AR13

CODE:13CE3019 **SET- 1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

WATER RESOURCE ENGINEERING
(Civil Engineering)

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

PART-A

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

1. a) What is run-off coefficient?
   b) What are the factors affecting infiltration?
   c) What are the limitations of the unit hydrograph?
   d) What is consumptive use?
   e) What is crop rotation?
   f) What are rabi and kharif crops?
   g) What is Gross Command Area
   h) What is soil moisture tension?
   i) Define reservoir routing?
   i) What is ridge canal?

PART-B

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

UNIT-1

2. (a) List the different types of Rain gauges? Explain any one automatic rain gauge with neat sketch? (6m)
   (b) Describe various methods of estimating average rainfall over a basin? (6m)

(OR)

3. (a) Explain Hydrological cycle with a neat sketch? (6m)
   (b) Explain the factors affecting the runoff from a catchment area? (6m)

UNIT-II

4. (a) What is Unit Hydrograph? How is it constructed? (8m)
   (b) Explain about IUH? (4m)

(OR)

5. (a) Explain computation of storm water flow by rational method (4m)
   (b) What is flood routing? Explain the graphical method of flood routing. (8m)

UNIT-III

6. (a) Derive an expression for discharge from a well in unconfined aquifer. (6m)
   (b) Describe the benefits and ill effects of irrigation? (6m)

(OR)

7. (a) What is Drip Irrigation and what are the advantages of drip irrigation? (6m)
   (b) Discuss the standards of irrigation water? (6m)

UNIT-IV

8. (a) What is consumptive use? How it is estimated? (6m)
   (b) Explain the terms duty and delta. Derive an expression between duty and delta. (6m)

(OR)

9.(a) Discuss about irrigation efficiencies. (6m)
   (b)What are the factors affecting the duty? How can duty be improved? (6m)

UNIT-V

10. Explain Lacey's theory in detail. Why Lacey's concept is superior to that of Kennedy's. (12m)

(OR)

11. (a) What is canal lining? What are its advantages? (6m)
    (b) Derive an expression for balancing depth of cutting and filling? (6m)

AR13

CODE: 13EE3020 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

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) Define overlap angle
   b) What is meant by arc back
   c) How uncharacteristic harmonics are generated during the operation of a converter?
   d) Why converters consume reactive power during the operation.
   e) What is meant by telephonic interference?
   f) What is the function of DC smoothing reactor.
   g) What are the methods of reducing harmonics.
   h) Explain about VA rating of valve?
   i) What is meant by break even distance?
   j) Does overlap is boon or bane justify in the converter operation

PART-B

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

UNIT-I

2. Compare both AC and DC transmission based on (i)Economics of power transmission (ii) Technical performance (iii) Reliability — 12

(OR)

3. Explain the analysis of three phase two way (or) three phase bridge rectifier with neat circuit diagram and voltage and current waveforms. — 12

UNIT-II

4. What are the main objectives of control of HVDC system and Write basic principles of DC link control. 12

(OR)

5. Explain about the two basic firing schemes in HVDC system and list out the drawbacks of EPC scheme. 12

UNIT-III

6. a) Explain about the reactive power requirement in steady state for conventional control strategy 6
   b) Discuss the various sources of reactive power for HVDC converters. 6

(OR)

7. a) Explain about the DC load flow problem in detail 6
   b) Explain about the reactive power requirement in steady state for alternate control strategy 6

UNIT-IV

8. Explain the over current and over voltage protection of HVDC system 12

(OR)

9. Explain the various types of converter faults like arc back, arc through, misfire and current extinction. 12

UNIT-V

10. a) Give a detailed account of design aspects of single tuned filters. 8
    b) Mention the problems created by harmonics in HVDC systems 4

(OR)

11. a) Explain about the effect of firing angle errors and unbalanced voltages on harmonics 4
    b) Give a detailed account of design aspects of double tuned filters. 8

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AR13

CODE: 13ME3021 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

OPERATIONS RESEARCH

(Mechanical Engineering)

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

PART-A

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

1. a) What is modelling in OR?
   b) Define surplus and slack variables.
   c) What is unbalanced transportation problem?
   d) What is a travelling salesman problem?
   e) State different sequencing rules.
   f) What is balking?
   g) What are the situations which make the replacement of items necessary?
   h) What is meant by pure strategy in the game theory?
   i) Define critical path in a network.
   j) What is Fulkerson's rule?

PART-B

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

UNIT-I

2. a) Discuss in brief the various techniques used in OR.
   b) Model building is the essence of OR approach. Discuss.

