VPM's
DR VN BRIMS, Thane
Programme: PGDM (2019-21)
Second Trimester Examination January 2020

Subject	**Quantitative Techniques**		
Roll No.		**Marks**	**60 Marks**
Total No. of Questions	**7**	**Duration**	**3 Hours**
Total No. of printed pages	**2**	**Date**	**06.01.2020**

Q1 is compulsory and carries 20 marks.
Attempt any 4 questions from remaining carrying 10 marks each.

Q 1 A person wants to invest in shares of 2 companies A and B with details below.

Share of company	market price	face value	% dividend	risk index per investment
A	250	10	80	0.3
B	500	10	170	0.6

Find how many shares of each company must be bought to maximize dividend income. The conditions are (a) total Risk index should not exceed 225000, (b) Total investment is limited to Rs 5 lakhs, (c) Investment in B should be less than 45% of total investment.
Determine graphical solution

Q 2. Answer any 2 from below:
A company wishes to advertize on Radio & TV. The cost is 2 lakhs per spot for Radio & 5 lakhs per spot for TV. The total advertising budget is 75 lakhs. The effectiveness is 60 per spot for Radio & 100 per spot for TV. The total spots are limited to 30.The amount spent on each Radio & TV should be at least one fourth of total expenditure by the company.

(a) Formulate as LPP to maximize total effectiveness. Find EXCEL solution. Find graphical solution as well.
(b) Find the redundant constraints.
(c) Find if increase in advertising budget will increase effectiveness. Why?

Q 3. Answer any 2 from below:
An organization has 4 typists A, B,C and D having different speeds of typing in words per minute as 30,40,50 & 60. They are paid at rates (Rs/hr) 50.60.70and 80. There are 4 jobs to be typed Q, R, S & T having pages 300, 600, 200 & 300. The typing format is 10 words per line & 30 lines per page. Formulate as LPP.
(a) Find the solution which will minimize total cost of typing.
(b) Which person can be called as best typist?
© Does it follow that best person should do the best job?

Q 4. Answer any 2 from below:
A company has 3 factories at different locations F1, F2 & F3 having capacity 400,300 & 800. The cost of production is (Rs/unit) 20, 30 & 20. The product produced can be supplied to 4 destinations D1, D2, D3 & D4 having demand 300,400,300 & 500.
The cost of transportation is as given below in Rs /unit.

	D1	D2	D3	D4
F1	2	5	7	3
F2	8	4	6	2
F3	3	4	4	5

(a) Formulate as transportation problem with total costs.
(b) Find optimum solution.
(c) What should be cost of transportation from F2 to D1 to use this route?

Q 5. Answer any 2 from below:

(a) Explain applications of Assignment Techniques in airlines.
(b) Explain what "Linear" means in Linear Programming.
(c) Name and Explain NWCR (North West Cornder Rule) method of generating initial solutions in Transportation.

Q 6. Answer any 2 from below:

(a) Explain what is meant by Infeasible Solution in Linear Programming.
(b) Explain applications of Transportation in agriculture.
(c) What you will do with extra salesperson in the company?

Q 7 Answer any 2 from below:

A company manufactures paper rolls of standard width 10 '& 20 '. A large order is received of rolls of nonstandard width as per details below: "177" rolls of width 5', 253 rolls of width 7' & 207 rolls of width 9' .These rolls can be obtained by cutting standard width rolls. The loss due to cutting is called as Trim Loss.

(a) What decision variables will be appropriate for this problem?
(b) Formulate to minimize trim loss.
(c) What you will do with extra rolls of paper which may be produced?