

## MS-9



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**Description**

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- **MANAGEMENT PROGRAMME**  
**Term-End Examination**  
**MS-8 December, 2021**

## **MS-8 : QUANTITATIVE ANALYSIS FOR O MANAGERIAL APPLICATIONS**

**Time : 3 hours Maximum Marks : 100**

(Weightage 70%)

Note : (i) Section A has six questions, each carrying 15 marks. Attempt any four questions from this Section.

(ii) Section B is compulsory and carries 40 marks. Attempt both questions.

(iii) Statistical tables may be supplied on request.

(iv) Use of calculator is permissible.

### **SECTION - A**

1. A person pays a total of rs 975 through monthly installments each less than the former by rs 5. The first installment is rs 100. In how many installments will the amount be paid ?

2. Calculate the harmonic mean from the following frequency distribution :

Class 0 -10 10 - 20 20 - 30 30 - 40

Frequency 5 8 3 4

3. The incidence of a certain disease is such that on an average 20% of workers suffer from it. If 10 workers are selected at random, find the probability that :

(a) Exactly two workers suffer from the disease.

(b) Not more than 2 workers suffer from the disease.

4. Explain the meaning of sampling distribution of a sample statistic. Obtain the sampling distribution of mean in case of sampling from infinite populations.

5. A company wants to study the relation between R and D expenditure (X) and sales (Y) for the

ten-year period. Determine the correlation coefficient between these variables.

X (in thousands) 50 50 50 40 30 20 20 15 10 5

Y (in thousands) 700 650 600 500 450 400 300 250 210 200

6. Write short notes on any three of the following :

(a) Identity matrix

(b) Quantiles

(c) Axioms of probability

(d) The power curve of a test

(e) Mixed Auto-regressive - moving average models

### **SECTION - B**

7. The mean life of a sample of 10 electric bulbs was found to be 1456 hours with a standard deviation of 423 hours. A second sample of 17 bulbs chosen from a

different batch showed a mean life of 1280 hours with a standard deviation of 398 hours. Is there a significant difference between the means of the two batches ?

8. What is skewness ? Distinguish between Karl Pearson's and Bowley's coefficient of skewness.

Which one of these would you prefer and why

## **MANAGEMENT PROGRAMME**

### **Term-End Examination -1**

**June, 2015**

### **MS-8 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS**

#### **SECTION - A**

1. The cost accountant of a company has derived the following expression relating total cost  $C$  to

the number of units ( $x$ ) of a product.

$$C = 1440 + 125x + 0.1x^2$$

Find :

(a) The number of units ( $x$ ) that will minimise the average cost.

(b) The value of average cost and total cost corresponding to above number of units.

2. The residents of Lucknow city were surveyed recently to determine readership of newspapers

available. 55% of the residents read the morning paper, 65% read the evening paper, and 30% read both newspapers. Find the probability that a resident selected reads either the morning or

evening paper or both the papers.

3. In a factory, four workers are assigned to complete an order received for dispatching 2000 boxes of a particular commodity. Worker A takes 10 minutes per box, B takes 15 minutes per box,

C takes 20 minutes per box and D takes 25 minutes per box. Find the average time taken

per box by the group of workers.

4. An auto company decided to introduce a new six cylinder car whose mean petrol consumption is claimed to be lower than that of the existing auto engine. It was found that mean petrol

consumption for the 100 cars was 15 km per litre with the standard deviation of 5

km per litre.

Test for the company at 5% level of significance whether the claim that the new car petrol

consumption is 14.50 km per litre on the average is acceptable. The critical value of Z at 5% level

of significance is 1.96.

5. Define Hypothesis. Explain various types of errors in testing of Hypothesis. Describe various steps involved in the "Hypothesis Testing".

6. Write short notes on **any three** of the following : **3x5**

(a) Polynomial Function

(b) Median

(c) Criterion of pessimism

(d) Cluster sampling

(e) Delphi method of forecasting

### **SECTION - B**

7. Using the method of least squares, find the regression equation of  $x$  on  $y$  for the data given in the table below :

$x$  1 2 3 4  $y$  6 9 12 15 18 And from the regression equation obtained, find the value of  $x$  corresponding to  $y = 20$ .

8. Solve the following system of non-homogeneous linear equations using Cramer's rule :

$$\begin{aligned} x + 2y - z &= -1 \\ 3x + 8y + 2z &= 28 \\ 4x + 9y + z &= 14 \end{aligned}$$

**MANAGEMENT PROGRAMME** Term-End Examination December, 2015

rr) MS-8 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS

*Time : 3 hours Maximum Marks : 100*

*(Weightage 70%)*

*Note : (i) Section A has six questions, each carrying 15 marks. Attempt any four questions from this Section.*

*(ii) Section B has two questions, each carrying 20 marks. Attempt both the questions from this section.*

*(iii) Use of scientific calculator is permitted. SECTION - A*

1. A maruti car is purchased for Rs. 60,000/-. If the depreciation for the first three years is at 15% per annum and for the next two years is at 20% per annum, then calculate the depreciated value of the car at the end of five years.