(OR)

3. Vitamins V and W are found in two different foods F1 & F2. One unit of food F1 contains 2 units of vitamin V and 5 units of vitamin W. One unit of food F2 contains 4 units of vitamin V and 2 units of vitamin W. One unit of food F1 and F2 cost Rs.30/- and 25/- respectively. The minimum daily requirements of vitamin V and W is 40 and 50 units respectively. Assuming that anything in excess of daily minimum requirement of vitamin V and W is not harmful, find out the optimal mixture of food F1 and F2 at the minimum cost which meets the daily minimum requirement of vitamins V and W. Formulate this as LPP and solve using graphical method.

UNIT-II

4. Find the optimal solution to the following transportation problem

	D_1	D_2	D_3	D_4	Supply
O_1	1	2	3	4	6
O_2	4	3	2	0	8
O_3	0	2	2	1	10
Demand	4	6	8	6	

(OR)

5. The captain of a cricket team has to allot five middle batting positions to five batsmen. The average runs scored by each batsman at these positions are as follows:

Batsman	Batting position				
	I	II	III	IV	V
P	40	40	35	25	50
Q	42	30	16	25	27
R	50	48	40	60	50
S	20	19	20	18	25
T	58	60	59	55	53

Find the assignment of batsmen to positions which would give the maximum number of runs.

UNIT-III

6. Six jobs go first on machine A and then over machine B. The order of the completion of jobs has no significance. The following table gives the machine times in hours for six jobs and the two machines.

	job						
Machining times		1	2	3	4	5	6
	A	5	9	4	7	8	6
	B	7	4	8	3	9	5

Determine the sequence for six jobs that will minimize the total elapsed time.

(OR)

7. a) Explain briefly the characteristics of a queuing system.

   b) A TV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minutes. If he repairs sets in the order in which they come in, and if the arrival of sets is approximately Poison with an average rate of 10 per 8 hour day, what is repairman's expected idle time each day? How many jobs are ahead of the average set just brought in?

UNIT-IV

8. A machine owner finds from his past records that the costs per year of maintaining a machine whose purchase price is Rs.6000 are as given below:

year	1	2	3	4	5	6	7	8
Maintenance cost in Rs.	1000	1200	1400	1800	2300	2800	3400	4000
Resale price in Rs.	3000	1500	750	375	200	200	200	200

Determine at what age is a replacement due?

(OR)

9. a) Define: (a) Pure Strategy; (b) Mixed strategy; (c) Zero sum Game; (d) Non-Zero sum Game; (e) Pay-off; (f) Saddle Point

   b) Solve the following game by dominance method:

		B					
	1	4	2	0	2	1	1
	2	4	3	1	3	2	2
A	3	4	3	7	-5	1	2
	4	4	3	4	-1	2	2
	5	4	3	2	-2	2	2

UNIT-V

10. A project consists of nine jobs (A, B, C …I) with the following precedence relations and time estimates.

Job	: A	B	C	D	E	F	G	H	I
Predecessor	: -	-	A,B	A,B	B	D,E	C,F	D,E	G,H
Time (Days)	: 15	10	10	10	5	5	18	9	15

(i) Draw the project network ; (ii) identify the critical path

(OR)

11. Determine the least cost schedule for the following project using critical path method

Activity	Normal time (days)	Crash time (days)	Cost slope (Rs./days)
1-2	5	3	3
2-3	4	2	2
3-4	6	3	4
3-5	4	1	3
4-5	3	1	6

Overhead cost per day is Rs.6.

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CODE: 13EC3022 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

TV AND SATELLITE COMMUNICATIONS
(Electronics & Communication Engineering)

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

PART-A

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

1. a) Define Aspect Ratio.
   b) Draw channel bandwidth for AM(DSB-SC)
   c) Draw composit video signal.
   d) Give the percentage of primary colours in luminance signal for white colour.
   e) Purpose of deflection system in TV
   f) Define AGC?
   g) What is satellite? Mention types of satellites
   h) What do you mean by Apogee?
   i) Define Geostationary orbit.
   j) State Kepler's Second Law.

PART-B

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

UNIT-I

2. a) Draw and explain Composite Video Signal? **8M**
   b) Write short notes on Aspect Ratio and Image continuity. **4M**

(OR)

3. a) Why the negative modulation is used for TV signal? **6M**
   b) Draw and explain the operation of TV transmitter? **6M**

UNIT-II

4.	a)	Write short notes on additive colour mixing.	**6M**
	b)	Explain the encoding of colour difference signals?	**6M**
		(OR)	
5.		Draw and explain the operation of monochrome picture tube?	**12M**

UNIT-III

6.		Draw and explain the operation of PAL Decoder?	**12M**
		(OR)	
7.	a)	Write short notes on RF tuner of TV?	**6M**
	b)	How the sync pulses are separated in TV receiver?	**6M**

UNIT-IV

8.		Explain the Orbital Perturbations in detail	**12M**
		(OR)	
9.	a)	Describe the steps involved in launching a satellite.	**6M**
	b)	What are look angles? How do you determine? Explain with the help of neat diagrams.	**6M**

