

BM 01

MMS-I

Roll No.

Total No. Of Questions : 07

Duration (hrs.): 03 hrs.

Total No. Of Printed Pages : 03

Maximum Marks : 60

26-12-2009

Note : Solve any five out of given seven questions. Each Question is of 12 marks ($12 \times 5 = 60$ marks). Draw neat and clean diagram as per need of question.

(Marks 12)

- Q) 1) The marginal cost of production is found to be $MC = 2000 - 320x + 3x^2$ where x is the number of units produced . The fixed cost of production is Rs . 18,000 . Find the cost function . If the manufacturer fixes the price per unit at Rs. 6800 .
- (i) Find the revenue (ii) Find the profit function
 (iii) Find the sales volume that yields maximum profit
 (iv) What is the profit at this sales volume ?

(Marks 12)

- Q) 2) Explain symmetric matrix , adjoint matrix with suitable examples .
 Mention the condition required for product of two matrices . Also explain the condition required to find inverse of any matrix.
 A company is to employ 60 laborers from either of the party X and Y comprising of persons in different age groups are as under :

Category

Party	I (20 - 25 yrs)	II (26 - 30 yrs)	III (31 - 40 yrs)
X	25	20	15
Y	20	30	10

Rate of labor applicable to categories I , II and III are Rs. 1200 , Rs . 1000 and Rs. 600 respectively . Using matrices , find which party is economically preferable .

(Marks 12)

- Q) 3) Define the relation between matrix and determinant . Explain any two determinant property .
Assume three linear equations with three unknown variables and explain cramer's rule for solving 3 unknown variables in three given linear equations .

(Marks 06)

- Q) 4)
- (a) Explain subjective probability . Give one situation in which subjective probability works . A husband and wife appear in an interview for two vacancies for the same post . The probability of husband's selection is $\frac{1}{7}$ and that of wife's selection is $\frac{1}{5}$. What is the probability that
- only one of them will be selected ?
 - both of them will be selected ?
 - none of them will be selected ?

(Marks 06)

- (b) Explain conditional probability with suitable example . A market survey was conducted in four cities to find out the preference for brand A soap . The responses are shown below :

	Delhi	Kolkata	Chennai	Mumbai
Yes	45	55	60	50
No	35	45	35	45
No opinion	5	5	5	5

- What is the probability that a consumer preferred brand A , given that he was from Chennai ?
- Given that consumer was from Mumbai , what is the probability that he preferred brand A?

Q) 5)

(Marks 06)

- (a) A brokerage survey reports that 30 percent of individual investors have used a discount broker, i.e. one which does not charge the full commission. In a random sample of 9 individuals, what is the probability that
- exactly two of the sampled individuals have used a discount broker?
 - at most three have used a discount broker?

(Marks 06)

- (b) An aptitude test for selecting officers in a bank was conducted on 1000 candidates. The average score is 42 and the standard deviation of scores is 24. Assuming normal distribution for the scores, find the number of candidates whose scores lie between 30 and 66.

(Marks 12)

- Q) 6) Differentiate quantitative and qualitative data giving suitable examples. Mention names of three important measures of dispersion. Mention one special characteristic of mode which is not possible for mean or median.

A survey was conducted to determine the age (in years) of 120 automobiles. The result of such a survey is as follows:

Age of auto :	0 - 4	4 - 8	8 - 12	12 - 16	16 - 20
No of autos :	13	29	48	22	8

What is the median age for the autos?

(Marks 12)

- Q) 7) Explain frequency distribution table with types in brief.

The ages of 30 school children are noted as: 11, 8, 10, 5, 7, 12, 7, 17, 5, 13, 9, 8, 10, 15, 7, 12, 6, 7, 8, 11, 14, 18, 6, 13, 9, 10, 6, 15, 3, 5 years respectively.

Calculate standard deviation of monthly scholarship. Find out the total monthly scholarship amount being paid to the students.

= Kex :

3