

AR13

CODE: 13CE3019

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular / Supplementary Examinations, April, 2017

WATER RESOURCES ENGINEERING
(Civil Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What are the components of Run-off?
b) What is stream gauging?
c) Write down the rational formula for computation of design discharge.
d) What is the use of Gumbel's method?
e) Distinguish between confined and unconfined aquifers.
f) What are the ill-effects of irrigation?
g) Differentiate duty and delta
h) What are the advantages of Sprinkler irrigation?
i) What are the types of canals based on discharge and relative importance?
j) Define a Regime Channel as per Lacey's theory.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Explain briefly about Isohyetal method (3)
b) What are the methods of computing run-off from a catchment area? Give various formulae stating clearly the area for which each is applicable. (9)
- (OR)**
3. a) What do you mean by Separation of base flow? (3)
b) Explain clearly various factors affecting Infiltration capacity (9)

UNIT-II

4. a) What is a Synthetic Unit Hydrograph? (3)
b) The ordinates of a 3-hr unit hydrograph are given below. Derive the flood hydrograph due to a 3-hr storm, producing a rainfall excess (net rain) of 5 cm. The base flow is estimated to be 5 cumecs and may be assumed constant. (9)

Time (hr)	0	3	6	9	12	15	18	21	24	27
Ordinates of Unit Hydrograph (cumecs)	0	2	5	8.2	12.3	9.6	4.8	2.3	1.1	0

(OR)

5. a) What is flood routing? (3)
b) Write any three empirical formulae for estimation of Flood discharge and explain the notation (9)

UNIT-III

6. a) Define i) Specific yield ii) Storage coefficient (3)
b) Design a tube well for the following data : (9)
 i) Yield required =0.25 cumec
 ii) Thickness of confined aquifer =25 m
 iii) Radius of circle of influence =300m
 iv) Permeability coefficient =75 m/day
 v) Drawdown =7 m

(OR)

7. a) What are the different types of irrigation? (3)
b) Explain with neat sketches about various types of Flow Irrigation (9)

UNIT-IV

8. a) Define: i) Crop period ii) Base period (3)
b) Explain clearly various factors which affect Duty. What steps can be taken to improve the duty? (9)

(OR)

9. a) Define: i) Water conveyance efficiency ii) Water Application efficiency (3)
b) Define consumptive use. What are the methods for the estimation of consumptive use? Write the relation between duty and delta in CGS system. (9)

UNIT-V

10. a) Define: i) side slope canal ii) inundation canal (3)
b) Explain clearly the design of canal by Kennedy's theory. What are its drawbacks? (9)

(OR)

11. a) What is balancing depth of cutting? (3)
b) The slope of a channel in alluvial soil is 1/4500. Find the channel section and the maximum discharge which can be allowed to flow in it. Take Lacey's silt factor $f=1$. The channel is of trapezoidal section, having side slopes $\frac{1}{2}:1$ (9)

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CODE: 13EE3019

SET-1

**ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)**

III B.Tech II Semester Supplementary Examinations, April, 2017

**UNIX & SHELL PROGRAMMING
(ELECTIVE – I)
(Electrical and Electronics Engineering)**

Time: 3 Hours

Max Marks: 70

PART- A

ANSWER ALL QUESTIONS

[1 X 10 = 10M]

1. a) Explain wc command with an example.
- b) Write notes on Operating system services.
- c) What is ftp?
- d) Write about awk command
- e) What is output redirection?
- f) Difference between local and predefined variables.
- g) Write about eval command.
- h) Define argument validation.
- i) Define On-Off variables.
- j) Write different features of kernel shell.

PART- B

Answer one question from each unit

[5 x 12 = 60 M]

UNIT - I

2. a) Explain about salient features of Unix operating system
 - b) Compare Internal and External Commands in UNIX with suitable examples. Explain why cd command cannot be an external command.
- (OR)
3. a) What are the options of ls command?
 - b) Explain the architecture of Unix operating system

UNIT – II

4. a) Which command is used for listing file attributes? Explain briefly the significance of each field of the output.
 - b) Briefly explain the different ways of setting file permissions.
- (OR)
5. a) Explain the command PS. Discuss different options used by PS.
 - b) Write about different text processing utilities.

