AR16

CODE: 16CE3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April-2019

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. Design a cantilever retaining wall to retain an earth embankment 4.5 m high above ground level. The density of earth is 18 kN/$m^3$and its angle of repose is 40^0 . The embankment is horizontal at top of wall. The safe bearing capacity of soil is 150 kN/$m^2$and the coefficient of friction between concrete and soil is 0.5. Adopt M-25 grade concrete and Fe-415 grade steel. 14M

(OR)

2. Design a counterfort type retaining wall to suit the following data. 14M
Height of wall above ground level = 8 m,
Safe bearing capacity of soil at site = 180 kN/m^2,
Angle of internal friction = 35^0
Density of soil = 18 kN/m^3,
Centre to centre spacing between counter forts = 3.5 m ,
Materials: M-30 grade concrete and Fe- 415 HYSD bars.

UNIT-II

3. Design a circular tank with flexible base for capacity of 200000 litres. The depth of tank is limited to 3.0 m from inside. Keep the joint between wall and the base slab as flexible. The base slab rests on the ground. Use M-30 and Fe-415 grades. 14M

(OR)

4. A rectangular water tank 4.5 m long, 2.25 m wide and 2.5 m high has its walls rigidly jointed at the vertical edges and pin jointed at their horizontal edges. Design the tank if it is supported on all sides under the wall. Use M-20 concrete and HYSD bars of Fe-415 grade. 14M

UNIT-III

5. Design an interior panel of a flat slab 5.0 m x 7.0 m in size, for a super-imposed load of 6 kN/m^2. Provide two way reinforcement. Adopt M-20 grade concrete and Fe-415 grade steel. 14M

(OR)

6. A circular room has 5.0 m diameter from inside. Design a circular roof slab for room, to carry a superimposed load of 4000 N/m^2. Assume that the slab is simply supported at the edges. Use M-20 and Fe415 grades. 14M

UNIT-IV

7. Design a pile cap 1m side with a RC column of size 400 mm square carries an axial load of 1200 kN and is supported by **four** piles of size 300 mm x 300 mm. The SBC of soil is 120 kN/m^2. Use M-30 and Fe-415 grades. 14M

(OR)

8. Design a pile under a column transmitting an axial load of 1000 kN. The pile is to be driven to a hard stratum available at a depth of 8 m. Use M-20 and Fe-415 grades. 14M

UNIT-V

9. Write the requirements of ductile detailing of beams and columns as per codal provision IS: 13920 14M

(OR)

10. Determine the design wind force of the framed building of plan 45 m x 15 m and 52.5 m height consisting of storey height is 3.5 m and it is braced in the longitudinal direction by rigid frame action and by a reinforced concrete infill wall in transverse direction. Assume the building is located near coastal area with basic wind speed of 60 m/sec. 14M

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AR16

CODE: 16CE3021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April-2019

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. What is the Principles of Industrial waste treatment? Explain the basic theories of industrial waste water management. 14M

(OR)

2. a Explain the physical and chemical properties of industrial waste. 8M
   b Write a note on organic and biological properties of industrial waste. 6M

UNIT-II

3. a Discuss the utilization of municipal waste water in industries for treatment process? and its advantages. 8M
   b Give the problems arise when we dispose the industrial waste water into streams. 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 manufacturing process of cotton text mills in detail. 8M
   b Explain the manufacturing process of paper mills. 6M

(OR)

6. Explain the sources of pollution and treatment procedure involved in dairy industries. 14M

UNIT-IV

7. a Discuss the manufacturing process of fertilizers and the sources of pollution for fertilizer plants. 10M
   b Write a note on treatment water coming from steel plants. 4M

(OR)

8. Discuss about the manufacturing process, sources of pollution and its treatment method of tanneries industry. 14M

UNIT-V

9. Give a brief note on common effluent treatment plants for treatment of industrial waste and its advantages. 14M

(OR)

10. Explain the design of treatment plant for the effluent of corn starch industry. 14M

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AR16

CODE: 16EE3020 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April, 2019

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)	Discuss the classification of loads and their characteristics.	7M
	b)	Define and derive the relationship between load and loss factor.	7M
		(OR)	
2.	a)	Explain the radial type primary distribution with a help of neat sketch	7M
	b)	List the factors affecting the selection of primary feeder rating.	7M

