to radio wave communication, classify and explain different modes of radio wave propagation. — 6M CO4 L5
   (b) Explain tilt of wave front in ground wave propagation. — 6M CO4 L5

(OR)

8. (a) How does refractive index vary with the height from the surface of earth? Justify your reason with a clear mathematical relationship — 6M CO4 L4
   (b) Explain about scattering phenomenon & Super refraction. — 6M CO4 L5

UNIT-V

9. (a) Draw the structure of Ionosphere and explain the characteristics of these layers. — 6M CO5 L3·
   (b) Why do we use high frequency waves in Sky wave propagation? — 6M CO5 L1

(OR)

10. (a) Discuss briefly i) Critical Frequency and ii) Virtual Height and iii).Skip Distance — 6M CO5 L4
    (b) A high frequency radio link has to be established between two points on the earth 5000 KM away. If the reflection region of ionosphere is at a height of 550KM and has a critical frequency of 7.6 MHz .Calculate MUF for the given path. — 6M CO5 L3

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Optical Communication (ECE)

Time: 3 Hours

Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	With neat sketch, explain the elements of an optical fibre transmission link.	6M	CO1	L2
	(b)	A silicon optical fibre with a core diameter large enough to be considered by ray theory analysis has a core refractive index of 1.50 and cladding refractive index of 1.47. Determine: (i) Critical angle at core cladding interface (ii) The Numerical aperture for the fiber (iii) Acceptance angle.	6M	CO1	L3
		(OR)			
2.	(a)	What is numerical aperture? Derive an expression for numerical aperture and maximum acceptance angle in case of a step index optical fibre in terms of refractive index core and cladding material.	6M	CO1	L2
	(b)	What is the concept of total internal reflection? Explain with suitable optical cable set up.	6M	CO1	L2
		UNIT – II			
3.	(a)	Discuss any two types of Losses in Optical Fiber Communication System.	6M	CO2	L4
	(b)	Explain about the following: (i) Material dispersion (ii) Wave guide dispersion	6M	CO2	L2
		(OR)			
4.	(a)	Describe about mechanical properties of fibers?	6M	CO2	L3
	(b)	An LED operating at 850nm has a spectral width of 45nm. What is the pulse spreading in nsec/km due to a material dispersion?	6M	CO2	L3
		UNIT – III			
5.	(a)	Compare with the performance parameters of Surface Emitting LED and Edge Emitting LED.	6M	CO3	L4
	(b)	Derive the expression for quantum efficiency and LED power of LED source?	6M	CO3	L3
		(OR)			
6.	(a)	Explain in detail about Avalanche Photo Diode principle and operation?	6M	CO3	L2
	(b)	Compare with the operating characteristics of different types of Photo Diodes.	6M	CO3	L4
		UNIT – IV			
7.	(a)	What is a Lensing Scheme? With simple sketch, show different Lensing Schemes.	6M	CO4	L3
	(b)	Explain about the source-to-fiber power launching?	6M	CO4	L2
		(OR)			
8.	(a)	Discuss about the different optical fiber connectors?	6M	CO4	L3
	(b)	Explain the following: (i) 2x2 fiber couplers (ii) Star couplers	6M	CO4	L2
		UNIT-V			
9.	(a)	What is rise time budget? With necessary expressions explain its significance.	6M	CO5	L4
	(b)	Explain the optical power loss model for a point-to-point link and discuss link power budget.	6M	CO5	L2
		(OR)			
10.	(a)	Discuss about Optical Time Domain Reflect meter (OTDR)?	6M	CO5	L3
	(b)	List out the different types of dispersion measurements and discuss any one of them?	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Software Engineering (CSE)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1.	Discuss manager's myths about software development and their effect on the practitioner's performance as well as on the overall outcome.	12M	CO1	L2
	(OR)			
2.	What is software process? What is the need for software process improvement? Discuss capability maturity models	12M	CO1	L1,L2
	UNIT – II			
3.	"The functional requirements specification of a system should be both complete and consistent". Substantiate this statement with relevant examples.	12M	CO2	L5
	(OR)			
4.	Discuss the Requirements modeling process with an example	12M	CO2	L2
	UNIT – III			
5.	How to translate the analysis model into the design model? Explain with an example scenario.	12M	CO3	L3
	(OR)			
6. (a)	Explain how to map data flow into a software architecture	6M	CO3	L3
(b)	Explain the design of class-based components.	6M	CO3	L2
	UNIT – IV			
7.	Discuss Theo Mandel's three golden rules on User Interface design	12M	CO4	L2
	(OR)			
8. (a)	Discuss the process of debugging.	6M	CO4	L2
(b)	What is the need of beta testing?	6M	CO4	L1
	UNIT-V			
9.	Discuss the Organization of the software project management plan (SPMP) document in detail.	12M	CO5	L2
	(OR)			
10.	Explain the different effort estimation methods that are available. Which one would be the most advisable to use and why?	12M	CO5	L3

