BIJU PATNAIK INSTITUE OF IT & MANAGEMENT STUDIES
4th SEMESTER (BATCH 2018-20)
CLASS TEST - I
Operations Research Applications (18MBA403D)

Total Marks : 15   **Time: 1 Hour**

Q1. **All Questions are compulsory each questions carry 1 mark**   **(1x5=5)**

   (a)   Define Dynamic Programing

   (b)   Differentiate between linear programming & integer programming.

   (c)   What are the objectives of Routing Problem ?

   (d)   What are the service channel used in Queuing Model ?

   (e)   How to convert on unbalanced TP to balanced TP?

Q2. **Answers two questions each questions carry 2.5 marks**   **(2.5x2=5)**

   (a)   Write the scope of operation research.

   (b)   A sales man wants to visit the four cities A, B, C & D. The distance in KM from each city to the other cities is given by the table.

	A	B	C	D
A	-	45	15	39
B	40	-	49	39
C	81	31	-	59
D	39	39	35	-

Determine the smallest route covered by the salesman.

   (c)   In a factory there are six jobs to persons, each of which should go through two machines A & B in the order AB. The processing time (hrs) for the jobs are given below. Determine the optimal sequence of the job & total elapsed Time (T) .

Job	J_1	J_2	J_3	J_4	J_5	J_6
M-A	1	3	8	5	6	3
M-B	5	6	3	2	2	10

Q3. **Answer one question out of two questions**   **(5x1=5)**

(a) A firm has divided its marketing area into 3 zones. The amount of sales depends upon the number of salesmen in each zone. The firm has been collecting the data regarding sales & sales man in each area over a number of past years.

For the next year firm has only 9 salesmen & the problem is to allocate these salesmen to three different zones, so that the total sales are maximum.

(Profit in Rs'000)

No. of salesmen	Zone 1	Zone 2	Zone 3
0	30	35	42
1	45	45	54
2	60	52	60
3	60	52	60
4	79	72	82
5	90	82	95
6	98	93	102
7	105	98	110
8	100	100	110
9	90	100	110

(b) Find the optimum integer solution to the following LPP.

Max $Z = 5x_1 + 8x_2$

Stc. $X_1 + 2x_2 \leq 8$

    $4x_1 + x_2 \leq 10$

And $x_1, x_2 \geq 0$

    And integer

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