UNIT-II

3.	a)	Explain the various factors to be considered to decide the ideal location of sub-station.	6M
	b)	Derive an expression for the rating of a substation serving an area with 'n' feeders.	8M
		(OR)	
4.	a)	What are the importances of ratings of distribution substation?	6M
	b)	Compare and contrast between square shaped and hexagonal shaped distribution substation areas.	8M

UNIT-III

5.	a)	Discuss the importance of voltage drop and power loss calculations in distribution system.	6M
	b)	Derive the expression for voltage drop and power loss in single phase 2-wire uni-grounded laterals.	8M
		(OR)	
6.	a)	Discuss the method of approximate calculations in terms of resistance and reactance for the calculation of voltage drop in 1-phase AC distributor.	6M
	b)	Explain the manual method of solution for radial distribution systems.	8M

UNIT-IV

7.	a)	What is coordination? Discuss the general coordination procedure to provide protection.	7M
	b)	Explain about the operation of a Fuse and Circuit Reclosure.	7M
		(OR)	
8.	a)	Define fusing current and cut-off current and explain the factors on which it depends?	7M
	b)	Explain the principle of operation of circuit breaker and line sectionalizer.	7M

UNIT-V

9.	a)	Explain the line drop compensation on voltage control.	7M
	b)	Explain the role of series capacitor in voltage control.	7M
		(OR)	
10.	a)	Explain how an AVR controls the voltage with a neat diagram	7M
	b)	Explain the economic justification of capacitors.	7M

AR16

CODE: 16ME3025 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April,2019

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)	How do you specify a Robot? Distinguish between the accuracy and repeatability of a robot.	7M
	b)	What are the basic components of a robotic system? State the main function of each of the components.	7M
		(OR)	
2.		Describe the types of End Effectors and gripper mechanisms with simple sketches.	14M

UNIT-II

3.	a)	Discuss the performance characteristics of actuators.	7M
	b)	Compare electrical, pneumatic and hydraulic actuators for their characteristics.	7M
		(OR)	
4.	a)	With Suitable Application, briefly explain resolvers and potentiometers.	7M
	b)	Briefly explain the working principle of Incremental Encoders and Strain guage force sensors with neat sketches.	7M

UNIT-III

5.	a)	Explain the basic translation and rotational transformations operations for 2D and 3D	10M
	b)	What is homogeneous coordinate system? Explain.	4M
		(OR)	
6.	a)	What is robot kinematics?	4M
	b)	Derive the forward and reverse transformation of 2D and 3D arms.	10M

UNIT-IV

7.		It is desired to have the first joint of six-axis robot go from initial angle of 30^0 to final angle of 75^0 in 5 seconds. Using third order polynomial, calculate the joint angle at 1, 2, 3 and 4 seconds. What will be the limiting speed of the vehicle if all the four wheels maintain contact with the road surface?	14M
		(OR)	
8.	a)	What are robot programmings Languages? Explain.	7M
	b)	Explain the steps involved in Trajectory Planning?	7M

UNIT-V

9.	a)	What are the various robot cell layouts? Explain them in detail.	7M
	b)	Explain briefly about Robot Centered Workcell	7M
		(OR)	
10.	a)	What are the applications of robots in material transfer and processing?	7M
	b)	Give future applications of robot.	7M

AR16

CODE: 16ME3022 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April-2019

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) Explain the Reduced Ambient type cooling system with a neat sketch and depict the processes on a T-S diagram. **[5]**

   b) The atmospheric air at a pressure of 1 bar and temperature -8^0C is drawn in the cylinder of the compressor of a Bell Coleman refrigerating machine. It is compressed isentropically to a pressure of 5 bar. In the cooler, the compressed air is cooled to 15^0C, pressure remaining the same. It is then expanded to a pressure of 1 bar in an expansion cylinder, from where it is passed to the cold chamber. Find **[9]**
   i. the work done per kg of air and ii. COP of the plant
   For air assume law for expansion $pv^{1.2}$=C, law for compression $pv^{1.4}$=C and the specific heat of air at constant pressure = 1.005 kJ/kg.K.

(OR)

2. a) Under what circumstances are the regenerative cooling systems used for Air cycle refrigeration? Explain the regenerative cooling system with a neat sketch and depict the processes on a T-S diagram. **[5]**

   b) A dense air refrigeration machine operates between 4 bar and 1 bar. The temperature of this after the air cooler is 15^0C and after the refrigeration coil is 6^0C. Determine: **[9]**
   i. Temperature of the air after compression and expansion
   ii. Air circulated per ton of refrigeration
   iii. The work of compressor and expander per ton of refrigeration.
   iv. The theoretical C.O.P.