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UNIT - III

- 6. a) Explain pipes with examples
- b) Describe the sort filter and illustrate its usage with -k, -u, -n, -r and -c options.

(OR)

- 7. a) Explain about translating characters and count characters with examples.
- b) What is a job? Describe different job control facilities with suitable examples.

UNIT - IV

- 8. a) What are environment variables in korn shell? Explain any three
- b) Discuss about Command history and command execution process.

(OR)

- 9. a) Explain about debugging shell scripts with examples
- b) Write notes on special parameters and variables in korn shell programming.

UNIT - V

- 10. a) Explain about startup and shutdown scripts in C shell with examples
- b) Discuss about selection and repetition in C shell with examples.

(OR)

- 11. a) Discuss basic concepts of C shell and its features.
- b) Write about changing position parameters in C shell.

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SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular Examinations, April, 2017

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) State the advantages in DC transmission?
b) What is meant by neglecting overlap in graetz in bridge circuit
c) What is equidistant pulse control?
d) Draw backs of constant current control (CCC).
e) Why is control of reactive power necessary during transients?
f) What are the different types of SVS systems?
g) Write the effects of unbalanced voltages.
h) What are the various faults exists in converter station?
i) Mention the performance criteria for selection of harmonic filter
j) State the ill effects of harmonics injected into the AC line?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) What are the advantages and disadvantages of HVDC transmission over HVAC? **6M**
b) Draw the schematic circuit diagram of a 6 pulse graetz's circuit and explain its principle of operation **6M**
- (OR)
3. a) Explain in detail about the planning of hvdc transmission? **6M**
b) For a fixed power transmission explain how the economic choice of voltage level selected in dc transmission system? **6M**

UNIT-II

4. a) With block diagram, discuss the principle of operation of basic power controller? **6M**
b) Explain in detail about the converter control characteristics of hvdc system? **6M**
- (OR)
5. a) Discuss in detail the effect of source inductance on hvdc system **6M**
b) Explain the effect of overlap angle on the performance of converter circuit **6M**

UNIT-III

6. Discuss about synchronous condensers and static VAR system for reactive power compensation in HVDC system. **12M**

(OR)

7. a) Explain the sequential method for AC-DC power flow. **6M**
b) Derive the mathematical model of DC converter and DC network. **6M**

UNIT-IV

8. a) Explain the necessity of smoothing reactor in a DC line. **6M**
b) Discuss the operation of surge arrestors for overvoltage protection of HVDC systems. **6M**

(OR)

9. Write a short note on **12M**
i. Over voltages on the HVDC system
ii. DC circuit breakers
iii. Smoothing reactors

UNIT-V

10. What are the filter configurations that are employed for HVDC converter station? **12M**
Give design aspect of one such filter.

(OR)

11. a) Discuss about various types of AC filters which will be employed for a HVDC link. **6M**
b) What are the adverse effects of harmonics on the operation of a d.c. link. **6M**

Time: 3 Hours

Max. Marks: 70

PART -A

ANSWER ALL QUESTIONS

[1 x 10=10Marks]

- 1 a) Define model in Operations Research
- b) How to identify Degeneracy in simplex method
- c) Define Unbalanced transportation Problem
- d) What is the principle of solving the Assignment problem
- e) What do you mean by slack variable?
- f) Define Renege with respect to Queuing theory
- g) Define Salvage value
- h) What is Minimax and Maximin principle
- i) What is the purpose of Dummy activity
- j) Define cost slope.

