AR13

CODE: 13ME3021 **SET-2**

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

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

PART-A

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

1. a) Define iconic model.
   b) When is the solution said to be unbounded in the simplex method?
   c) What is the degeneracy in Transportation problem?
   d) Write the extra condition for the travelling salesman problem?
   e) Define total elapsed time.
   f) What is steady state condition in queuing theory?
   g) Explain retrogressive failure?
   h) What is meant by pure strategy?
   i) Find the average time estimate for a task when optimistic time, most likely time and pessimistic times are 5, 7, and 9 respectively?
   j) Define critical path.

PART-B

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

UNIT-I

2. solve by simplex method **12M**

Max.Z= $4x_1 + 3x_2$
Subject to
$x_1 \leq 5$
$x_1 - x_2 \leq 8$
$x_1, x_2 \geq 0$

(OR)

3. a Write the chief characteristics of Operations Research **5M**
   b Explain the simplex procedure to solve LPP **7M**

UNIT-II

4. A company operates three coal mines A, B C which provide 400,500 and 700 tonnes respectively per week. Orders for 500,400, 300,300 and 600 tonnes per week have been received from customers' c1, c2, c3, c4, c5 respectively. Transportation costs in rupees per tonne from each mine to each customer are given below **12M**

	C1	C2	C3	C4	C5	supply
A	4	16	1	16	14	400
B	18	10	8	12	12	500
C	6	1	4	13	2	700
Demand	500	400	300	300	600	

For each tonne of coal demanded but not supplied there is a loss of one rupee per tonne for the company. Find the weekly shipping (transporting) schedule which minimises the total expenses.

(OR)

5. There are 5 jobs and 4 machines .The expected profits on each job on each machine is given below. Determine an optimal assignment of the machines to the jobs so that total profit is maximum. 12M

MACHIN	JOBS					
		1	2	3	4	5
	I	62	78	50	101	82
	II	71	84	61	73	59
	III	87	92	111	71	81
	IV	48	64	87	77	80

UNIT-III

6. Find the optimalsequence and total elapsed time for the following tasks if the order of the machines is M-I,M-II and, M-II 12M

Tasks	A	B	C	D	E	F	G
Time on M-I	3	8	7	4	9	8	7
Time on M-II	6	7	5	11	5	6	12
Time on M-III	4	3	2	5	1	4	3

(OR)

7. In a telephone booth, the arrivals follow poisson distribution with an average of 9 minutes between two consecutive arrivals. The duration of a telephone call is exponential with an average of 3 minutes. 12M
(i) Find the probability that a person arriving at the booth has to wait?
(ii)Find the average queue length?
(iii)Find the fraction of the day, the phone will be in use?
(iv) The company will install a second booth if a customer has to wait for phone, for at least 4 minutes .If so , find the increase in the flow of arrivals in order that another booth will be installed.

UNIT-IV

8. a Explain types of failures? 4M
b The initial price of equipment is Rs.5000 and the running cost varies as shown below 8M

Year	1	2	3	4	5	6	7
Running cost (Rs)	400	500	700	1000	1300	1700	2100

Taking a discount rate of 0.90 , when should the equipment be replaced?

(OR)

9. a When do you use dominance property and write the rules for dominance property? 5M
b Consider the following payoff matrix for two firms. Find the best strategies for both the firms and value of the game 7M

Firm I	Firm II			
		No advertising	Medium advertising	Large advertising
	No advertising	60	50	40
	Medium advertising	70	70	50
	Large advertising	80	60	75

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UNIT-V

10. A project consists of the following activities and time estimates. **12M**

Activity	Estimated duration in weeks		
	Optimistic	Most likely	pessimistic
(1,2)	1	1	7
(1,3)	1	4	7
(1,4)	2	2	8
(2,5)	1	1	1
(3,5)	2	5	14
(4,6)	2	5	8
(5,6)	3	6	15

(i) Draw the net work (ii) Find the expected time and variance for each activity? (iii) What is the probability that the project will be completed in 4 weeks early than expected time?

(OR)

11. Draw the network and find the critical path to the following **12M**

Job	Precedence activity	Duration (in hrs)
A	-	14
B	A	22
C	B	10
D	B	16
E	B	12
F	C	10
G	C	6
H	F,G	8
I	D,E,H	24
J	I	16

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CODE: 13EC3026 SET-1

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
III B.Tech II Semester Supplementary Examinations, October-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 variable with an example?
   b) Describe Garbage Collection in Java?
   c) Can an abstract class be final? Why?
   d) List out the benefits of using inheritance.
   e) Difference between Abstract and Concrete Class?
   f) Difference between Process and Thread?
   g) Define package?
   h) Explain System.out.println?
   i) When we invoke repaint() for a java.awt.Component object, which method does the AWT invokes?
   j) Give syntax of checkbox.

PART-B

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

UNIT-I

2. a) Describe the structure of java program? 6M
   b) Explain type conversion and casting with an example program? 6M

(OR)

3. a) Explain with differences between procedural oriented programming & object oriented programming languages. 6M
   b) Write a simple java program to calculate factorial of a given number? 6M

UNIT-II

4. a) What is the purpose of using a method? How do you declare a method? How do you invoke a method? 6M
   b) What is Method Overloading? Explain with an example program. 6M

(OR)

5. a) Explain the usage of 'this' keyword with an example. 5M
   b) How objects are constructed? Explain constructor overloading with an example 7M

UNIT-III

6.	a)	Explain multiple inheritances with an example?	6M
	b)	What is an Interface? Write a program to demonstrate how interfaces can be extended / implemented.	6M
		(OR)	
7.	a)	Explain about final classes, final methods and final variables?	6M
	b)	Explain about the extending interfaces.	6M

UNIT-IV

8.	a)	Write differences between throw and throws keywords.	4M
	b)	What are the different ways to handle exceptions? Explain?	8M
		(OR)	
9.	a)	Define thread? Explain thread life cycle with a neat sketch.	6M
	b)	What are the different ways of creating a thread? Explain with an example.	6M

UNIT-V

10.	a)	What are the methods supported by Mouse Listener Interface? Explain in detail.	6M
	b)	How do you pass parameters to an applet? Give an example.	6M
		(OR)	
11.	a)	What is an event? Explain the event delegation model.	6M
	b)	Write a java program which draws a dashed line and dotted line using applet.	6M

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