UNIT-II

3. a) Why in practice a throttle valve is used in vapour compression refrigerator rather than cylinder to reduce the pressure between the condenser and the evaporator? **[5]**

   b) A refrigerating machine using F-12 as working fluid works between temperatures 18^0C and 37^0C. The enthalpy of liquid at 37^0C is 455 kJ/kg. The enthalpies of F-12 entering and leaving the compressor are 563.15 kJ/kg and 595.4 kJ/kg respectively the mass flow of refrigerant is 2 kg/min and the efficiency of compressor is 0.85. Determine **[9]**
   i. The capacity of the plant ii. power required to run the plant iii. COP of the plant

(OR)

4. a) What are the parameters that effect the vapour compression refrigeration system and how? **[5]**

   b) An ammonia refrigerating machine has working temperatures of 35^0C in the condenser and -15^0C in the evaporator. . It is sub-cooled by 4^oC in the condenser before it enters the expansion valve and is superheated by 5^oC in the evaporator before it enters the compressor. Calculate **[9]**
   (a) Theoretical piston displacement per ton of refrigeration.
   (b) Theoretical power per ton of refrigeration.

UNIT-III

5. a) What is the basic function of a compressor in vapour compression refrigeration systems? How this function is achieved in vapour absorption refrigeration system? **[5]**

   b) In a vapour absorption system, the heat is supplied to the generator by condensing steam at 3 bar and 85% dry. The temperature in the evaporator has to be maintained at -10 ^{0}C. If the cooling water rejects heat at 30 ^{0}C in the condenser, find the maximum COP of the system. **[9]**
   When refrigerator load is 10 tonnes and the actual COP is 40% of the maximum COP, find the mass of steam required per hour

(OR)

6. a) Discuss the advantages of vapour absorption refrigeration system over vapour compression refrigeration system **[5]**

   b) Explain the Electro-lux refrigeration system with a neat sketch. What is the purpose of hydrogen in it? **[9]**

UNIT-IV

7. a) With the aid of a sketch, briefly describe how does the vortex tube refrigerator work? **[7]**

   b) What are the phenomena that take place simultaneously when two dissimilar metals are connected and the junction held at different temperatures? **[7]**

(OR)

8. a) List out the merits and demerits of thermo-electric refrigeration system over other refrigeration systems. **[7]**

   b) With the aid of a sketch, briefly describe how does the pulse tube refrigerator work? **[7]**

UNIT-V

9. a) Explain by-pass factor and ADP for cooling coils. **[5]**

   b) An air-conditioning hall is to be maintained at 27^{0}C DBT and 21^{0}C WBT. **[9]**
   RSH = 46.522 kW; RLH = 17.446 kW;
   Outdoor sir supply: 38^{0}C DBT and 27^{0}C WBT, 25 cmm (cubic meter per minute).
   Re-circulated air from the hall = 60%
   Outdoor air passes through the cooling coil having ADP = 15^{0}C. Re-circulated air is mixed with the conditioned air after the cooling coil. Determine (i) The condition of air after the coil and before the re-circulated air mixed with it, (ii) Condition of air entering the hall, (iii) The quantity of fresh air (iv) By-pass factor (v) Refrigeration load on the cooling coil.

(OR)

10. a) Explain the process of heating and humidification. **[5]**

    b) Air at 30^{o}C DBT and 60% RH is passed over a cooling cum dehumidifying coil in a summer air-conditioning application. The volume flow rate of dry air is given to be 250 m^3/min. The air leaves the coil at a DBT of 14^{o}C. If the bypass factor of the coil is 0.1, calculate (i) apparatus dew point temperature of the coil, (ii) relative humidity of the conditioned air leaving the coil, (iii) capacity of the cooling coil in tons of refrigeration and (iv) sensible heat factor of the coil. **[9]**

AR16

CODE: 16EC3024 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April,2019

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)	Explain about basics of a switching system in detail?	7M
	b)	Explain in detail about the classification of switching systems?	7M
		(OR)	
2.	a)	Explain in brief about the evolution of telecommunications?	7M
	b)	Explain the principle of cross bar switching?	7M

