AR16

CODE: 16CE3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

ADVANCED DESIGN OF CONCRETE STRUCTURES

(Civil Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. A rigid retaining wall 6m high has a saturated backfill of soft clay soil, the properties of the clay soil are γsat = 17.56 kN/m3 and unit cohesion Cu=18 kN/m2.Determine a) The expected depth of the tensile crack in the soil b) The active earth pressure before the occurrence of the tensile crack, and c) The active pressure after the occurrence of the tensile crack — 14M

(OR)

2. A counter fort wall of 10m height retains a non-cohesive backfill. the void ratio and angle of internal friction of the backfill respectively are 0.70 and 300 in the loose state and they are 0.40 and 400 in the dense state. Calculate and compare active and passive earth pressures for the both cases. Take the specific gravity of solids as 2.7 — 14M
   i) In the loose state, e=0.70, ii) In the dense state , e=0.40

UNIT-II

3. An open square tank 6m x 6m x 3m deep rests on firm ground. Design the tank by using M25 Concrete and Fe415 steel? — 14M

(OR)

4. A Reinforced concrete tank is 6m x 3m with a maximum depth of 2.5m of water. The tank rests on ground. 150mm x 150 mm splays are provided at the junction of the wall and base slab. Design the tank and use M20 concrete and Mild Steel Reinforcement? — 14M

UNIT-III

5. Design an interior panel of a flat slab 5m x 3m without drop or column head. The story height above and below the slab is 3.5m. Consider the live load as 6kN/m^2. The size of column is 500mmX300mm. Use M25 and Fe 500. — 14M

(OR)

6. Design a flat slab supported on columns spaced at 6m apart in both the directions. Size of the column and column head are 500mm x 500mm and 750mm x 750mm. The super imposed dead and live loads are 2kN/m^2 and 4 kN/m^2. The height of the floor is 5m. — 14M

UNIT-IV

7. A column carrying a load of 2500 kN has to be supported by four piles each of size 300 mm x 300 mm. The piles are spaced 1 m centre. The column size is 600 mm x 600 mm. Design the pile cap and use M20 grade concrete and Fe 415 Steel? 14M

(OR)

8. The foundation of a structure is to consist of 6 piles to carry a total load of 10000kN. The piles are 350 mm x 350 mm and are 4m long. They are spaced at 1m. Design one of the piles. The effective length of a pile may be taken as0.50 times the actual length. Use M20 concrete and Fe 415. 14M

UNIT-V

9. Define Ductility? Explain the importance of ductility and the need for ductility in designing earthquake resistant design of structures? List out the general ductility considerations for an earthquake resistant design of structure? 14M

(OR)

10. A three storied symmetrical RC School building situated at Bhuj with the following data: 14M

    Plan Dimensions: 7m, Story height:3.5m, Total weight of beams in a story: 130kN, Total weight of slab in the story: 250kN, Total weight of column in a story: 50kN, Total weight of walls in a story: 530kN, Live load: 130kN, Weight of terrace floor: 655kN. The structure is resting on hard rock. Determine the total base shear and lateral loads at each floor level for 5% damping using seismic coefficient method?

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AR16

CODE: 16CE3021 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

INDUSTRIAL WASTE AND WASTE WATER MANAGEMENT

(Civil Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.		Explain the physical, chemical and biological properties of the industrial waste in detail.	14M
		(OR)	
2.	a	Explain the volume reduction theories of industrial waste water management	8M
	b	What do you mean by strength reduction of the industrial waste? Explain the strength reduction procedure for the industrial waste water briefly.	6M

UNIT-II

3.	a	Discuss the recirculation of industrial waste and its purpose.	8M
	b	Explain the self purification of streams when we add industrial waste to it.	6M
		(OR)	
4.		Discuss about the joint treatment of domestic sewage and industrial waste water and Its problems.	14M

UNIT-III

5.	a	Discuss the treatment of waste water coming from cotton textile mills with neat flow chart	8M
	b	Explain about the treatment of waste water of paper mill industry	6M
		(OR)	
6.		Explain about the treatment of waste water of breweries industry	14M

UNIT-IV

7.	a	Discuss the treatment of waste water of oil refineries with neat flow chart	7M
	b	Explain about the treatment of waste water coming from sugar mills.	7M
		(OR)	
8.		Discuss about the manufacturing process, sources of pollution and its treatment method of fertilizer industry	14M

