SIKKIM MANIPAL UNIVERSITY - DDE

Master of Business Administration – MBA Semester I

MBA103/MB0040 – Statistics for Management – 4 Credits

(Book ID B1731)

Model Question Paper

Duration: 3 hours **Total mark: 70**

Section A

Qn 1 Multiple Choice Questions (MCQs)

[Please answer ALL the following questions, each question carries TWO marks]

(2*10=20)

I. A random variable takes the values -3, -2, 1, 0, 4, 6 with probabilities 1/12, 2/12, 3/12, 4/12, 1/12, 1/12 respectively. The mean or expected value and variance is _____.

a. 1/2 and 23/4
b. 2/3 and 1/2
c. 23/4 and 1/2
d. 5/2 and 24/5

II. i. Size of the class interval is equal to _____.

ii. Tally marks are used to construct _____.

a. i- Range/(1+3.322 log N), ii - frequency tables
b. i - Range/(1+2.22 log N), ii - frequency tables
c. i - Range/number of classes, ii - frequency distribution
d. i - Range/number of classes, ii - class interval

III. Steps in construction of cost of living index numbers involve the following in the order of:

a. Conduct family budget inquiry, select the class of people, obtain price quotations, define the scope of the index, prepare a frame or list of persons.
b. Define scope of the index, Select the class of people, prepare a frame or list of persons, conduct family budget inquiry, obtain price quotations.
c. Select the class of people, define scope of the index, conduct family budge inquiry, obtain price quotations, prepare a frame or list of persons

d. Prepare a frame or list of persons, obtain price quotations, conduct family budget inquiry, define scope of the index, select the class of people

IV. The Arithmetic Mean for following data is:

Age Group	0-10	10-20	20-30	30-40	40-50
No. of persons	5	15	25	8	7

a. 25
b. 29
c. 32
d. 12

V. State whether the following statements are true or false

i. The quantitative characteristic that varies from unit to unit is called a variable.
ii. A variable that assumes all the values in the range is known as discrete variable.

a. i- True, ii- False
b. i - False, ii- True
c. i- True, ii- True
d. i- False, ii- False

VI. i. 1. The totality of all units in a survey is called _____.

ii. A _____ is a part or a subset of the population.

a. i - Unit, ii - Statistic
b. i - Variable, ii - Unit
c. i - Population, ii - Sample
d. i - Statistic, ii – Population

VII. In a bivariate data on ‘x’ and ‘y’, variance of ‘x’ = 49, variance of ‘y’ = 9 and covariance Cov(x, y) = -17.5. Coefficient of correlation between ‘x’ and ‘y’is

a. 0.833
b. -0.833
c. 0.933
d. -0.933

VIII. i. Questions that are answered only if the respondent gives a particular response to a previous question is_____

ii. Questions where the respondents' answers are limited to a fixed set of responses are_____

a. i - Closed ended questions, ii - Contingency questions
b. i - Matrix questions, ii - Open ended questions
c. i - Contingency questions, ii - Closed ended questions
d. i - Closed ended questions, ii – Open ended questions

IX. i. The computed values of chi-square are_____

ii. The number of degrees of freedom in a 4X4 contingency table is_____

a. i - always negative , ii- 16
b. i - always positive, ii- 9
c. i - either positive or negative, ii- 8
d. i- always zero, ii – 15

X. From a random sample of 36 New Delhi civil service personnel, the mean age and the sample standard deviation were found to be 40years and 4.5 years respectively. 95% confidence interval for the mean age of civil personnel in New Delhi is:

a. 40 ± 1.47
b. 42 ± 2.47
c. 52 ± 3.37
d. 55 ± 5.57

Section B

SHORT ANWER QUESTIONS (5 Marks each)

[Please answer any FOUR questions on the Answer Sheet provided separately for the purpose.]

(4*5=20 Marks)

2. Write a note on any 5 terminologies used in probability theory.
3. The incidence of occupational disease in an industry is such that the workers have a 20% chance of suffering from it. What is the probability that out of six workers, 4 or more will contract the disease?

4. In a very large organisation, the director wanted to find out what proportions of the employees prefer to provide their own retirement benefits in lieu of a company – sponsored plan. A simple random sample of 75 employees was taken. It was found that 30% of them are interested in providing their own retirement plans. If the management requests that they use this sample to find an interval about which they can be 99 percent confident that it contains the true population proportion how do we calculate. Elaborate using the value of z' from z table as 2.58.

5. List at least 5 conditions to apply Chi-Square test.
6. Write the differences between Correlation and Regression Coefficient.
7. Write short note on forecasting methods using time series.

Section C

ESSAY-TYPE QUESTIONS (10 Marks each)

[Please answer any THREE questions on the Answer Sheet provided separately for the purpose.]

(10*3=30 Marks)

8. Explain the various methods of sampling.

9. Discuss the various steps involved in the analysis of variance in two-way classification.

10. Two research workers classified some people in income groups on the basis of sampling studies. Their results are as follow:

Investigators	**Income groups**			**Total**
	Poor	**Middle**	**Rich**	
A	160	30	10	200
B	140	120	40	300
Total	300	150	50	500

Show that the sampling technique of at least one research worker is defective.

11. **Case Study**

The following data represent the number of units of production per day turned out by five different workers using four different types of machines.

Workers	**Machine type**			
	A	**B**	**C**	**D**
1	44	38	47	36
2	46	40	52	43
3	34	36	44	32
4	43	38	46	33
5	38	42	49	39

4. a. Test whether 5 men differ with respect to mean productivity.

b. Test whether the mean productivity is the same for the four different machine types. Using $\alpha = 0.05$.