

[A-1]

SEAT No. _____

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SARDAR PATEL UNIVERSITY
BBA (ITM) SEMESTER-IV (4 Yearly) EXAMINATION (NC)
SATURDAY, 13TH APRIL,
2019

10.00 A.M. to 12.00 P.M.

UM04CBB103: QUANTITATIVE TECHNIQUES FOR MANAGEMENT-II

Total Marks: 60

- Q.1 [A]** Define regression and regression lines. Write properties of regression coefficient. [07]
- [B]** If the lines of regression of variable x and y are: [08]
- $$x + 6y - 31 = 0 \quad \text{and} \quad 2x + 3y - 26 = 0,$$
- Find (i) the mean values of x and y . (ii) Correlation coefficient between x and y ; (iii) Standard deviation of y if the standard deviation of x is 5.

OR

- Q.1 [A]** The following information is obtained for two variables x and y . Find regression equation of y on x . $n = 10$; $\sum x = 130$; $\sum y = 220$; $\sum x^2 = 2288$; $\sum xy = 3467$. Estimate value of y when $x = 15$. [07]
- [B]** Find regression coefficients, Coefficient of correlation and Estimate value of y when $x = 10$ and x when $y = 6$ for the following value of x and y . [08]

x:	12	10	14	18	16	15	17
y:	9	10	8	9	7	5	6

- Q.2 [A]** Define and write mathematical form of Transportation and Assignment problem. [07]
- [B]** A company has five sales representatives who are to be assigned to five different territories. The monthly sales increase estimated for each sales representative for different sales territories (in lakhs of rupees), are shown in the following table. [08]

Sales representatives	Sales territories				
	I	II	III	IV	V
A	54	56	57	55	61
B	57	53	56	59	55
C	58	55	54	56	59
D	59	62	57	61	60
E	57	55	59	58	61

Suggest optimal assignment to maximize monthly sales.

OR

①

(P.T.O.)

Q.2 The following table shows all necessary information on the availability of supply to each warehouse, the requirement of each market and unit transportation cost from each warehouse to each market. Obtain an initial basic feasible solution to the following T.P. by,

[i] North West corner Method

[ii] Vogel's Approximation method.

	Warehouse				Capacity	
	W1	W2	W3	W4		
Market	F1	1	3	5	5	70
	F2	7	3	4	6	90
	F3	4	8	7	2	180
Requirement		50	80	70	140	

[7]

[8]

Q.3 [A] Define: (i) Predecessor activity, (ii) Successor activity
(iii) Concurrent activity (iv) Dummy activity (v) Event

[05]

[B] A project has the following time schedule.

[10]

Activity	(1-2)	(1-3)	(2-3)	(2-4)	(2-5)	(3-5)	(4-5)	(5-6)
Time in months	5	14	9	15	8	9	4	5

Then,

- Draw the network diagram.
- Find EST, EFT, LST and LFT.
- Calculate Slacks.
- Obtain the critical path and project completion

OR

Q.3 [A] What is PERT and CPM? Write rules of drawing network diagram?

[05]

[B] Draw a network corresponding to the following information. Obtain the early and late start and completion times, and determine the critical activities and critical path.

[10]

Activity	1-2	1-3	1-4	3-4	2-5	4-6	5-7	6-7	7-8
Duration	3	6	10	0	5	8	3	3	9

Q.4 [A] What is inventory control? Write its advantages.

[07]

[B] A particular item has a demand of 250 units per month. The ordering cost is Rs. 100 per order and the unit holding cost is Rs. 2.40 per unit per year. Determine (i) the economic lot size (ii) total inventory cost per year (iii) the time between orders and (iv) the number of orders per year.

[08]

OR

Q.4 [A] Write advantages of carrying inventories.

[04]

[B] Explain ABC and HML selective approaches of inventory control.

[05]

[C] Annual demand of an item is 3200 units. The purchase cost of the item is Rs. 6 per unit and its holding cost is 25% of the purchase cost per unit per year. If the ordering cost is Rs. 150 per order, find (i) EOQ (ii) optimum inventory cost (iii) optimum time interval between the orders.

[06]