UNIT-II

3.		Explain the operation of Distributed and Centralized SPC with neat diagrams?	14M
		(OR)	
4.	a)	Explain the operation of time multiplexed time switching?	7M
	b)	Discuss in detail about combination Switching?	7M

UNIT-III

5.	a)	Explain in detail about subscriber loop systems?	7M
	b)	Discuss in brief about numbering plan?	7M
		(OR)	
6.	a)	Explain briefly about common channel signalling techniques?	7M
	b)	What is grade of service? Explain in detail about blocking probability?	7M

UNIT-IV

7.	a)	Explain OSI reference model with neat diagrams?	7M
	b)	Write about data communication protocols?	7M
		(OR)	
8.	a)	Explain about serial and parallel data transmission two wire versus four wire operation?	7M
	b)	Draw the simplified block diagram of a data communication network and explain function of each block?	7M

UNIT-V

9.	a)	Explain principle of operation of Packet switching network with an example?	7M
	b)	Compare between circuit, message and packet switching networks?	7M
		(OR)	
10.		Explain in brief about concepts and architecture in ISDN?	14M

AR16

CODE: 16EC3025 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April-2019

BIO-MEDICAL INSTRUMENTATION

(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)	Draw and explain Man and instrumentation system.	7M
	b)	Draw and explain resting and action potentials.	7M
		(OR)	
2.	a)	What are the problems occurred in measuring parameters in a human body.	7M
	b)	Explain about Bio-Chemical PH electrode..	7M

UNIT-II

3.	a)	Draw and explain Einthoven Triangle.	7M
	b)	Explain about heart sounds.	7M
		(OR)	
4.	a)	Draw and explain how various voltages are measured by 12 lead electrodes of ECG.	7M
	b)	Explain the indirect measurement method of blood pressure using korotkoff sounds.	7M

UNIT-III

5.	a)	What are the basic components of Patient – Monitoring System.	7M
	b)	Draw and explain Lung volumes and capacities.	7M
		(OR)	
6.	a)	Draw and explain the block diagram of Internal Pacemaker.	7M
	b)	Explain the working of spirometer.	7M

UNIT-IV

7.	a)	Give the different systems that can adopt for measuring physiological variables by the method of Transmission of data.	7M
	b)	Draw and explain block diagram of Bio-telemetry receiver.	7M
		(OR)	
8.	a)	Give the list of Physiological parameters for Biotelemetry.	7M
	b)	What is the PWM modulation techniques used in Telemetry transmitter?	7M

UNIT-V

9.	a)	Explain detection of radiation.	7M
	b)	Explain about Angiography and fluoroscopy.	7M
		(OR)	
10.	a)	Explain how the X-Ray tube works and principle of operation?	7M
	b)	Write short note on Radiation Therapy.	7M

AR16

CODE: 16CS3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April-2019

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)	Discuss in detail about Data Mining primitives.	6M
	b)	Explain about different types of data used for data mining	8M
		(OR)	
2.	a)	Why data pre-processed is needed? Explain it.	7M
	b)	Explain in detail about various data cleansing techniques.	7M

UNIT-II

3.	a)	Differentiate OLTP and OLAP.	6M
	b)	Draw and explain the components of Data Warehouse Architecture.	8M
		(OR)	
4.	a)	Define cuboid. Explain about lattice of cuboids with suitable example.	7M
	b)	Compare data generalization and summarization.	7M

UNIT-III

5.	a)	Describe market basket analysis.	7M
	b)	Mention and explain the metrics used in Association rule mining.	7M
		(OR)	
6.	a)	What are the limitations of Apriori?	4M
	b)	Write and explain FP-Growth algorithm with a suitable example.	10M

UNIT-IV

7.	a)	Write and explain decision tree induction algorithm.	8M
	b)	Define over-fitting. Explain its concept.	6M
		(OR)	
8.	a)	Explain feed forward neural network with suitable example.	9M
	b)	Describe different techniques that are used to improve classifier accuracy.	5M

UNIT-V

9.		Explain the following clustering techniques. i) DBSCAN ii) BIRCH	14M
		(OR)	
10.		What is an outlier? Describe various outlier handling methods.	14M

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AR13

CODE: 13CE3021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, April-2019

INDUSTRIAL WASTE AND WASTE WATER MANAGEMENT

(Civil Engineering)

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

PART-A

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

1. a) Give any two sources of biomedical wastes.
   b) When do you call a waste as hazardous waste?
   c) What is meant by segregation of industrial wastewater?
   d) Name the digester chemicals used in Kraft process of manufacturing pulp.
   e) What is a Common Effluent Treatment Plant?
   f) How do you tackle the sodium chloride problem in tannery wastewater treatment?
   g) 'An equalization tank is desirable before biological treatment of dairy wastes'. Why?
   h) Which is the most common raw material used in industrial alcohol industry?
   i) What is the importance of BOD/COD ratio in deciding method of treatment of industrial wastewater?
   j) What is meant by pickling in case of steel plants?