UNIT-V

9.		Classify the common effluent treatment plants (CETP) and what are the advantages of CETPs.	14M
		(OR)	
10.		Give a brief note on zero discharge and give the limitations of common effluent Treatment plant.	14M

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AR16

CODE: 16EE3020 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

ELECTRICAL DISTRIBUTION SYSTEMS

(Elective-I)

(Electrical and Electronics Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) Write about various load modelling characteristics
   b) Derive the relation between load factor and loss factor

(OR)

2. a) Derive the expression for % voltage drop for non-uniformly distributed load
   b) Derive the expression for % voltage drop for uniformly distributed load

UNIT-II

3. a) Derive the expression for % voltage drop for n shaped service area
   b) Compare four feeder and Six feeder patterns

(OR)

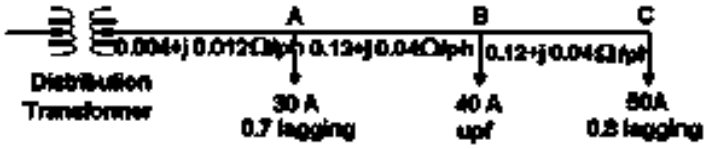
4. a) Derive the expression for % voltage drop for square shaped service area
   b) Relate four feeder and Six feeder patterns

UNIT-III

5. a) Compare single phase ungrounded with 3-pharse 3-wire system.
   b) Discuss about s 2-phase three wire with 3-pharse 3-wire system.

(OR)

6 Consider the 3 - phase, 3 wire 240 V secondary system with balanced loads at A, B and C as shown in figure. Determine the following: **(Apply)**



i. Calculate the total voltage drop
ii. Calculate the kVA output and load p.f. of the distribution transformer
iii. Calculate total power per phase for each load.

UNIT-IV

7. a) List out various Protective devices and explain about any two devices
   b) Discuss the coordination between Fuse and Automatic Circuit Recloser

(OR)

8. a) Explain about automatic Circuit recloser
   b) Discuss the coordination between Fuse and Fuse

UNIT-V

9. a) Write a short notes on need for maintaining good voltage profile in power systems and need to improve power factor
   b) A 3-phase substation transformer has a name plate rating of 7250KVA and a thermal capability of 120% of the name plate rating. If the connected load is 8816KVA with a 0.85pf lagging .determine the following
      i. The KVAR rating of the shunt capacitor bank required to decrease the KVA load of the transformer to its capability level.
      ii. The power factor of the corrected level.

(OR)

10. a) Explain the effect of shunt compensation on distribution system.
    b) Discuss any one of the voltage control methods with neat diagram.

AR16

CODE: 16ME3022 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

REFRIGERATION AND AIR CONDITIONING

(Elective - I)

(Mechanical Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1. a) What is the unit of refrigeration and COP of a refrigeration cycle. [4M]
   b) A dense air refrigeration machine operating on Bell-coleman cycle works between 3.4bar and 17bar. The temperature of air after the cooler is 15°C and after the refrigerator is 6°C. For a refrigeration capacity of 6tons, find Theoretical COP and Rate of water circulation required in the cooler in kg/min, if the rise in temperature is limited to 30°C. [10M]

(OR)

2. a) Give a brief discussion on refrigeration needs for aircrafts air systems. [4M]
   b) An open-cycle air refrigeration system working between 1bar and 12bar produces 25tons of refrigeration. The temperature of air leaving the cooler is 298K and its temperature leaving the refrigerator is 273K. Assuming the expansion and compression follow the law $pv^{1.35}$=constant, find(i) Mass of air circulated per minute(ii)C.O.P of the system(iii) KW required per ton of refrigeration also find the compressor and expander piston displacements. [10M]

UNIT-II

3. a) Sketch T-S and p-h charts for Vapour Compression cycle with Subcooling of refrigerant. [6M]
   b) A refrigerating plant using CO_2 as refrigerant works between 25°C and -5°C. The dryness of CO_2 is 0.6 at the entry of the compressor. Find the ice formed per day if the ice formed at 0°C and from the water at 10°C. Quantity of CO_2 circulated=10kg/min. Take relative efficiency=0.6.(C_p=4.2 KJ/kg°C for water; Latent heat of Ice=335KJ/kg). [8M]

(OR)

