

**MBA**  
**(SEM I) THEORY EXAMINATION 2019-20**  
**BUSINESS STATISTICS**

**Time: 3 Hours****Total Marks: 70****Note: 1. Attempt all Sections. If require any missing data; then choose suitably.****SECTION A****1. Attempt all questions in brief. 2 x 7 = 14**

- a. What is statistics?
- b. Define Inferential Statistics.
- c. What is Least Square method
- d. What do you mean by dispersion?
- e. What do you understand by linear regression?
- f. What is a Test Statistic?
- g. What do you mean by Critical Region of a test?

**SECTION B****2. Attempt any three of the following: 7 x 3 = 21**

- a. "Every average has its own peculiar characteristics. It is difficult to say which average is the best." Explain with examples.
- b. "Correlation and Regression are two sides of the same coin". Explain.
- c. Explain the uses of index numbers. What problems are involved in the construction of index numbers?
- d. Distinguish between the point estimation and interval estimation. Explain how an interval estimate is better than a point estimate.
- e. What is a Hypothesis? Explain how Hypothesis Testing is useful to management?

**SECTION C****3. Attempt any one part of the following: 7 x 1 = 7**

- (a) Assuming the probability of male birth as  $\frac{1}{2}$ , find the probability distribution of number of boys out of 5 births.
  - (a) Find the probability that a family of 5 children have
    - (i) at least one boy
    - (ii) at most 3 boys
  - (b) Out of 960 families with 5 children each find the expected number of families with
    - (i) and
    - (ii) above
- (b) What are the different components of statistics? How is statistics used in everyday life? Explain with suitable examples.

**4. Attempt any one part of the following: 7 x 1 = 7**

- (a) SBI claims that more than 55% of the saving accounts in Haryana are at SBI. A sample survey of 400 account holders revealed that only 180 account holders have account at SBI. Verify, using 5% level of significance, if the sample results underestimate the claim of SBI.
- (b) What effect does seasonal variability have on a time-series? What is the basis for this variability for an economic time-series?

5. Attempt any *one* part of the following: 7 x 1 = 7

- (a) What is a sampling distribution, and what are the uses of sampling distributions?
- (b) The average monthly electricity consumption for a sample of 100 families is 1250 units. Assuming the standard deviation of electric consumption of all families is 150 units, construct a 95 per cent confidence interval estimate of the actual mean electric consumption.

6. Attempt any *one* part of the following: 7 x 1 = 7

- (a) List some of the important areas where Poisson distribution is used. Also state the important properties of a Poisson distribution.
- (b) ABC Tool Company makes Laser XR; a special engine used in speedboats. The company's engineers believe that the engine delivers an average power of 220 horsepower, and that the standard deviation of power delivered is 15 horsepower. A potential buyer intends to sample 100 engines (each engine to be run a single time). What is the probability that the sample mean  $\bar{X}$  will be less than 217 horsepower?

7. Attempt any *one* part of the following: 7 x 1 = 7

- (a) Explain what you understand by the term 'probability'. How the concept of probability is relevant to decision making under uncertainty?
- (b) The data on price and quantity purchased relating to a commodity for 5 months is given below:

Month :	January	February	March	April	May
Prices(Rs):	10	10	11	12	12
Quantity(Kg):	5	6	4	3	3

Find the Karl Pearson's Coefficient of Correlation between prices and quantity and comment on its sign and magnitude.