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Design and Analysis of Algorithms (CSE)

Time: 3 Hours

Max. Marks: 60

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

|		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Define Algorithm and write specifications of an Algorithm with Examples?	6M	CO1	L1
	(b)	Describe i) Big - Oh (O) ii) Big - Omega (Ω) iii) Big - Theta (Θ)	6M	CO1	L2
		(OR)			
2.	(a)	Explain Selection Sort with an Algorithm and find Time Complexity of Selection Sort?	6M	CO1	L2
	(b)	Perform Selection sort on given A={ 15,30,24,10,35,20,45,40,6}	6M	CO1	L1
		UNIT – II			
3.		Write Merge Sort Algorithm? Show that Average case time complexity of merge sort is O (n log n)?	12M	CO2	L2
		(OR)			
4.	(a)	Define Binary Search Algorithm and Describe i) Iterative Binary Search ii) Recursive Binary Search	6M	CO2	L1
	(b)	Write Prims Algorithm? Apply Prims Algorithm Below. Let X be the set of nodes explored, initially X = { A }	6M	CO2	L3
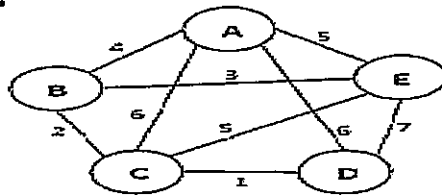
|					
		UNIT – III			
5.	(a)	Write a brief note on Multistage Graphs and Explain five stages Graph?	6M	CO3	L1
	(b)	Explain OBST in detail with an Example?	6M	CO3	L2
		(OR)			
6.		With an Algorithm and Example, Explain the Concept of Travelling Sales Person Problem?	12M	CO3	L2
		UNIT – IV			
7.	(a)	Compare DFS and BFS with an Example Graph?	6M	CO4	L5
	(b)	Consider below Graph and find Depth first spanning tree and Breadth first Spanning tree graphs?	6M	CO4	L1
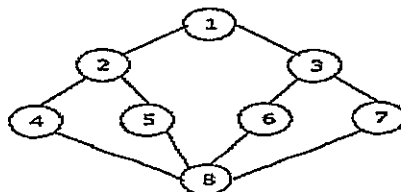
		(OR)			
8.		Explain the N-Queen's Problem. Draw the Portion of State space for N=4 using Backtracking Algorithm.	12M	CO4	L2
		UNIT-V			
9.		Demonstrate the Following i) FIFO B&B ii) LIFO B&B iii) LC B&B	12M	CO5	L2
		(OR)			

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Computer Networks (CSE)