PART-B

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

UNIT-I

2. Explain various physical, chemical and biological characteristic of Industrial wastes. 12M

(OR)

3. a) Explain with suitable examples, the characteristics of hazardous wastes. 6M
   b) Define bio-medical wastes? Discuss the risks involved with bio-medical wastes. 6M

UNIT-II

4. a) Explain various methods of strength reduction of industrial wastewater in brief. 8M
   b) What are the purposes served by Equalization of Industrial Wastes? 4M

(OR)

5. a) What are the advantages of combined treatment of industrial wastes and domestic sewage? 6M
   b) Explain various methods used for neutralization of industrial wastes? 6M

UNIT-III

6. Explain with suitable examples, the effects of industrial pollutants on receiving streams. 12M

(OR)

7. a) What are the benefits and limitations of using municipal wastewater in industries. 6M
   b) Write a note on recirculation of industrial wastewater giving appropriate examples. 6M

AR13

CODE: 13CE3021 SET-2

UNIT-IV

8.	a)	Briefly discuss various sources of wastewater from a dairy industry.	4M
	b)	How are the wastes from the following units of steel plant treated?	8M
		i) Coke oven	
		ii) Coal washery	
		iii) Blast furnace	

(OR)

9.		Explain the following in case of pulp and paper mill	12M
		i) Recovery of black liquor	
		ii) Massive lime treatment for colour removal	
		iii) Biological treatment with a flow diagram	

UNIT-V

10.	a)	What are the main points to be considered in the design of CETP.	4M
	b)	Discuss the advantages of common effluent treatment plants.	8M

(OR)

11.	a)	Discuss various effluent disposal methods.	8M
	b)	What are the limitations of Common Effluent Treatment Plants?	4M

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AR13

CODE: 13CE3023 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, April-2019

PRESTRESSED CONCRETE

(Civil Engineering)

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

PART-A

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

1. a) What are the advantages of prestressed concrete structures?
   b) Why high strength steel is essential for prestressed concrete?
   c) Mention the losses of prestress?
   d) Define kern distance?
   e) List the various factors influencing the deflection of prestressed concrete members?
   f) Distinguish between web shear cracks and flexural shear cracks.
   g) Draw a sketch showing the stress distribution in end block by double anchor plate
   h) Define pressure line?
   i) What is pretensioning and post-tensioning?
   j) Write about the end zone reinforcement?

PART-B

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

UNIT-I

2. a) Explain any two methods of prestressing system? 6M
   b) What is the basic principle of prestressed concrete? Explain the application of prestressed concrete? 6M

(OR)

3. a) Discuss about any 2 types of post tensioning anchorage systems with neat sketches? 6M
   b) Write historic development of the Prestressed concrete? 6M

UNIT-II

4. a) A prestressed concrete pile 250mm square, contains 60 pre-tensioned wires, each of 3mm diameter, uniformly distributed over the section. The wires are initially tensioned on the prestresssing bed with a total force for 500kN. Calculate the final stress in concrete and the % loss of stress in steel after all losses, given the following data: 6M
   Es = 210 kN/mm^2 & Ec = 32 kN/mm^2
   Shortening due to creep = 30 x 10^{-6} mm/mm per N/mm^2 of stress
   Total shrinkage = 200 x 10^{-6} per unit length, Relaxation of steel stress = 5 per cent of initial stress, Prestressing force P = 400 kN
   b) What are the relaxation of stress in the steel? How do you account for it in prestressed members? Explain the provisions made in IS: 1343 for relaxation loss? 6M

(OR)

5. a) a concrete beam AB of 20m span is post tensioned by a cable carrying a stress of 1000MPa at the jacking end A. the cable is parabolic between the supports A and B is concentric at the supports A and B and is concentric of friction between duct and cable as 0.35 and friction coefficient for wave length is 0.15 for 100m. calculate the stress allowing for losses due to friction and wave length at the following points: a) Assuming the jacking end at A, compute the effective stress at B 6M
   b) If the cable is tensioned from both ends A and B, calculate the minimum stress after losses in the cable and its location?
   b) Explain about the load balancing concept? 6M