UNIT-V

10.	a)	Derive the Satellite Link design equation	**6 M**
	b)	Explain how altitude and orbit control is achieved from an earth station	**6 M**
		(OR)	
11.	a)	With the help of a neat diagram, explain the functions of TTC&M system.	**6M**
	b)	Define a Geostationary satellite and explain the frequency considerations for the same.	**6M**

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AR13

CODE: 13EC3023 SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular Examinations, April, 2018

BIO – MEDICAL SIGNAL PROCESSING
(Electronics & Communication Engineering)

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

PART-A

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

1. a) What is meant by action potential?
   b) Expand AZTEC
   c) What is meant by polishing?
   d) What is meant by Huffman coding?
   e) What is meant by vector quantization?
   f) What are the different points obtained in ECG?
   g) What is meant by spikes
   h) What are transducers with digital output?
   i) What is meant by gamma wave?
   j) What is meant by trend removal?

PART-B

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

UNIT-I

2. a) Explain TP data reduction algorithm with the help of flow chart 6M
   b) After applying the AZTEC algorithm to a signal, the saved data array is {2, 50, -4, 30, -6, 50, -6, 30, -4, 50, 2, 50}. 6M
      (i) Draw the waveform that AZTEC would reconstruct from these data.
      (ii) What is the amount of data reduction?
      (iii) What is the peak-to-peak amplitude of a signal reconstructed from these data?

(OR)

3. a) What is data reduction algorithm? Explain Lossy and lossless data reduction algorithms. 6M
   b) Explain CORTES data reduction algorithm with the help of flow chart 6M

UNIT-II

4. a) Discuss about Pre-processing in Cardiological signal processing 6M
   b) Explain Rhythm analysis 6M

(OR)

5. What are the methods for the analysis of heart rate variability 12M

UNIT-III

6. Briefly explain Auto regressive modeling of EEG 12M

(OR)

7. Discuss about least squares and polynomial modelling 12M

UNIT-IV

8. What are advantages of adaptive filters ? Explain Adaptive noise cancelling with the LMS adaptation algorithm 12M

(OR)

9. Discuss about Noise cancelling method to enhance ECG monitoring 12M

UNIT-V

10. Explain Prony's method based on the least squares estimate 12M

(OR)

11. Explain the analysis of evoked potentials. 12M

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AR13

SUB CODE:13EC3026 **SET-1**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular & Supplementary Examinations, April, 2018
OOPS THROUGH JAVA
(Electronics & Communication Engineering)

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

PART-A

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

1. a) What is static variable?
   b) Why multiple inheritance is not supported in java?
   c) Difference between method Overloading and Overriding.
   d) What is the difference between abstraction and encapsulation?
   e) What is the base class for Error and Exception?
   f) What is nested class?
   g) What is serialization?
   h) What are wrapper classes?
   i) What is anonymous inner class?
   j) Can we overload main method?

PART-B

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

UNIT-I

2. a) Explain about the OOP concepts **6**
   b) Explain different data types defined in java **6**

(OR)

3. a) Explain creation, compilation and running of simple java program **6**
   b) What is an array? How to represent an array in Java? Explain **6**

UNIT-II

4. a) Define class and object with examples **6**
   b) What is method overloading? Explain it example. **6**

(OR)

5. a) Explain the concept of scope and life time of a variable. **6**
   b) Write a short note on 'this' keyword with suitable example **6**

UNIT-III

6. a) What is multiple inheritance? Explain how it can be implemented in Java with the help of an example. **6**
   b) Explain BufferedReader and BufferedWriter classes from IO package with an example. **6**

(OR)

7. a) How to create interfaces? When they are implemented and extended? Explain with examples **6**
   b) Explain about the importance of super and final keywords **6**

AR13

SUB CODE:13EC3026 **SET-1**

UNIT-IV

8.	a)	Explain the working of Java errors and exception detecting and correcting mechanism.	**6**
	b)	Create a try block that will generate three types of exception and also create necessary catch blocks to catch these exceptions and handle these. You should also use finally statement in your block.	**6**
		(OR)	
9.	a)	Explain about the life cycle of threads..	**6**
	b)	Write a program to print even numbers in one thread and odd numbers in another thread	**6**

UNIT-V

10.	a)	Explain the procedure for creating and deploying an applet.	**6**
	b)	Write a program to create a simple banner applet.	**6**
		(OR)	
11.	a)	Discuss various event sources and event listeners.	**6**
	b)	Write a java program to handle mouse events	**6**

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AR13

CODE: 13CS3019 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI

(AUTONOMOUS)

III B.Tech II Semester Regular & Supplementary Examinations, April, 2018

UNIX PROGRAMMING

(Computer Science & Engineering)

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

PART-A

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

1. a) Describe the file handling utilities in brief.
   b) How to display contents of a file?
   c) What is the difference between shell and kernel?
   d) List process execution meta-characters of shell
   e) What do you mean by command substitution?
   f) How can you identify the invisible characters in a file
   g) Define zombie process.
   h) What do you mean by daemon?
   i) How can we suspend background and foreground job
   j) Write operations provided in IPC?