Time: 3 Hours   Max. Marks: 60

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

	Questions	M	CO	BL
	UNIT - I			
1. (a)	Illustrate TCP/IP reference model with neat diagram	8M	CO1	L4
(b)	Summarize uses of computer networks	4M	CO1	L2
	(OR)			
2. (a)	Explain in detail about packet switching	8M	CO1	L1
(b)	Compare guided media and unguided media	4M	CO1	L2
	UNIT – II			
3. (a)	What is the need of framing? Explain character stuffing and bit stuffing for framing	8M	CO2	L1
(b)	What are the design issues of Data Link Layer? Explain.	4M	CO2	L1
	(OR)			
4. (a)	Analyze draw backs of stop and wait protocol? How can they overcome by sliding window protocol?	6M	CO2	L4
(b)	What are the various types of error detection methods?	6M	CO2	L1
	UNIT – III			
5. (a)	Differences between IPv4 and IPv6	4M	CO3	L2
(b)	Explain distance vector routing algorithm with example	8M	CO3	L1
	(OR)			
6. (a)	Explain fragmentation	4M	CO3	L1
(b)	Give the general principles of various congestion control algorithms	8M	CO3	L1
	UNIT – IV			
7. (a)	How does UDP differ from TCP? List the applications of UDP.	6M	CO4	L2
(b)	Write the structure of TCP pseudo header and explain how it is used in checksum calculation.	6M	CO4	L2
	(OR)			
8. (a)	Explain in detail three way handshaking for connection establishment in TCP.	6M	CO4	L1
(b)	What are the functions of transport layer? State transport service primitives	6M	CO4	L2
	UNIT-V			
9. (a)	Explain in brief about the formats of HTTP request and Response messages?	6M	CO5	L2
(b)	Describe importance of DNS in application layer.	6M	CO5	L3
	(OR)			
10. (a)	What is electronic E-mail? Describe in brief about the two architectures of E-Mail.	6M	CO5	L3
(b)	Explain importance of telnet in the application layer.	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Web Technologies (CSE)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain the attributes of list tag	6M	CO1	L2
	(b)	Discuss about tags related to table and different types of lists with sample code	6M	CO1	L6
		(OR)			
2.		Explain various types of CSS with examples	12M	CO1	L2
		UNIT – II			
3.	(a)	Illustrate with example java script arrays and functions	6M	CO2	L3
	(b)	Explain about Pattern Matching by Using Regular Expressions with an example.	6M	CO2	L2
		(OR)			
4.	(a)	Write a java script program to find the number is prime or not using functions	6M	CO2	L2
	(b)	Write java script program for email using regular expression	6M	CO2	L2
		UNIT – III			
5.	(a)	Illustrate with an example angular java script program to display string using four steps	6M	CO3	L3
	(b)	Describe different expressions in angular java script	6M	CO3	L2
		(OR)			
6.	(a)	Explain with an example how to create an object in Angular js.	6M	CO3	L2
	(b)	Discuss about strings with an example in angular js	6M	CO3	L2
		UNIT – IV			
7.	(a)	what are the different types of operators in PHP discuss with an example	6M	CO4	L2
	(b)	Explain different data types used in PHP	6M	CO4	L2
		(OR)			
8.	(a)	Describe usage of headers in PHP	6M	CO4	L2
	(b)	Explain about sessions in PHP	6M	CO4	L2
		UNIT-V			
9.		Discuss about how to create and access the MYSQL database with an example	12M	CO5	L2
		(OR)			
10.		Explain with an example SQL queries for data base connection	12M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Employability Skills (OE – I)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain how communication skills contribute to success in one's professional life.	6M	CO1	L1, L3
	(b)	Discuss the basic elements of human communication	6M	CO1	L2
		(OR)			
2.	(a)	Illustrate what personality traits are the most effective for a leader who has inherited a loss-making company to achieve a turn around	6M	CO1	L2
	(b)	Explain the role of interpersonal communication to become a good leader?	6M	CO1	L2
		UNIT – II			
3.	(a)	Describe a few effective strategies of time management with examples.	6M	CO2	L2
	(b)	Define adaptability and illustrate the benefits of adaptability at workplace.	6M	CO2	L1, L2
		(OR)			
4.	(a)	Discuss some desirable and undesirable gestures of candidate in an interview.	6M	CO2	L2
	(b)	Write the benefits of adopting good manners and etiquette.	6M	CO2	L1
		UNIT – III			
5.	(a)	Describe the role of creativity and collaboration skills in decision making.	6M	CO3	L2
	(b)	Discuss few ground rules in conflict resolution	6M	CO3	L2
		(OR)			
6.	(a)	Discuss few ways of improving decision making skills	6M	CO3	L2
	(b)	Define conflict. Discuss few tips for managing and resolving conflict	6M	CO3	L1, L2
		UNIT – IV			
7.	(a)	Outline some useful points that can help to reduce anxiety	6M	CO4	L2
	(b)	Describe few effects of stress in students	6M	CO4	L2
		(OR)			
8.	(a)	Explain in brief i) Acute stress ii) episodic stress iii) Chronic stress	6M	CO4	L2
	(b)	Discuss major causes of depression and how to overcome	6M	CO4	L2
		UNIT-V			
9.	(a)	Explain the 4Ps in interview i) Plan ii) Prepare iii) Practice iv) Perform	6M	CO5	L2
	(b)	Write a brief note on how to make a great first impression in the interview.	6M	CO5	L1
		(OR)			
10.	(a)	Explain different modes of interviews	6M	CO5	L2
	(b)	Discuss few objectives of a presentation.	6M	CO5	L2

