



HCT-010-001510

Seat No. _____

B. B. A. (Sem. V) (CBCS) Examination

October – 2017

**Operation Research - I
(New Course)**

Faculty Code : 010

Subject Code : 001510

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) Write answers of all questions in main answer sheet.
(2) Q. 1 to Q.5 each carries 14 marks.

1 Explain methods of collection of primary data and secondary data. **14**

OR

1 Explain : Meaning of Research. **14**

2 (a) Explain the graphical method of solving a L.P.P. **6**

(b) Solve the following LPP using graphical method. **8**

Maximize $Z = 4x + 6y$

Subject to $x + y = 5, x \geq 2, y \leq 4, x, y \geq 0$

OR

Solve the following LPP using simplex method **14**

Maximize $Z = 4x_1 + 3x_2 + 6x_3$

Subject to $2x_1 + 3x_2 + 2x_3 \leq 440$

$$4x_1 + 3x_3 \leq 470$$

$$2x_1 + 5x_2 \leq 430$$

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

- 3 (a) Explain : VAM 6
 (b) Determine an initial basic feasible solution to the following TP by using VAM 8

Source	Destination				Supply
	D_1	D_2	D_3	D_4	
A	1	2	1	4	30
B	3	3	2	1	50
C	4	2	5	9	20
Demand	20	40	30	10	

OR

- 3 (a) Explain : North-West Corner method. 6
 (b) Solve the following TP by NWCM. 8

From \ To	W_1	W_2	W_3	W_4	Supply
F_1	30	25	40	20	100
F_2	29	26	35	40	250
F_3	31	33	37	30	150
Demand	90	160	200	50	

- 4 Discuss the solution of the Assignment Models in detail. 14

OR

- 4 Five jobs are to be processed and five machines are available. Any machine can process any job with resulting profit (in rupees) as follows : 14

		Machines				
		A	B	C	D	E
$Jobs$	1	32	38	40	28	40
	2	40	24	28	21	36
	3	41	27	33	30	37
	4	22	38	41	36	36
	5	29	33	40	35	39

Find the assignment pattern that maximize the sales.

- 5 (a) Explain : Importance of Non Parametric Test. **6**
- (b) Use the sign test to see whether there is a difference **8**
between the no. of days required to collect an account
receivable before and after new collection policy, use
the 0.05 significance level.

Before : 33 36 41 32 39 47 34 29 32 34
40 42 33 36 29

After : 35 29 38 34 37 47 36 32 30 34
41 38 37 35 28

OR

- 5 (a) Explain : Wilcoxon signed Rank test. **6**
- (b) Test the H_0 of no difference between the ages of **8**
male and female employees of a certain company.
Using the Mann-Whitney U-test for the sample data.
Use the level of significance is 0.1.

Man : 31 25 38 33 42 40 44 26 43 35

Females : 44 30 34 47 35 32 35 47 48 34