4. a) Give the classification of refrigerants. [4M]
   b) A Vapour compression refrigeration plant works between pressure limits of 5.3bar and 2.1bar. The vapour is superheated at the end of compression, its temperature being 37°C. The vapour is superheated by 5°C before entering the compressor. If the specific heat of superheated vapour is 0.63 KJ/kg k, find the coefficient of performance of the plant. [10M]

UNIT-III

5. a) Draw a neat and Compact diagram of NH_3- Water absorption refrigeration system and explain its working. [8M]
   b) A stream of liquid aqua-ammonia at 7bar, 30°C and C=0.6 flowing at a rate of 6kg/min is mixed with another stream of aqua-ammonia at same pressure flowing at the rate of 3kg/min at 80°C and C=0.3. Determine the concentration, enthalpy and temperature of the mixture. [6M]

(OR)

6. a) Represent Vapour absorption refrigeration cycle on T-S, p-h, and h-s charts [6M]
   b) Explain in detail construction and working of Electrolux refrigerator [8M]

UNIT-IV

7. a) What is Thermoelectric effect? Explain Construction and working of Thermoelectric Refrigeration system with a neat sketch. [10M]
   b) Mention advantages and disadvantages of pulse tube refrigeration [4M]

(OR)

8. a) Explain the phenomena of energy transfer in Vortex tube [6M]
   b) Explain some of the applications of Vortex tube. [8M]

UNIT-V

9. a) Define four psychometric properties i) Relative humidity ii) Specific humidity iii) Dew point temperature iv) Wet bulb temperature. [4M]
   b) 40 m^3 of air at 35^0C DBT and 50% R.H. is cooled to 25^0 C DBT maintaining its specific humidity constant. Determine [10M]
   i) Relative humidity of cooled air ii) Heat removed from air.

(OR)

10. a) Explain the terms Humidification and Dehumidification with neat sketches. [8M]
    b) What does ESHF, GSHF and RSHF indicates? Represent these terms on Psychometric chart. [6M]

AR16

CODE: 16ME3025 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

ROBOTICS

(Elective - I)

(Mechanical Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Classification of Robots based on Configuration	10 M
	b)	Explain Degree of Freedom in robots.	4 M
		(OR)	
2.	a)	What is drive System Explain in details	8M
	b)	Explain the following terms briefly: (i) Precision (ii) Accuracy	6 M

UNIT-II

3.	a)	Write the working principles of the following actuators (i) Pneumatic actuator (ii) Hydraulic Actuator (iii) Electromagnetic actuators	9 M
	b)	Explain the operation of optical encoder used in robot as a feedback device	5 M
		(OR)	
4.	a)	With neat sketches, explain velocity sensors used in Robots.	7 M
	b)	Explain about potentiometer, resolvers, and encoders.	7 M

UNIT-III

5.	a)	For the point [3 7 5] perform the following operations: a) Rotate 30^0 about X-axis b) Translate 8 units along y-axis c) Rotate 30^0 about x then translate 6 units along Y- axis. d) Rotate 90^0 about z-axis.	14 M
		(OR)	
6.	a)	Derive the Inverse kinematics of the 3-DOF manipulator by considering an example.	7 M
	b)	Define and explain a geometric Jacobian	7 M

UNIT-IV

7.		What is the importance of robot programming. Explain any two methods.	14 M
		(OR)	
8.	a)	Discuss different features of Trajectory planning in Robots & their significance	7 M
	b)	A single cubic trajectory given by q(t)= 40+t2 -6t3 is used for a period of 3 seconds. Determine starting and final position, velocity and acceleration of end effectors.	7 M

UNIT-V

9.	a)	What are the various robot cell layouts? Describe any two with the help of neat sketches.	7 M
	b)	What are the factors need to be considered while designing Robot work cell.	7 M
		(OR)	
10.	a)	Explain the applications of Robots in assembly operation.	7 M
	b)	Describe the various considerations taken into account for material handling.	7 M

AR16

CODE: 16EC3023 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February, 2021

OPTICAL COMMUNICATION & NETWORKS

(Electronics and Communication Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Explain the advantages of optical fiber communication.	7M
	b)	Compare step-index and graded indexfibers	7M
		(OR)	
2.	a)	Discuss different scattering losses in SiO_2 fiber at the operating wavelengths.	7M
	b)	Explain cut-off wavelength and mode field diameter.	7M

