

**2018**

**Time : 3 hours**

**Full Marks : 80**

**Answer all questions**

***All questions carry equal marks***

***Candidates are required to answer in their own words  
as far as practicable***

**( OPERATIONS RESEARCH )**

- 1. Use Simplex method to solve the following LPP :**

**Minimize  $Z = x_1 - 3x_2 + 2x_3$**

**subject to;**

$$3x_1 - x_2 + 3x_3 \leq 7$$

$$-2x_1 + 4x_2 \leq 12$$

$$-4x_1 + 3x_2 + 8x_3 \leq 10$$

$$x_1 \geq 0, x_2 \geq 0; x_3 \geq 0$$

**( Turn Over )**



Or

A pen manufacturing company produce two types of pen; type-I and type-II. If the company produce only type-I pen it can make 500 pens per day. The selling price of type-I is Rs. 8 and company can sell atmost 150 pens a day. The selling price of type-II pen is Rs. 5 and company can sell at most 250 pens per day. Type-I pen takes twice as much time than type-II pen to make. The objective of the company is to maximise the revenue. Formulate the problem as LPP and write its dual problem.

2. Solve the following Assignment problem explaining all the steps of algorithm used :

		Man			
		A	B	C	D
Job	I	12	30	21	15
	II	18	33	9	31
	III	44	25	24	21
	IV	23	30	28	14



( 3 )

Or

Solve the transportation problem where all entries are unit costs :

	$D_1$	$D_2$	$D_3$	$D_4$	$D_5$	$a_i$
$O_1$	73	40	9	79	20	8
$O_2$	62	93	96	8	13	7
$O_3$	96	65	80	50	65	9
$O_4$	57	58	29	12	87	3
$O_5$	56	23	87	18	12	5
$b_j$	6	8	10	4	4	

3. In a game of matching coins with two players, suppose A wins one unit of value when there are two heads, wins nothing when there are two tails and loses  $1/2$  unit of value when there are one head and one tail. Determine the payoff matrix, the best strategies for each player and the value of the game to A.



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Or

For the following activity schedule, draw the network, work out expected time for various activities also find the project completion time and critical path :-

Activity	Optimistic time	Pessimistic time	Most likely time
1-2	5	12	7
1-3	12	17	13
2-4	15	21	18
3-4	2	5	3
2-5	8	14	10
4-5	21	35	26

4. There are five jobs, each of which must go through the two machines *A* and *B* in the order *AB*. Processing times are given below :

Job	1	2	3	4	5
Machine <i>A</i>	5	1	9	3	10
Machine <i>B</i>	2	6	7	8	4

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

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*Or*

Explain what do you mean by Integer programming problem, highlight its importance and applications.

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**(COMPUTER GRAPHICS AND MULTIMEDIA)**

1. (a) What is transformation and what are the different types of transformation ?
- (b) What is projection ? How it is different from clipping ?

*Or*

- (c) What are the different application areas of graphics software ? Explain.

*( Turn Over )*



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(d) What is Rotation ? What are the matrix representation of scaling ?

2. (a) What is multimedia ? What are the components of multimedia ?

(b) Explain different types of sound and how representation of sound is done in computer.

*Or*

(c) What is animation ? What are the different types of animation ?

(d) Give short notes on :

(i) Audio

(ii) Image

(iii) Video.

3. (a) What is internet ? What are internet service providers ?

(b) Write about different HTML standards and text formatting tags.



( 3 )

*Or*

- (c) What is a Protrol ? What are the different types of protocols ?
  - (d) Write the difference between web browser and web page.
4. (a) What are filters ? Explain.
- (b) What is Painting ? Write a brief about painting in ADOBE PHOTOSHOP.

*Or*

- (c) What is retouching ? How it is different from painting ?
  - (d) What are the different action and photoshop files in ADOBE PHOTOSHOP ?
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**( SOFTWARE ENGINEERING )**

1. (a) What is the difference between a program and software product ?

(b) Write about the evolution of Software engineering.

**Or**

(c) Compare between classical waterfall life cycle model and iterative waterfall life cycle model.

(d) Write the significance of evolutionary model.

**( Turn Over )**



2. (a) What is project scheduling ? Write the activities and functions of scheduling.
- (b) According to Boehm, what are the three different categories of s/w product ?

*Or*

- (c) What are the different types of team structure and organisation structure in a project ? Explain with diagram.
- (d) What is COCOMO ? Explain.
3. (a) Discuss the characteristics of a good software design.
- (b) What is UML ? Write the importance of UML. Draw the interaction diagram of online examination system.

*Or*

- (c) Write the significance of UML. Draw the class diagram of online examination system or ATM system.



( 3 )

(d) What is SRS in software development ? What are the different types of requirements written in SRS ?

4. Write short notes on :

(i) Coding and Testing

(ii) S/W Reliability

*Or*

(i) User interface design

(ii) ISO 9000 and CMM.

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