

M.B.A.-I (Sem.-I) Examination
Quantitative Analysis
May-2017

Time : 3 Hours]

[Max. Marks : 100

- Instructions: (1) This paper contains **FIVE** questions.
 (2) All questions are compulsory.
 (3) Question No.2, 3, 4 have internal options.
 (4) Figures in the right side in parenthesis indicate marks.
 (5) Use of Statistical tables and Scientific Calculator is allowed.

- Q:1 (a) Answer the following. (Any Four) 20**
1. Null and Alternate Hypothesis
 2. Scatter diagram
 3. Measurement Scale
 4. Revised probabilities
 5. EPPI and EVPI
 6. Sampling Techniques.
- Q:2 (a) A multinational bank issuing Master Card is monitoring the use of credit card account holders in the context of their spending habits. A market survey shows that the average monthly spending of its regular card users is normally distributed with mean ₹2800 and standard deviation ₹900. The customers are classified into four categories according to pattern of spending: 10**
- a) Category 1 spends less than ₹2000
 - b) Category 2 spends ₹ 2000 or more but less than ₹3000
 - c) Category 3 spends ₹3000 or more but less than ₹4000
 - d) Category 4 spends ₹4000 or more
- What proportion (probability) of customers would you expect to fall into each category?
- Q:2 (b) It is required to test whether the test whether the temperature required to damage a computer on an average is less than 110 degrees. Because of the price of testing, a sample of twenty computers was tested to see what temperature would damage the computer. It was observed that the damaging temperature averaged 109 degrees with a standard deviation of 3 degrees. Use $\alpha = 0.01$, to test if the damaging temperature is less than 110 degrees? 10**
- OR**
- Q:2 (a) Compute Mean and Standard Deviation from following table. 10**
- | class | 20-30 | 30-40 | 40-50 | 50-60 | 60-70 | 70-80 | 80-90 |
|-------|-------|-------|-------|-------|-------|-------|-------|
| Freq. | 4 | 12 | 18 | 28 | 19 | 14 | 5 |
- Q:2 (b) Write a detailed note on Types of Probability 10**
- Q:3 (a) Construct a Histogram and O-gives chart. 10**

(Graph paper not required)

class	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Freq.	4	12	18	28	19	14	5

- Q:3 (b)** A small independent physicians' practice has three doctors. Dr. Shah sees 41% of the patients, Dr. Patel sees 32%, and Dr. Brahmbhatt sees the rest. Dr. Shah request blood test on 5% of her patients, Dr. Patel request blood test on 8% of his patients, and Dr. Brahmbhatt request blood test on 6% of her patients An Auditor randomly selects a patient from past week and discovers that patient had a test as a result of the physician visit. Knowing this information, what is the probability that the patient saw Dr. Patel? For what percentage of all patients at this practice are blood tests requested? Use your Knowledge of Bayes' theorem to calculate revised probabilities. **10**

OR

- Q:3 (a)** Write a detailed note on Measures of Central Tendency. **10**
Q:3 (b) Write a detailed note on Steps of Hypothesis Testing. **10**

Q:4 Out of three attempt any **Two**

- Q:4 (a)** The average number of annual trips per family to amusement parks in the India is Poisson distributed, with a mean of 0.6 trips per year. What is the probability of randomly selecting an Indian family and finding the following: **10**
 I. The family did not make a trip to an amusement park last year?
 II. The family took exactly one trip to an amusement park last year?
 III. The family took two or more trips to amusement parks last year?
 IV. The family took three or fewer trips to amusement parks over a three – year period?
 V. The family took exactly four trips to amusement parks during a six –year period?

- Q:4 (b)** Use the following data to determine the equation of the least square regression line, also calculate r-square. **10**

X	5	7	3	16	12	9
Y	8	9	11	27	15	13

- Q:4 (c)** According to Reuters, a survey undertaken by the National Center for Health Statistics revealed that about 25% of U.S. households have only a cell phone (no land line). According to the FCC, 65% of U.S. households have high-speed Internet. Suppose of U.S. households having only a cell phone, 80% have high-speed Internet. A U.S. household is randomly selected. **10**
 What is the probability that the household has only a cell phone and has high-speed Internet?
 What is the probability that the household has only a cell phone or has high-speed Internet?
 What is the probability that the household has only a cell phone and does not have high-speed Internet?
 What is the probability that the household does not have just a cell phone and does not have high-speed Internet? (Hint: Prob. Matrix)

OR

- Q:4 (a)** Is the transportation mode used to ship goods independent of type of industry? **10**
 Analyze the data by using the chi-square test of independence to determine type of industry is independent of transportation mode.

Industry/ Transportation mode	Air	Train	Truck
Publishing	32	12	41
Computer Hardware	5	6	24

Level of significance is 0.05

- Q:4 (b)** Use of Statistics in Business. **10**
Q:5 (a) A management consulting company presents a three-day seminar on project management to various clients. The seminar is basically the same each time it is given. However, sometimes it is presented to high-level managers, sometimes to midlevel managers, and sometimes to low-level managers. The seminar facilities believe evaluations of the seminar may vary with the audience. Suppose the following data are some randomly selected evaluation scores from different levels of managers who attended the seminar. The ratings are on a scale from 1 to 10, with 10 being the highest. Use a one-way ANOVA to determine whether there is a significant difference in the evaluations according to manager level. Assume $\alpha = 0.05$. Discuss the business implications of your findings. **20**

High Level	Medium Level	Low Level
7	8	5
7	9	6
8	8	5
7	10	7
9	9	4
	10	8
	8	