UNIT-III

6. a) Discuss briefly the basis of IS: 1343 code recommendations regarding the design of reinforcement in prestressed section subjected to shear and moment? 6M

   b) How do you compute the bursting tension in the case of end block subjected to evenly distributed forces using Mangel's method? 6M

(OR)

7. a) Explain the terms a) End block b) Anchorage zone c) Bursting tension with reference to post tensioned prestressed members? 6M

   b) A concrete beam of rectangular section has 250mmX600mm. The beam is prestressed by a parabolic cable carrying an effective force of 1000kN. The cable has max eccentricity of 100mm at the centre of span. The beam spans over 10m and supports a UDL of 20kN/m. Estimate A) the max principal stress developed in the section of the between at a distance of 300mm from the support. B) And the prestressing force required to nullify the shear force due to dead and live loads at the support section? 6M

UNIT-IV

8. a) Explain with sketches, the stresses developed due to differential shrinkage in structural elements comprising precast prestressed and cast in situ concrete elements? 6M

   b) Design a precast Prestressed inverted T section to eb used in a composite slab of total depth 600mm and width 300mm. the composite slab is required to support an imposed load of $16kN/m^2$ over a span of 14m. the compressive stress in concrete at transfer & the tensile stress under working loads may be assumed to be 20 and 1MPa respectively. The loss ratio is 0.85. Determine the prestressing force required for the section? 6M

(OR)

9. a) A composite T-beam is made up of a pre tensioned rib 100X200mm, and a cast in situ slab 400mmX40mm thick having a Ec = $27kN/mm^{2.}$ If the differential shrinkage is $100X10^{-6}$ units, determine the shrinkage stresses developed in the precast and cast in situ units? 6M

   b) What is differential shrinkage and Explain the importance of composite sections? 6M

UNIT-V

10. A prestress concrete beam having a rectangular section 100mmX200mm deep spans over 2.76m. the beam is prestressed by a straight cable containing five wires of 5mm diameter stressed to $1200N/mm^2$ at an eccentricity of 37mm. assume the modular ratio is 6.2. If the Ec is $34kN/mm^2$ and modulus of rupture is $4N/mm^2$ calculate the maximum deflection of the beam at the following stages: 12M

    a) Prestress + self weight of the beam, Prestress + self weight + imposed load of 8.4kN/m, Cracking load, 1.46 times the working load, 1.8times of the working load.

    b) Estimate long term and short term deflection of beam under a sustained load of 1.8 times the working load. Assume the value of creep coefficient to be 2.

(OR)

11. a) Distinguish between the short term and long term deflection of PC beams? 6M

    b) Explain the short term deflection of uncracked members and explain with examples the effect of tendon profile on deflections of prestressed concrete members? 6M

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AR13

CODE: 13EE3020 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, April-2019

H.V.D.C. TRANSMISSION
(Electrical and Electronics Engineering)

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

PART-A

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

1. a) Application of DC Transmission
   b) Define pulse number
   c) What are the assumption are made to simplify the graetz circuit analysis
   d) Draw block diagram of power frequency control
   e) What is meant by DC Link
   f) Classify the solution methodology of AC –DC power flow
   g) How a DC breaker is characterised
   h) What are the functions of smoothing reactors
   i) What is meant by Arc through
   j) Define characteristics and non characteristic harmonics

PART-B

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

UNIT-I

2. a) Compare between AC and DC Transmission 6M
   b) Explain the modern trends in DC Transmission 6M

(OR)

3. a) Analyze the graetz circuit with overlap mode when two and three valve conduction mode 6M
   b) Explain the converter bridge characteristics in Inverter mode 6M

UNIT-II

4. a) Explain about System control Hierarchy 6M
   b) Write a short notes on power control 6M

(OR)

5. Explain about Equidistance pulse control and the different variation in EPC 12M

UNIT-III

6. a) Write a short notes on synchronous condensers. 6M
   b) Classify the solution methodology for AC – DC power flow and explain them 6M

(OR)

7. a) Write a short notes on DC Network 6M
   b) Compare between simultaneous and sequential methods of solution methodology for AC-DC power flow 6M