UNIT-II

3.	a)	Explain the various measures of efficiency in PIN photodiode and briefly explain the working principle of PIN diode	7M
	b)	The quantum efficiency of an In GaAs PIN diode is 80% in the wave length range between 1300nm and 1600nm. Compute the range of responsivity of the PIN diode in the specified wavelength range.	7M
		(OR)	
4.	a)	Explain External quantum efficiency of a LASER	7M
	b)	Compare various photodetectors.	7M

UNIT-III

5.	a)	What is dispersion? Explain multimode dispersion in step index and graded index fibers.	7M
	b)	On what parameters does the power launched into the fiber depends on? Explain the power launched to optical fiber from light source.	7M
		(OR)	
6.	a)	Explain waveguide dispersion	7M
	b)	Discuss group delay in deatail.	7M

UNIT-IV

7.	a)	Explain types of error sources in detection mechanism.	7M
	b)	Briefly explain the link power budget.	7M
		(OR)	
8.	a)	What are the system considerations for a point-to-point fiber optic transmission link?	7M
	b)	Analyse point-to-point fiber optic transmission link.	7M

UNIT-V

9.	a)	Explain wavelength division multiplexing.	7M
	b)	Explain optical CDMA	7M
		(OR)	
10.	a)	Explain optical power coupling and coupling losses.	7M
	b)	Explain the basic principles of SONET/SDH Networks	7M

AR16

CODE: 16EC3024 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

TELECOMMUNICATION SWITCHING SYSTEMS

(Elective –I)

(Electronics and Communication Engineering)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	Give a brief description of evoluation of Telecommunications	7M
	b)	Explain the elements of a Switching system.	7M
		(OR)	
2.	a)	Explain the operations of a single and multistage cross bar switch	8M
	b)	Explain about principles of cross bar switching	6M

UNIT-II

3.	a)	Compare Time Division Space and Time Division Time Switching.	7M
	b)	Summarize Distributed SPC	7M
		(OR)	
4.	a)	Give a brief description of combination switching	6M
	b)	Illustrate time division space switching.	8M

UNIT-III

5.	a)	Write about modes of operation of Common channel signalling.	8M
	b)	Write about Numbering plan.	6M
		(OR)	
6.	a)	Explain the attenuation limits in Subscriber loop system.	7M
	b)	Explain the operation of an echo suppressor in a Transmission Plan.	7M

UNIT-IV

7.	a)	What are the components of Data communication network? Explain.	7M
	b)	Explain the Layered Network Architecture.	7M
		(OR)	
8.	b)	Define open system interconnection. Name and explain functions of each of the layers of OSI model	14M

UNIT-V

9.	a)	Explain the Principles and evolution of ISDN.	8M
	b)	Explain public switching data network	6M
		(OR)	
10.	a)	Compare the difference between ISDN and BISDN	6M
	b)	Explain the Principle of operation of circuit Switching concept with example.	8M

AR16

CODE: 16CS3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

DATA WAREHOUSING AND DATA MINING

(Common to CSE & IT)

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

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the Question must be answered at one place

UNIT-I

1.	a)	What is Data mining? Explain the Data mining tasks.	7M
	b)	Explain different types of data with examples.	7M
		(OR)	
2.	a)	Explain about Data pre processing in detail.	9M
	b)	Explain the measures of similarity and dissimilarity.	5M

UNIT-II

3.	a)	Explain the OLAP operations in multi dimensional model.	9M
	b)	Write short note on Join Indexing.	5M
		(OR)	
4.	a)	Explain attribute oriented induction for Data characterization.	6M
	b)	Describe the following i) Enterprise Warehouse ii) Data Mart and Virtual Warehouse	8M

UNIT-III

5.	a)	Explain the Apriori algorithm with an example.	10M
	b)	Write short note on frequent item set mining.	4M
		(OR)	
6.	a)	Describe the FP growth algorithm with an example.	9M
	b)	Distinguish between Apriori and FP-growth algorithms.	5M

UNIT-IV

7.	a)	What is Classification? How does classification work? Explain.	7M
	b)	Explain the Classifier Accuracy measures.	7M
		(OR)	
8.	a)	Explain the Decision tree induction with suitable example.	9M
	b)	Describe the Tree pruning	5M