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

B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023

SUB: Energy Systems Engineering (OE – I)

Time: 3 Hours   Max. Marks: 60

Answer any FIVE Questions choosing one question from each unit.

All questions carry Equal Marks.

	Questions	M	CO	BL
	UNIT - I			
1. (a)	With a neat sketch explain about Ash Handling System and write its advantages and disadvantages?	6M	CO1	L1
(b)	Explain about Centrifugal or Cyclone type of dust collector with a neat sketch?	6M	CO1	L2
	(OR)			
2. (a)	What are the different types of cooling towers? Explain in detail about natural draught cooling tower.	6M	CO1	L1
(b)	Draw the layout of Modern Steam Power Plant and explain the working of different circuits?	6M	CO1	L2
	UNIT – II			
3. (a)	Explain any two spillways used in Hydro-Electric power plant?	6M	CO2	L2
(b)	Give the classifications of Dams and Explain any one of them with a neat sketch?	6M	CO2	L1
	(OR)			
4. (a)	Write the classifications of Hydro-Electric Power plants?	6M	CO2	L1
(b)	Discuss about High Head Power plant with a neat diagram?	6M	CO2	L1
	UNIT – III			
5. (a)	Describe with the help of a neat sketch the construction of a Pressurized Water Reactor along with merits and demerits?	6M	CO3	L4
(b)	What is Nuclear fusion? How does it differ from Nuclear fission?	6M	CO3	L1
	(OR)			
6. (a)	What are the advantages and disadvantages of a Gas turbine power plant over diesel and Steam power plant of the same capacity?	6M	CO3	L5
(b)	How are Gas turbines plants classified and list the applications of Gas turbine plants?	6M	CO3	L5
	UNIT – IV			
7. (a)	Describe with the help of a neat sketch the working of a Solar power plant?	6M	CO4	L6
(b)	Write the difference between HAWM &VAWM with a neat diagram?	6M	CO4	L1
	(OR)			
8. (a)	What is Thermo-Electric effect? Explain with a neat diagram the working of a Thermo-Electric generator?	6M	CO4	L6
(b)	Give the classification of Solar Collector and Explain any one?	6M	CO4	L2
	UNIT-V			
9. (a)	What are the various costs involved in power plant economics discussing them in detail?	6M	CO5	L1
(b)	Define the following terms (i) Diversity Factor (ii) Load factor	6M	CO5	L1
	(OR)			
10. (a)	A generating station has the maximum demand of 30 MW, a load factor is 0.6, a plant capacity of 0.48, and the plant use factor is 0.82. Find (i) The daily energy produced (ii) The reverse capacity of the plant (iii) The maximum energy that could be produced if the plant were running all the time (iv) The maximum energy that could be produced daily, if the plant when running according to the operating schedule were fully loaded.	6M	CO5	L4
(b)	Define the following terms (i) Demand Factor (ii) Capacity Factor.	6M	CO5	L1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Data Structures (OE – I)