PART -B

Answer one question from each unit

[5 x 12=60Marks]

UNIT I

2. a) Explain the following with respect to graphical solution. 6M
 - i. Unbounded solution
 - ii. Infeasible solution
 - iii. Multiple optimum solution

- b) Solve graphically 6M
 Max. $Z = 10x_1 + 20x_2$
 Sub. to

$$2x_1 + 4x_2 \geq 16$$

$$x_1 + 5x_2 \geq 15$$

$$x_1, x_2 \geq 0$$

(OR)

3. Solve 12M

$$\text{Max } Z = 4x_1 - 2x_2$$

$$\text{Sub to } x_1 + x_2 \leq 14$$

$$3x_1 + 2x_2 \geq 36$$

$$2x_1 + x_2 \leq 24$$

$$x_1, x_2 \geq 0$$

UNIT II

4. Solve the transportation problem 12M

Supply

42	27	24	35
46	37	32	32
40	40	30	32

200

60

140

Demand 80 40 120 60

(OR)

5. Solve the Assignment Problem

12M

9	11	15	10	11
12	9	--	10	9
--	11	14	11	7
14	8	12	7	8

UNIT III

6. You are given the following data regarding the processing times of some jobs on three machines I II III. The order of processing is I-II-III. Determine the sequence that minimizes the total elapsed time (T) required to complete the jobs. Also find the idle time of I, II and III over the cycle time.

12M

Job	A	B	C	D	E	F	G
I	3	8	7	4	9	8	7
II	4	3	2	5	1	4	3
III	6	7	5	11	5	6	12

(OR)

- 7.a) Discuss in detail about the various elements of queuing system.

6M

- b) Customers arrive at sales counter managed by a single person according to Poisson process with a mean rate of 20/hr. The time requirement to serve a customer has an exponential distribution with a mean of 100sec. Find the average waiting time of customer in queue and in system.

6M

UNIT IV

8. A firm is using a machine whose purchase price is Rs 13,000/-. The installation charges amount to Rs. 3600/- and the machine has a scrap value of only Rs. 1600/- because the firm has a monopoly of this type of work. The maintenance cost in various years is given in the following table.

Year	1	2	3	4	5	6	7	8	9
Cost(Rs.)	250	750	1000	1500	2100	2900	4000	4800	6000

The firm wants to determine after how many years the machine should be replaced on economic considerations, assuming that the machine replacement can be done only at the year ends. 12M

(OR)

9. Reduce the following two-person zero-sum game to 2×2 order, and obtain the optimal strategies for each player and the value of the game. 12M

		B's Strategy			
		b1	b2	b3	b4
A's Strategy	a1	3	2	4	0
	a2	3	4	2	4
	a3	4	2	4	0
	a4	0	4	0	8

UNIT V

10. A project Schedule has the following characteristics. Find Critical Path and Project duration and also tabulate all the float values. 12M

Activity	1-2	1-4	1-5	2-3	2-5	2-6	3-6	4-6	4-7	5-6	5-7	6-7
Duration	10	1	5	9	8	10	4	5	4	7	3	8

(OR)

11. The cost of completing the eight activities in normal time is Rs.6500/-. The contract includes a penalty clause of Rs.100/- per day over 17 days. The overhead cost per day is Rs. 160/. 12M

Activity	Normal Time	Shortest Time	Cost slope
1-2	6	4	80
1-3	8	4	90
1-4	5	3	30
2-4	3	3	---
2-5	5	3	40
3-6	12	8	200
4-6	8	5	50
5-6	6	6	---

Calculate lowest cost and associated time.

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CODE:13EC3022

SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Supplementary Examinations, April, 2017

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) List the Horizontal sync details.
b) Draw channel bandwidth for AM(DSB-SC)
c) List the types of camera tubes?
d) Give the percentage of primary colours in luminance signal for white colour.
e) Draw diagram of sync separator?
f) Define AGC?
g) Mention the various types of satellite orbits.
h) What do you mean by Apogee?
i) What are the features of LEO?
j) State Kepler's Second Law.

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) Draw and explain Composit Video Signal? **8M**
b) Write short notes on Aspect Ratio and Image continuity. **4M**
(OR)
3. a) Write the differences between +ve and -ve modulation techniques. **6M**
b) Draw and explain channel bandwidth of TV? **6M**

UNIT-II

4. a) Explain the camera signal generation techniques. **6M**
b) Draw and explain the operation of vidicon camera tube? **6M**
(OR)
5. a) Write short notes on additive colour mixing. **6M**
b) Explain the encoding of colour difference signals? **6M**

