

UNIVERSITY OF PUNE
DEPARTMENT OF MANAGEMENT SCIENCES
DIPLOMA IN INDUSTRIAL ADMINISTRATION AND SERVICES MANAGEMENT
Module I External Examination 2008
Business Mathematics and Statistics (103)

70 marks

Time: 3Hrs

Note: Answer any Five questions Each question carries 14 Marks.

Q1 What do you mean by Linear Programming? Write applications of Linear Programming

Q2 a A toy manufacturer company manufactures two types of dolls as basic version 'Doll A' and Deluxe version 'Doll B'. Each doll of type B takes as long to produce as one of the type A. The company would have time to make a maximum of 2000 per day if it produced only basic version. The supply of plastic is sufficient to produce 1500 doll per day (both A and B combine). The deluxe version requires a fancy dress of which there are 600 per day available. If company makes profit of Rs 3 and Rs. 5 per doll respectively on doll A and doll B. How many of each should be produced per day in order to maximize profit. Formulate the LP and solve by graphical method.

Q2 b A company manufactures gidgets and gadgets. Producing a gidget requires 3 hours of working time on machine M1 and one hour on machine M2. Producing a gadget requires 2 hours on machine M1 and one hour on machine M2. Machine M1 is available for not more than 120 hours per week. Machine M2 is available for not more than 50 hours per week. Gidgets can be sold at a profit of Rs 7 each where as a profit of Rs 5 each can be realized on a gadget. How many gidget and gadgets should be produced each week to maximize profit? What should the maximum profit be.?

Q3 Find the Standard Deviation

A) 50, 38, 49, 53, 36, 57.

B) Find the standard deviation from the following table

Size	2	3	4	5	6
No of persons	5	10	20	10	5

Q4 A) Find mean, median, mode

17.3, 16.05, 13.75, 23.43, 13.75, 13.75, 82.756, 784.0008, 53.7, 63.47, 118.118.

B) Calculate the mean deviation from the mean for the following data

10, 12, 13, 17, 17, 19, 20, 21, 9, 12 .

Q5. From the following information relating to Royal Productions Ltd Calculate:

1. Ratio Variable cost to sales
2. The break-even sales.
3. Net profit from the sales of Rs. 62500.
4. Sales required for earning Profit of Rs. 6000.

Period	Total Sales	Total Cost
2004	42500	38700
2005	39200	36852

Q6. ABC Ltd has to decide which project to select. There are two mutually exclusive projects Project A and Project B. The details of the projects regarding cash outflows and cash inflows are as follows,

YEAR	Project X	Project Y
0	-70,000	-80,000
1	10,000	50,000
2	20,000	40,000
3	30,000	20,000
4	45,000	10,000
5	60,000	10,000

Compute 1. Pay Back Period.

2. Net Present Value (Discounting Factor @ 10%).

Analyze and decide which Project the company should start.

Give reasons for your Answer.

Q7. Write note on applications of Mathematics and Statistics in Business.