PART-B

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

UNIT-I

2. a) Explain the file permission of Unix in detail. 7
   b) Explain the following commands. 5
   i) tail ii) sort iii) fgrep

(OR)

3. a) Write a shell program to implement head command? 6
   b) Discuss about networking commands in Unix. 6

UNIT-II

4. a) Illustrate about pipes and input Redirection, output redirection with examples. 6
   b) Write a shell script that accepts two integers as its arguments and computes the value of first number raised to the power of the second number. 6

(OR)

5. a) Explain shell/Environment customization in detail. 6
   b) Write a short note on 6
   (i)here document (ii) shell meta characters.

UNIT-III

6. a) Explain the following System Call with syntax 6
   i) create ii) open

   b) Explain the following Directory API with example 6
   i) closedir ii) umask

(OR)

7. a) Create a script file called fproperties that reads a filename entered and outputs its properties. 4
   b) Explain about standard i/o fuctions -fopen, fclose,fflush, fseek in brief 8

UNIT-IV

8. a) Explain following functions? 6
   (i) pause (ii) abort (iii) sleep
   b) What is a Process? Describe the structure of a process 6

(OR)

9. a) Explain about process identifiers. 6
   b) Write short notes on interrupted system Calls 6

UNIT-V

10. a) What is shared memory? Explain the process of creating shared memory that is shared by two processes. 6
    b) Discuss about applications of IPC. 6

(OR)

11. a) Explain about message queues used for inter process communication 6
    b) Write about unreliable signals 6

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AR13

CODE : 13IT3004 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Regular & Supplementary Examinations, April, 2018
DESIGN AND ANALYSIS OF ALGORITHMS
(Information Technology)

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

PART-A

ANSWER ALL THE QUESTIONS **[10 X 1=10]**

1. a) Define program verification and validation?
   b) State towers of Hanoi problem?
   c) What is the total number of nodes in a 8-queen state space tree?
   d) What is the control abstraction?
   e) What is the difference between greedy and dynamic programming?
   f) Define live node and E-node?
   g) Define satisfiability?
   h) State Dominance rule?
   i) What are the advantages and disadvantages of randomized algorithms?
   j) Define articulation point and connected components?

PART-B

Answer one question from each **[5 X 12=60]**

UNIT-I

2. a) What do you mean by performance analysis of an algorithm? Explain. **6M**
   b) Explain the properties of strongly connected components? **6M**

(OR)

3. Explain various asymptotic notations used to represent complexity of algorithms with an example? **12M**

UNIT-II

4. a) Explain the general method of divide and conquer. Solve the recursive relation using substitution method: **5M**

$$T(n)=\begin{cases} 2 & \text{if } n=1 \\ 2T(n/2)+n & \text{if } n>1 \end{cases}$$

   b) Write merge sort algorithm and develop computing time of a recursive relation to find T(n) **7M**

(OR)

5. a) What is knapsack problem? Find an optimal solution to the knapsack instance n=7 & m=15,(p1 to p7)={10,5,15,7,6,18,3} and (w1 to w7)={2,3,5,7,1,4,1} **6M**
   b) What is a single source shortest path problem? Give greedy algorithm to generate shortest paths? **6M**

UNIT-III

6. a) Solve the Travelling salesperson problem as shown in cost matrix for optimal tour using dynamic programming **8M**

0	8	16	18
10	0	19	20
9	31	0	12
16	12	7	0

   b) Explain the control abstraction of dynamic programming? **4M**

(OR)

7. Design a three stage system with devices D1, D2,D3. The costs are $30,$15,$20 respectively. The cost of the system is to be no more than $105.The reliability of each device type is 0.9, 0.8, 0.5 respectively. **12M**

UNIT-IV

8. a) Write an recursive backtracking algorithm for Hamiltonian cycles problem? **6M**
   b) Describe the Graph coloring problem & its time complexity? **6M**

(OR)

9. a) Explain the Extended Euclidean algorithm with an example? **6M**
   b) Explain the Langrage interpolation algorithm? **6M**

UNIT-V

10. a) What is a bounding function? Explain how these bounds are useful in Brach & Bound methods? **6M**
    b) Write comparative note on solving the knapsack problem by **6M**
       i) LCBB ii) FIFOBB

(OR)

11. a). Write short notes on classes NP-hard and NP-complete? **6M**
    b). State and Explain cook's theorem. 6**M**

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