UNIT-III

6. Draw and explain the operation of PAL Decoder? **12M**
(OR)
7. a) Explain the operation of video amplifier in TV receiver? **6M**
b) Explain the operation of sound section in TV receiver? **6M**

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UNIT-IV

8. a) Write about the future trends of Satellite Communications **6 M**
b) Define Look angle and explain Look angle determination in detail **6 M**
(OR)
9. Explain the Orbital Perturbations in detail **12 M**

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) Explain the Tracking, telemetry and Command sub system of a spacecraft. **6 M**
b) Compare LEO and GEO Satellites. **6 M**

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SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular / Supplementary Examinations, April, 2017
OOPS THROUGH JAVA
(Electronics and Communication Engineering)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) What is difference between static (class) method and instance method?
b) What is Runtime Polymorphism?
c) What is the difference between static binding and dynamic binding?
d) What is package?
e) What is difference between throw and throws?
f) Is there any difference between nested classes and inner classes?
g) What is the purpose of finalize() method?
h) What is Enum in Java?
i) What is default constructor?
j) What is difference between path and class path variables?

PART-B

Answer one question from each unit

[5x12=60M]

UNIT-I

2. a) How OOP is different from Structured programming? Explain. 6
b) What is abstraction? Explain about abstraction mechanisms 6
- (OR)
3. a) Explain different control statements in java with example 6
b) Explain benefits and applications of OOP. 6

UNIT-II

4. a) What is constructor? Explain different types of constructors in Java 8
b) What is garbage collection? Explain with an example. 4
- (OR)
5. a) Explain the parameter passing mechanisms in java. Give examples for it. 6
b) Define recursion. Write a program to find the factorial for a given integer using recursive function. 6

UNIT-III

6. a) Give the general form of the import statement. Illustrate a Java program that creates a package and uses it. 6
b) Define abstract class and interface. What are the differences between them? Explain with suitable examples 6
- (OR)
7. a) How the keyword 'final' can be used to prevent overriding? Explain with an example 6
b) Write a simple program to demonstrate the order to initialization of the base classes and derived classes. 6

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SET-2

UNIT-IV

8. a) Distinguish between checked and unchecked exceptions. **6**
b) Write briefly on multithreaded programming and inter thread communication in java. **6**

(OR)

9. a) What is thread? Explain the life cycle of thread. **6**
b) What is a Package? Explain the procedure for creating and importing the packages in java. **6**

UNIT-V

10. a) Differentiate between JApplet, JFrame and JComponent **6**
b) Explain about applet life cycle **6**

(OR)

11. a) Explain about the keyboard handling events. **6**
b) Write a short note on a) Radio Button b) Tabbed Panes **6**

**UNIX Programming
(Computer Science Engineering)****Time: 3 Hours****Max Marks: 70****PART-A****ANSWER ALL QUESTIONS****[1 x 10 = 10 M]**

1.
 - a) Difference between tail and head commands?
 - b) What is Shell ?.
 - c) Define Shell Script
 - d) List out the Low level file access functions
 - e) Write about chdir Command
 - f) Explain in detail about umask function.
 - g) Short note on process structure?
 - h) What is Zombie process?
 - i) Difference between Unidirectional and Bidirectional pipe
 - j) What is Message Queues?

PART B**Answer one question from each****[5 x 12=60M]****UNIT – I**

2.
 - (a) Discuss about Functionality and working environment of Vi editor. [6 M]
 - (b) Explain the different forms of grep command with suitable example. [6 M]
- (OR)
3.
 - (a) Explain any five file handling utility commands with its syntax and example. [6 M]
 - (b) Explain the following commands: i) join ii). unlink iii). finger
iv). Uniq v) sort vi) who [6 M]

UNIT – II

4.
 - (a) Give brief description about the here documents. [6 M]
 - (b) Write a detailed note shell Meta characters. [6 M]
- (OR)

5. Write a short note on control structures with an example [12 M]

UNIT - III

6.
 - (a) Explain any three standard I/O function calls.. [6 M]
 - (b) Draw and explain the UNIX file structure in detail [6 M]
- (OR)

7.
 - (a) Discuss in detail about the various directory handling system calls [6 M]
 - (b) Explain getchar and putchar system calls [6 M]