AR13

CODE: 13EE3020 **SET-2**

UNIT-IV

8.	a)	Explain the function of Smoothing Reactors	6M
	b)	What are the effects of corona in DC Line	6M
		(OR)	
9.		Write a short notes on a) Radio Interference b) Audible noise	12M

UNIT-V

10.	a)	Explain the adverse effects of Harmonics in Systems	4M
	b)	Derive an equation for harmonic voltage and current for a single tuned filter	8M
		(OR)	
11.		Give a detailed account of design aspects of following filters a) Single tuned filters b) double tuned filters	12M

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AR13

CODE: 13ME3021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.TECH II SEM SUPPLEMENTARY EXAMINATIONS, APRIL, 2019

OPERATIONS RESEARCH
(Mechanical Engineering)

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

PART-A

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

1. a) What are the limitations operations research
   b) What is degenerate solution of an LPP
   c) Describe the transportation table
   d) Describe Travelling salesman problem
   e) What is queuing problem?
   f) What is no passing rule in sequencing algorithm
   g) Define pure strategy
   h) What is replacement problem
   i) When we call a game is fair?
   j) Explain briefly about Critical path

PART-B

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

UNIT-I

2. Solve the following LPP by two Phase simplex method. **12M**

$$Max\ Z = 3x_1 - x_2 Subject\ to$$
$$2x_1 + x_2 \geq 2,\ x_1 + 3x_2 \leq 2\ ,x_2 \leq 4$$
$$and\ x_1 \geq 0,\ x_2 \geq 0$$

OR

3.(a) Discuss about the Use of Operation Research **6M**

(b) A paint manufacturer produces two types of paint, one type of standard quality (S) and the other of top quality (T). To make these paints, he needs two ingredients, the pigment and the resin. Standard quality paint requires 2 units of pigment and 3 units of resin for each unit made, and is sold at a profit of R1 per unit. Top quality paint requires 4 units of pigment and 2 units of resin for each unit made, and is sold at a profit of R1.50 per unit. He has stocks of 12 units of pigment, and 10 units of resin. Formulate the above problem as a linear programming problem to maximize his profit? **6M**

UNIT-II

4. Solve the assignment problem represented by the following matrix. **12M**

Job					
Typist	**P**	**Q**	**R**	**S**	**T**
A	85	75	65	125	75
B	90	78	66	132	78
C	75	66	57	114	69
D	80	72	60	120	72
E	76	64	56	112	68

(OR)

5. Find the optimum solution to the following transportation problem. **12M**

Distribution centre						
		D1	**D2**	**D3**	**D4**	**Supply**
Plant	**P1**	19	30	50	12	7
	P2	70	30	40	60	10
	P3	40	10	60	20	18
Requirement		5	8	7	15	

UNIT-III

6. Find the sequence that minimizes the total elapsed time (in hours) required to complete the following jobs on three machines M_1, M_2, M_3 in the order $M_1M_2M_3$, Also find the total elapsed time, idle time for each machine **12M**

	job					
Machine		1	2	3	4	5
	M_1	5	7	6	9	5
	M_2	2	1	4	5	3
	M_3	3	7	5	6	7

(OR)

7.(a) Describe the characteristics of queuing system. **4M**

(b) A self service store employs one cashier at its counter. An average of nine customers arrives at every 5 minutes while the cashier can serve 10 customers in 5 minutes. Assuming Poission distribution for arrival rate and exponential distribution for service rate find, (i) what is the probability that a person arriving at the store will have to wait? (ii) What is the average length of the queue that form from time to time? **8M**

UNIT-IV

8. A Manufacturer is offered two machines A and B. Machine A is priced at Rs. 5000 and running cost is estimated at Rs. 800 for each of the first five years, increasing by Rs. 200 per year in the sixth and subsequent years. Machine B, with the same capacity as A, costs Rs. 2500, but has running cost of Rs. 1200 per year for six years, thereafter increasing by Rs. 200 per year. If money is worth 10% per year, which machine should be purchased? (Assume that the machines will eventually be sold for scrap at a negligible price). **12M**

(OR)

9. Use dominance principle to reduce the following game to 2 X 2 games and hence **12M**

Solve it.

Player A \ Player B	B1	B2	B3	B4
A1	3	5	4	2
A2	5	6	2	4
A3	2	1	4	0
A4	3	3	5	2

UNIT-V

10(a) Briefly explain the following terms commonly used in Network of PERT /CPM (i) activity (ii) event (iii) path **6M**

(b) Briefly explain the four types of floats used in Network Analysis. **6M**

(OR)

11 A project schedule has the following characteristics **12M**

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

Construct the PERT network and find critical path and time duration of the project.