Time: 3 Hours   Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Define Double linked lists and write a program on double linked lists.	6M	CO1	L1
	(b)	What is an array? Discuss different types of arrays with example.	6M	CO1	L1
		(OR)			
2.	(a)	Analyze application of stack and write a program on stack using linked list representation.	7M	CO1	L4
	(b)	List different operations on stack.	5M	CO1	L4
		UNIT – II			
3.	(a)	Define Binary tree? Explain how to represent the binary tree with an example.	7M	CO2	L1
	(b)	Explain dequeue and priority queue.	5M	CO2	L2
		(OR)			
4.	(a)	Explain the operations of queue with example.	6M	CO2	L2
	(b)	Write a program to convert an infix expression into its equivalent postfix expression.	6M	CO2	L2
		UNIT – III			
5.	(a)	Explain the deletion operation of binary search tree with an example.	7M	CO3	L2
	(b)	Write an algorithm for splitting a binary search tree.	5M	CO3	L2
		(OR)			
6.	(a)	Construct a binary search tree by using the following in-order and pre-order traversals Inorder: BCAEDGHFI Preorder: ABCDEFGHI	6M	CO3	L3
	(b)	Explain Red Black Trees and its operations in detail.	6M	CO3	L2
		UNIT – IV			
7.	(a)	Explain in detail about Depth First Search (DFS) with example.	8M	CO4	L2
	(b)	List any three applications of BFS algorithm.	4M	CO4	L4
		(OR)			
8.	(a)	Give any two representations of graphs? What do you mean by in-degree and out-degree of a graph?	6M	CO4	L2
	(b)	Explain about shortest path routing algorithm with example.	6M	CO4	L2
		UNIT-V			
9.	(a)	What is hashing? Explain about hash table.	6M	CO5	L1
	(b)	Explain different types of hash functions with example.	6M	CO5	L2
		(OR)			
10.	(a)	Trace the steps of recursive merge sort algorithm to sort the following elements: 12, 25, 5,9, 1, 84, 63, 7, 15, 4, 3.	6M	CO5	L2
	(b)	Define heap sort .Apply heap sort on set of any ten elements and explain its working.	6M	CO5	L1

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
Sub: Database Management Systems (OE – I)   Max. Marks: 60

Time: 3 Hours
Answer any FIVE Questions choosing one question from each unit.
All questions carry Equal Marks.

Questions	M	CO	BL
UNIT - I			
1. (a) Draw ER diagram for Hospital Management System (Use DOCTOR, PATIENT, HOSPITAL and MEDICAL_RECORD Entity).	6M	CO1	L3
(b) Explain database system Vs file system.	6M	CO1	L2
(OR)			
2. (a) Explain the following constraints with examples. (i) Foreign key (ii) check	6M	CO1	L2
(b) Explain data abstraction	6M	CO1	L2
UNIT – II			
3. (a) Write Select, Project, Cartesian product operations in Relational Algebra with examples.	6M	CO2	L3
(b) Explain Natural join, Outer join operations with examples	6M	CO2	L3
(OR)			
4. (a) Explain various integrity constraints with example	6M	CO2	L3
(b) Explain any one database schema with example	6M	CO2	L3
UNIT – III			
5. (a) Explain DML commands with example	6M	CO3	L2
(b) Explain Tuple Relational Calculus	6M	CO3	L2
(OR)			
6. (a) Explain nested queries with example	6M	CO3	L2
(b) Explain advantages of views	6M	CO3	L2
UNIT – IV			
7. (a) Write about loss decomposition with example	6M	CO4	L3
(b) Explain 2NF with example	6M	CO4	L3
(OR)			
8. (a) What is multivalued dependency? Explain 4NF.	6M	CO4	L3
(b) Explain BCNF with an example	6M	CO4	L3
UNIT-V			
9. (a) (a) Explain ACID properties of transaction.	6M	CO5	L2
(b) (b) Explain Conflict serializability	6M	CO5	L2
(OR)			
10. (a) Explain about database recovery	6M	CO5	L2
(b) Write Time stamp based protocol.	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Basics of Civil Engineering (OE – I)