UNIT – IV

8.
 - (a). Explain the following signals: i). kill ii) pause iii). Raise [6 M]
 - (b) Write short notes on interrupted system calls. [6 M]
- (OR)

9.
 - (a) Distinguish between reliable and unreliable signals. [6 M]
 - (b) Explain the alarm and pause functions [6 M]

UNIT – V

10. Explain in detail about streams, messages and namespaces with respect to UNIX IPC [12 M]
- (OR)

11. Explain with a program, the concept of file locking with semaphores [12 M]

AR13

CODE: 13IT3004

SET-2

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)

III B.Tech II Semester Regular / Supplementary Examinations, April, 2017

DESIGN AND ANALYSIS OF ALGORITHMS (Information Technology)

Time: 3 Hours

Max Marks: 70

PART-A

ANSWER ALL QUESTIONS

[1 x 10 = 10 M]

1. a) List the asymptotic notations.
b) What is Time complexity of an algorithm?
c) What are the disjoint set operations?
d) Distinguish DFS and BFS.
e) Explain dynamic programming approach.
f) Define state space tree.
g) What is a Hamiltonian cycle?
h) State the graph coloring problem.
i) What is LC Branch and Bound?
j) Define NP complete problem.

PART-B

Answer one question from each unit

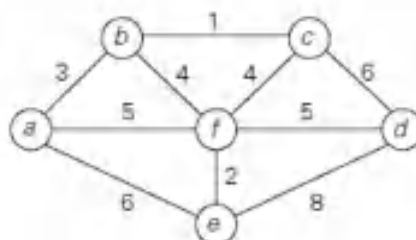
[5x12=60M]

UNIT-I

2. a) Describe the fundamental steps involved in algorithm design. 6M
b) Show that $f(n)+g(n)=O(n^2)$ where $f(n)=3n^2-n+4$ and $g(n)=n\log n+5$ 6M
- (OR)
3. a) What is biconnected graph? How to determine biconnected components of graph? 6M
b) Define Articulation point. Illustrate with an example. 6M

UNIT-II

4. a) How quick sort sorts the following sequences of keys in ascending order. 6M
22,55,33,11,99,77,55,66,54,21,32.
b) Write a pseudo code for a recursive version of a binary search. 6M
- (OR)
5. a) Apply Kruskal's algorithm to find a minimum spanning tree of the following graph. 6M



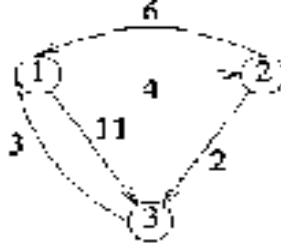
- b) Write and Explain the Dijkstra's algorithm for single source shortest path problem. 6M

UNIT-III

6. Identify the optimal solution for 0/1 Knapsack problem using Dynamic programming for $n = 4; M = 30$. $(W_1, W_2, W_3, W_4) = (10, 15, 6, 9)$; $(P_1, P_2, P_3, P_4) = (2, 5, 8, 1)$; 12M

(OR)

7. a) Find the shortest path between all pairs of nodes in the following graph. 6M



- b) Distinguish divide-and-conquer and dynamic programming methods. 6M

UNIT-IV

8. a) Discuss Sum of subset problem. 6M
b) Solve the 4-queens problem by constructing the state space tree. 6M

(OR)

9. a) Evaluate $p(x) = 2x^4 - x^3 + 3x^2 + x - 5$ at $x = 3$ using Horner's rule. 6M
b) Explain the general method of backtracking. 6M

UNIT-V

10. Apply the branch and bound algorithm to solve the travelling salesman problem for the following cost matrix. 12M

$$\begin{bmatrix} \infty & 20 & 30 & 10 & 11 \\ 15 & \infty & 16 & 4 & 2 \\ 3 & 5 & \infty & 2 & 4 \\ 19 & 6 & 15 & \infty & 3 \\ 16 & 4 & 7 & 16 & \infty \end{bmatrix}$$

(OR)

11. a) Explain about non deterministic algorithms. 6M
b) Write short notes on cook's theorem. 6M