UNIT-V

9.	a)	Describe the DBSCAN algorithm with an example.	8M
	b)	Compare and contrast various clustering algorithms.	6M
		(OR)	
10.	a)	What is Cluster analysis? Explain K-means algorithm with an example.	10M
	b)	Discuss the Strengths and weaknesses of K-means algorithm.	4M

AR13

CODE: 13CE3021

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, February-2021

INDUSTRIAL WASTE AND WASTER WATER MANAGEMENT
(ELECTIVE-I)
(Civil Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1 a) Define Biomedical wastes. Find the major source of these type of waste
b) What does neutralization meant? If pH value of waste is 3, How do you neutralize it?
c) What are the problems due to discharge of Industrial waste water into streams?
d) What do you mean by volume reduction in industrial waste water management?
e) State advantages (any two) of Common Effluent Treatment Plants for managing industrial waste.
f) List the typical chemical characteristics (any four) of Industrial waste water.
g) What are the final products (any four) obtained from Oil refineries?
h) Soft water is required in process water used in boilers of power plant industry. Why?
i) What is biodegradable waste?
j) What are the by-products in sugar mill industry which can be used in paper and pulp and distillery industries respectively?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. What are the different types of Physical and biological characteristics in industrial waste? Explain these characteristics.

(OR)

3. a) Differentiate between Hazardous waste and Non-Hazardous waste along with some examples.
b) What are heavy metals? List some of them. Where these heavy metals used in industries. Write removal methods used for it.

UNIT-II

4. What is Strength reduction in industrial waste management? Explain how the strength reduction can be achieved.

(OR)

5. What is Equalization and proportioning? Explain different types of equalization basin present with help of neat sketch.

UNIT-III

6. What is recirculation of industrial waste? Explain Reverse osmosis process with help of neat sketch. What are uses of this treatment?

(OR)

7. List the problems due to discharge of industrial waste water into Lakes Explain with help of Eutrophication of lakes along with a neat sketch of this process.

UNIT-IV

8. a) Explain the Manufacturing process of Milk products in dairy industry. List the
   b) treatment methods undertaken in Oil refineries to produce treated effluent waste?

(OR)

9. a) Explain the Manufacturing process of Alcohols in Distillery industry. List the
   b) treatment methods undertaken in Textile industry to produce treated effluent waste?

UNIT-V

10. Explain the Primary methods used in the design of CETP along with sketches.

(OR)

11. Explain the Secondary methods used in the design of CETP along with sketches.

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AR13

CODE: 13ME3021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, February-2021
OPERATIONS RESEARCH
(Mechanical Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1 a). List various models used in OR.
b). List various techniques to find optimal solution for LPP.
c). Discuss about Balanced Transportation Model with example.
d). What is the purpose of Hungarian Method?
e). Discuss the Limitations of OR
f). Discuss Kendall's Notation for representing queuing models.
g). Discuss about Burst Event and Merge Event.
h). Define Pure Strategy and Mixed Strategy.
i). Differentiate CPM and PERT.
j). Compare Activity and Dummy Activity.

PART-B

Answer one question from each unit **5x12=60M**

UNIT-I

2. Solve the following Linear Programming problem by graphical method

$$\text{Maximize } Z = 6X_1 + 8X_2$$

$$\text{Subjected to } \quad 5X_1 + 10X_2 \leq 60$$

$$4X_1 + 4X_2 \leq 40 \text{ where } X_1, X_2 \geq 0$$

(OR)

3. Solve the following Linear Programming problem by Simplex method

$$\text{Maximize } Z = 7X_1 + 5X_2$$

$$\text{Subjected to } \quad X_1 + 2X_2 \leq 6$$

$$4X_1 + 3X_2 \leq 12 \text{ where } X_1, X_2 \geq 0$$

UNIT-II

4. A Company has 3 Sources which supplies goods to 4 destinations. Monthly Source supplies and destinations demand requirements are shown below. Unit shipping costs are also given in table. Determine the optimum distribution for this company to minimize shipping costs.

		Destination				
		1	2	3	4	Supply
Source	1	19	30	50	10	7
	2	70	30	40	60	9
	3	40	8	70	20	18
Demand		5	8	7	14	

(OR)

AR13

CODE: 13ME3021 **SET-2**

5. A marketing manager has 5 salesman and 5 sales districts. Considering the capabilities of the salesman and the nature of districts, the marketing manager estimates that sales per month (in hundred rupees) for each salesman in each district would be as follows. Find the Assignment of salesman to districts that will result in maximum sale.

