COPYRIGHT RESERVED Voc(Sem-V) — BCA (DSE - 1)

2021

Time: 3 hours

Full Marks: 70

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from all the Sections as directed.

Section - A

(Objective Type Questions)

Select the correct answer of the following :

 $1 \times 5 = 5$

(a)	Operation	Research is alan.	1 .
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- (i) Science
- (ii) Art

(iii) Mathematics

(iv) Both (i) and (ii)

BX - 11/3

(Turn over)

(b)	Obj	ective function of a Linear Programming
4 4	Pro	blem is :
· ·	(i)	A constraint
	-(ii)	Function to be optimized
	(iii)	A relation between the variables
8	(iv)	None of these
(c)		asible region is the set of points which isfies:
s.*	(i)	The objective functions
	(ii)	Some of the given constraints
	(iii)	All of the given constraints
	(iv)	None of these
(d)	Ine	quation $3x - y \ge 3$ and $4x - 4y \ge 4$:
	(i)	Have solution for positive x and y
	(ii)	Have no solution for positive x and y
	(iii)	Have solution for all x
	(iv)	Have solution for all y
(e)		ngarian method for solving an assignment blem can also be used to solve by
	(i)	A transportation problem

A travelling salesman problem

- (iii) A LP problem
- (iv) Both (i) and (ii)
- 2. Fill up the blanks:

 $1 \times 5 = 5$

- (a) The transportation problem is basically a <u>Maximization</u> model
- (b) The objective functions and constraints are linear relationship between Noviable
- balance the rim requirements, is known as dummy column

 - (e) Full form of CPM is ______

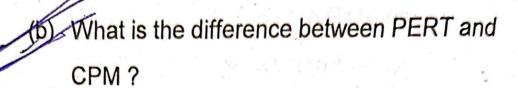
Section - B

(Short-answer Type Questions)

Answer any four questions (Answers to be not more than 200 words each): $5\times4=20$

3. (a) What is vector and what are the types of vector? Find dot product of two vectors having magnitudes of 6 units and 7 units angle between the vectors is 60°.

(Turn over)



What is convex set in LPP? Describe with example.

Write the Simplex Algorithm.

$$x + 3 = 2(y - 1)$$
 and $(y + 1) = 5x$

What is linear algebra and its application?
Also, describe the elementary terms of LA.

Section - C

(Long-answer Type Questions)

(Long-answer Type Questions)

Answer any four questions:

What is Hungarian Method? Write the steps with example.

What is degeneracy in L. P. Problem and how it is resolved?

Write the steps of transportation algorithm with suitable example.

BX - 11/3 (4)

Contd.

 $10 \times 4 = 40$

(d) Maximize
$$Z = 2x + 5y$$

$$3x + y \le 21$$

where, $x \ge 0$ and $y \ge 0$.

Solve this problem using graphical method.

(e) Find the solution of game theory problem using saddle point.

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B1	B2	ВЗ	B4
20	15	12	35
25	14	8	10
40	2	10	5
-5	4	11	0
	20 25 40	20 15 25 14 40 2	20 15 12 25 14 8 40 2 10

(f) What is Optimization Problems? How Linear Programming is used in optimization? Give example.

BX - 11/3 (500)

(5) Voc(Sem-V) — BCA (DSE - 1)