Time: 3 Hours

Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain briefly about Various Disciplines Of Civil engineering	6M	CO1	L2
	(b)	What is the Orientation of The Building	6M	CO1	L1
		(OR)			
2.		Explain the relevance of civil engineering in the overall infrastructural development of the country	12M	CO1	L5
		UNIT – II			
3.		Explain in detail about the components and functions of Residential Buildings.	12M	CO2	L2
		(OR)			
4.		Discuss in detail about components and types of Industrial buildings	12M	CO2	L3
		UNIT – III			
5.	(a)	Demonstrate the importance of need for planning of residential building.	6M	CO3	L4
	(b)	Discuss about the factors that are considered while planning a residential building.	6M	CO3	L3
		(OR)			
6.	(a)	What is the Orientation of the Building	6M	CO3	L1
	(b)	What is mean by Floor Space Index and Floor area Ratio	6M	CO3	L1
		UNIT – IV			
7.		Eloborate about the Space Requirements for Different parts of The Building.	12M	CO4	L3
		(OR)			
8.	(a)	Mention the factors to consider for development of a Layout?	6M	CO4	L4
	(b)	Write about the Stair case Requirements.	6M	CO4	L2
		UNIT-V			
9.	(a)	Mention different types of Foundations With neat sketches	6M	CO5	L4
	(b)	List different types of roofs and discuss its functions.	6M	CO5	L3
		(OR)			
10.	(a)	Explain about Types of Brick masonry with neat sketches	6M	CO5	L4
	(b)	Write about bearing capacity of soil.	6M	CO5	L2

K.S.R.M. COLLEGE OF ENGINEERING (AUTONOMOUS), KADAPA
B. Tech. V Semester (R20UG) Regular Examinations of January / February – 2023
SUB: Building Materials (OE – I)

Time: 3 Hours

Max. Marks: 60

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

		Questions	M	CO	BL
		UNIT - I			
1.	(a)	Explain the qualities of a good building stone.	8M	CO1	L2
	(b)	Distinguish between Coarse and fine aggregates?	4M	CO1	L4
		(OR)			
2.	(a)	Discuss the mechanical properties of aggregates.	6M	CO1	L2
	(b)	Explain the thermal properties of aggregates.	6M	CO1	L2
		UNIT – II			
3.	(a)	Discuss the types of bricks based on quality.	6M	CO2	L2
	(b)	Explain the various tests to be done on steel rebar.	6M	CO2	L2
		(OR)			
4.	(a)	Explain the types of tests on bricks for construction purpose.	8M	CO2	L2
	(b)	Discuss the types of steel.	4M	CO2	L2
		UNIT – III			
5.	(a)	Explain the different types of cement.	8M	CO3	L2
	(b)	Discuss the defects in timber.	4M	CO3	L2
		(OR)			
6.	(a)	List the characteristics of good timber.	8M	CO3	L1
	(b)	Discuss the field tests of cement as per BIS.	4M	CO3	L2
		UNIT – IV			
7.	(a)	Distinguish between Brick and Stone Masonry?	6M	CO4	L4
	(b)	Explain the following with neat sketch: i) King closer ii) queen closer.	6M	CO4	L2
		(OR)			
8.	(a)	Explain with neat sketches the types of Rubble masonry.	8M	CO4	L2
	(b)	Distinguish between Load bearing and Partition walls.	4M	CO4	L4
		UNIT-V			
9.	(a)	Discuss the Fiber reinforced polymers .	6M	CO5	L2
	(b)	List the advantages and disadvantages of Poly-vinyl chloride in construction.	6M	CO5	L1
		(OR)			
10.	(a)	List the advantages and disadvantages of Ferro-cement.	6M	CO5	L1
	(b)	Discuss the types of ceramics.	6M	CO5	L2