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AR13

CODE: 13EC3026 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, April-2019

OOPS THROUGH JAVA

(Electronics & Communication Engineering)

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

PART-A

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

1. a) List any four java buzzwords.
   b) Explain public static void main()?
   c) Does java support multiple inheritance? Why?
   d) Define a package?
   e) List any four built-in exceptions in java
   f) Differentiate between sleep() and wait() methods?
   g) Draw the life cycle of an applet.
   h) Difference between Private, Public and Protected?
   i) What is the difference between static and non-static variables?
   j) Define AWT?

PART-B

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

UNIT-I

2. a) What is data type? Explain Different data types in detail. 6M
   b) Write a program that will read an unspecified number of integers and will determine how many positive and negative values have been read. Your program ends when the input is 0. 6M

(OR)

3. a) Define an array? Explain one dimensional array with an example. 6M
   b) Write a program to find the row and column sum on a given matrix? 6M

UNIT-II

4. a) What is constructor? How is the use of constructor different from method? 6M
   b) Define recursion? Write a program to generate Fibonacci series using recursion? 6M

(OR)

5. a) Explain the uses of 'static' keyword with an example. 6M
   b) Write a program to swap two numbers using call by value? 6M

UNIT-III

6. a) Explain about the abstract class with an example program? 6M
   b) Explain about creating packages and accessing packages with an example. 6M

(OR)

7. a) Explain about dynamic method dispatch with an example program. 7M
   b) List out the differences between classes and interfaces. 5M

UNIT-IV

8. a) Define exception? Explain the benefits of exception handling 5M
   b) Write a java program that prints numbers from 20 to 10 line by line after every 5 seconds. 7M

(OR)

9. a) Distinguish between checked and unchecked exceptions. 6M
   b) What is Synchronization and why is important explain with an example program? 6M

UNIT-V

10. a) Explain life cycle of an applet with neat sketch. 6M
    b) Create an applet with buttons named as red, green and blue. If the user clicks any button on an applet, then change the background color of an applet. 6M

(OR)

11. a) What are the methods supported by KeyListener Interface? Explain in detail. 6M
    b) Explain the following AWT components with example 6M
       a) JBotton b) JCheck boxes c) JRadio buttons

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AR13

CODE: 13CS3015 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, April-2019

DATA WAREHOUSING AND DATA MINING

(Computer Science & Engineering)

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

PART-A

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

1. a) Define Data Sampling
   b) What are the applications on Association Analysis
   c) What is Concept Description
   d) Define computational complexity of Apriori Algorithm
   e) What are the factors to have a quality data
   f) State the clustering for utility
   g) Distinguish between Clustering And Classification
   h) Write some applications of Data warehousing
   i) What is Center-Based Approach
   j) List the Classification Algorithms in mining

PART-B

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

UNIT-I

2. a) Describe Attribute types and types of Data sets 6
   b) Demonstrate similarity measures and dissimilarity measures between data objects 6

(OR)

3. a) Explain Summary Statistics with an example 8
   b) Discuss the general characteristics of datasets 4

UNIT-II

4. a) Describe OLAP operations in Multi dimensional data model 6
   b) Differentiate Data warehousing and data mining 6

(OR)

5. a) Describe the implementation of Data warehousing 6
   b) Explain different approaches of Characterization 6

AR13

CODE: 13CS3015 **SET-2**

UNIT-III

6.	a)	Discuss Apriori Algorithm with frequent item set generation	6
	b)	Explain FP-Growth algorithm with a neat daigram	6
		(OR)	
7.	a)	Enumerate compact representation of frequent items sets using Rule Generation	6
	b)	Explain candidate generation and pruning with example	6

UNIT-IV

8.	a)	Explain Baysian classificatiom with example	6
	b)	Explain Classification by Back Propagation	6
		(OR)	
9.	a)	Explain the Prediction and Error measures for classification	6
	b)	Discuss the issues regarding classification and Prediction	6

UNIT-V

10.	a)	Explain different types of Clusters in mining	6
	b)	Differntiate Hierarchical and Partitional clustering	6
		(OR)	
11.	a)	Define proximity between clusters using agglomerative hierarchical clustering	6
	b)	Demonstrate the optimization problem in K-means	6

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