

Total No. of Pages : 06

Roll No.

MS 104/CP - 1004

Quantitative Techniques in Management

(प्रबन्ध में परिमाणात्मक तकनीकें)

**Master of Business Administration/
Diploma in Management**

MBA-10/12/13/16/17/DIM-10/16/17

1st Semester

Examination-2019

Time : 3 Hours

[Maximum Marks : 80

Note : This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section 'A' contains Five (05) long-answer-type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only. **(3×15=45)**

(3)

3. What is a queue. Give a brief description of the type of queue discipline commonly faced. Give some applications of queuing theory.
4. You are given the following information about advertising expenditure and sales :

	Advertisement (x) (₹ in lakh)	Sales (y) (₹ in lakh)
Arithmetic mean, \bar{x}	10	90
Standard deviation, $\bar{\sigma}$	3	12

Correlation coefficient = + 0.8, Answer the following :

- (a) Obtain the two regression equations.
- (b) Find the likely sales when advertisement budget is ₹ 15 lakh.
- (c) What should be the advertisement budget if the company wants to attain sales target of ₹ 120 lakh?

(4)

5. Describe briefly the various schools of thought on probability. Discuss its importance in business decision-making.

Section–B

(Short-Answer-Type Questions)

Note : Section 'B' contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. If on an average 8 ships out of 10 arrive safely at a port, find the mean and standard deviation of the number of slips arriving safely out of a total of 1600 ships.
2. The probability that a contractor will get a blumbing contract is $\frac{2}{3}$ and the probability that he will not get an electrical contract is $\frac{5}{9}$. If the probability of getting at least one contract is $\frac{4}{5}$, what is the probability that he will get both?
3. Explain the differences and similarities between the MODI method and stepping stone method used for solving transportation problems.

(2)

1. In a random sample of 500 people belonging to urban area, 200 are found to be commuters of public transport. In another sample of 400 people belonging to rural area, 200 are found to be commuters of public transport. Discuss whether the data reveal a significant difference between urban area so far as the proportion of commuters of public transport is concerned.
2. ABC company manufactures and sells two products P_1 and P_2 . Each unit of P_1 requires 2 hours of machining and 1 hour of skilled labour. Each unit of P_2 requires 1 hour of machining and 2 hours of labour. The machine capacity is limited to 600 machine hours and skilled labour is limited to 650 man hours. Only 300 units of product P_1 can be sold in the market. You are required to answer the following :
 - (a) Develop a suitable model to determine the optimal product mix.
 - (b) Find out the optimal product mix and maximum contribution by simplex method. Unit contribution from product P_1 is Rs 8 and from product P_2 is Rs. 12.

(5)

4. Describe the various steps involved in testing of hypothesis. What is the role of standard error in testing of hypothesis?
5. A company has four machines of which to do three jobs. Each job can be assigned to one and only one machine. The cost of each job on each machine is given below.

Job	Machine	M_1	M_2	M_3	M_4
J_1		18	24	28	32
J_2		8	13	17	18
J_3		10	15	19	22

Find an optimal assignment.

6. A can solve 90 percent of the problems given in a book and B can solve 70 percent. What is the probability that at least one of them will solve a problem selected at random?
7. What is chi-square test? under what conditions is it applicable? Point out its role in business decision-making.
8. What is meant by 'correlation'? Distinguish between positive, negative and zero correlation.