		Districts				
		A	B	C	D	E
Salesman	I	32	38	40	28	40
	II	40	24	28	21	36
	III	41	27	33	30	37
	IV	22	38	41	36	36
	V	29	33	40	35	39

UNIT-III

6. There are five jobs each of which must go through machines A,B and C in order ABC. Processing times are given in the following table.

Job_i	Processing Times		
	A_i	B_i	C_i
1	10	7	6
2	12	8	11
3	8	4	10
4	9	5	8
5	13	6	7

(OR)

7. The arrival rate of customers at a Banking counter follows Poisson distribution with a mean rate of 45 per hour. The service rate of counter clerk follows exponential distribution with a mean rate of 60 per hour. Calculate the following.
   i. What is the probability of having zero customers in the system.
   ii. What is the probability of having 5 customers in the system.
   iii. Find the Ls, Lq, W_s, W_q

UNIT-IV

8. Find the replacement interval for the following machine which purchase price is Rs.10000 and maintaining prices are given below.

Year	1	2	3	4	5	6	7	8
Maintenance cost	1000	1400	1600	2000	2500	3000	3600	4000
Resale Price	300	1800	750	375	200	200	200	200

(OR)

AR13

CODE: 13ME3021 **SET-2**

9. Solve the following game whose pay off matrix is given by pay off matrix to player A. Apply dominance principle, then find the optimal strategy of both players and Value of game.

		Player-B			
		I	II	III	IV
Player -A	I	2	-2	4	1
	II	6	1	12	3
	III	-3	2	0	6
	IV	2	-3	7	1

UNIT-V

10. Construct the network diagram for the following data. Calculate total float, free float, independent float, total project duration and the critical path?

Activity	1-2	1-3	1-4	2-6	3-7	3-5	4-5	5-9	6-8	7-8	8-9
Duration (Minutes)	2	2	1	4	5	8	3	5	1	4	3

(OR)

11. Draw Network diagram and find critical path, project duration ,slack for all events, probability for completing the project in 41 days from the following data ;

Activity (i-j)		1-2	1-6	2-3	2-4	3-5	4-5	6-7	5-8	7-8
Duration (Days)	Optimistic time	3	2	6	2	5	3	3	1	4
	Most likely time	6	5	12	5	11	6	9	4	19
	Pessimistic time	15	14	30	8	17	15	27	7	28

AR13

CODE: 13EC3026 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, February-2021

OOPS THROUGH JAVA

(Electronics & Communication Engineering)

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

PART-A

ANSWER ALL QUESTIONS **[1 x 10 = 10 M]**

1. a) Define Polymorphism?
   b) Define Inheritance?
   c) Define Recursion?
   d) Write the use of this key word?
   e) List the uses of final keyword?
   f) Define dynamic method binding?
   g) Define an exception?
   h) List various states of a thread it can undergo during its life cycle?
   i) Define Event Source?
   j) List the types of applets?

PART-B

Answer one question from each unit **[5x12=60M]**

UNIT-I

2. a) Explain Primitive data types in java? 6M
   b) Write about compiling and running a java program with an example? 6M

(OR)

3. a) Explain about scope and lifetime of variables? 6M
   b) Explain about if...else and switch statements in java? 6M

UNIT-II

4. a) Explain about constructor overloading with an example program? 6M
   b) Write about recursion with an example program? 6M

(OR)

5. a) Explain about call by value parameter passing method with an example program? 6M
   b) Explain static variables with an example program? 6M

UNIT-III

6. a) Explain about the significance of final keyword in preventing inheritance and overriding with an example? 6M
   b) Can we extend interfaces? Support your argument with an example? 6M

(OR)

7. a) Write about accessing super class members in subclass with the help of super keyword with an example? 6M
   b) Explain about abstract classes with an example? 6M

UNIT-IV

8. a) Explain about creating our own exception with an example? 6M
   b) Write about creating threads by using Runnable interface with an example? 6M

(OR)

9. a) Write a java program to handle array index outofbounds exception by using try and catch statements? 6M
   b) Explain about Synchronizing threads by using Synchronized method? 6M

UNIT-V

10. a) Explain about Choice class with an example? 6M
    b) Write a java program to handle mouse events? 6M

(OR)

11. a) Explain JFrame with an example? 6M
    b) Explain Adapter classes with an example? 6M