2. It has been observed that on an average one telephone number out of ten is busy. Using binomial distribution find the probability that if five randomly selected telephone numbers are called

(a) not more than two will be busy

(b) at least four of them are busy

3. A builder employs three types of workers : male, female and children. He pays Rs. 350, Rs. 250 and Rs. 200 per day to a male, female and child worker respectively. Suppose he employs 40 males, 30 females and 10 children, determine

(a) Average wage per day paid by the builder

(b) Average wage per day paid by the builder if the number of males, females and children employed are equal.

4. Two brands of electric bulbs are quoted at the same price. A buyer tested a random sample of 100 bulbs of each brand and found the following : Mean Life Standard Deviation (in hrs) of Life (in hrs) Brand I 1400 90 Brand II 1350 100 Test the hypothesis that there is a significant difference in the quality of the two brands of bulbs at 5% level of significance. The critical value of Z at 5% level of significance is 1.96.

5. Explain Binomial and Normal distribution. 15 Mention the conditions under which a random variable having a binomial distribution with parameters  $n$  and  $p$  can be approximated to a random variable having a normal distribution with parameters  $\mu$  and  $\sigma$ . 6. Write short notes on any three of the following :

(a) Linear function

(b) Coefficient of variation

(c) Baye's Theorem

(d) Stratified sampling

(e) Correlation coefficient

SECTION - B 7. Using the method of least squares, find the regression equation of y on x for the data given in the table below :

$x$  1 2 3 4 5  $y$  5 9 14 17 20 And from the regression equation obtained, find the value of y corresponding to  $x = 8$

8. Solve the following system of non - homogeneous linear equations using Cramer's rule :

$$x + 2y + 3z = 6 \quad 2x + 4y + z = 7 \quad 3x + 2y + 9z = 14$$

MANAGEMENT PROGRAMME

CD Term-End Examination

june 2013

MS-8 : QUANTITATIVE ANALYSIS FOR

MANAGERIAL APPLICATIONS

Maximum Marks : 100

**Note :**

**(i) Section A has six questions, each carrying 15 marks. Attempt any four questions from this section.**

**(ii) Section B is compulsory and carries 40 marks. Attempt both questions.**

**(iii) Statistical tables may be supplied on request.**

## **SECTION – A**

**Ques** **1.**

**If an amount of `10,000/- is invested at a simple interest of 15% per annum, how much it will become at the end of 5 years? And if this amount is invested at a compound interest of 12% per annum (the interest being compounded on yearly basis), how much it will become at the end of 5 years? Also answer that the invested amount will be more at the end of 5 years in which case.**

**Ques** **2.**

**In a bolt factory, machines A, B, C manufacture 25%, 35%, 40% bolts respectively. Out of these bolts, 5%, 4%, 12% defective ones came from machines A, B, C respectively. Find the probability that a bolt found to be defective came from machine B.**

**Ques** **3.**

**Give definitions of Less than and More than ogives. After this, draw their graphs for the frequency distribution showing the marks of 56 students shown in the table below:**

Marks	Number of Students	Marks	Numbers of Students
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0-10	4	30-40	15
10-20	8	40-50	12
20-30	11	50-60	6

**Table – Frequency distribution showing number of students in intervals of marks.**

**Ques 4.**

**The results of a survey of 320 families with 5 children together with observed and expected frequencies are shown in the table below:**

Number of Boys and girls	5 Boys and 0 girls	4 Boys and 1 girl	3 Boys and 2 girls	2 Boys and 3 girls	1 Boy and 4 girls	0 Boy and 5 girls	Total
Observed frequencies	18	56	110	88	40	8	320
Expected frequencies	10	50	100	100	50	10	320

**Using chi-square test of goodness of fit, answer whether the hypothesis that births of boys and girls are equally likely at a significance level of .**

**Ques 5.**

**Name the types of Probability Sampling Methods. Then explain the terms Simple Random and Stratified Sampling. While doing so, draw figures wherever required. Thereafter compare the two types of sampling methods.**

**Ques 6.**

**Write short notes on any three of the following topics:**

**(a) Total and Average revenues**

- (b) Standard deviation**
- (c) Normal distribution**
- (d) Null and Alternative hypothesis**
- (e) Opinion polls method of forecasting**

## **SECTION – B**

**Ques** **7.**

**Find the equation of the regression line of x on y for the data given in the table below:**

x	1	2	3	4	5
y	5	7	9	10	11

**And from the equation of the regression line, find the value of x corresponding to y = 6.**

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