Roll No. ⎿⎽⎽⎽⎽⎽⎽⎽⎽⎽⎽⎽⏌ **Total No. of Pages : 04**

Total No. of Questions : 15

MBA / MBA(IB) (2012 & onward) (Sem.–1)
QUANTITATIVE TECHNIQUES
Subject Code : MBA-104
Paper ID : [C0104]

Time : 3 Hrs.   **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A contains SIX questions carrying FIVE marks each and students has to attempt any FOUR questions.**
2. **SECTIONS-B consists of FOUR Subsections : Units-I, II, III & IV. Each Subsection contains TWO questions each carrying EIGHT marks each and student has to attempt any ONE question from each Subsection.**
3. **SECTION-C is COMPULSORY and consist of ONE Case Study carrying EIGHT marks.**

SECTION-A

1. "*Statistics is a method of decision-making in the face of uncertainty on the basis of numerical data and calculated risk.*" Explain with suitable illustrations.

2. Compare and contrast the roles of correlation and regression in studying the interdependence of two variates.

3. What is meant by Time Series Analysis? Discuss its importance in business.

4. "*In the construction of index numbers the advantages of Geometric mean are greater than those of Arithmetic mean*". Discuss.

5. Give the mathematical and statistical definition of probability.

6. Explain Chi-square test. What are the uses of Chi-square test? Explain various conditions for applying the chi-square test.

SECTION-B

UNIT-I

7. From the following data of the wages of 50 workers of a factory compute the first four moments about mean and also the value of β_1 and β_2. Comment on the results.

Daily Wages (Rs.)	No. of Workers	Daily wages (Rs.)	No. of workers
100-110	1	140-150	12
110-120	3	150-160	4
120-130	7	160-170	3
130-140	20		

8. Distinguish between 'Skewness' and Kurtosis and bring out their importance in describing frequency distribution.

UNIT-II

9. a) A stenographer claims that she can type at the rate of 120 words per minute. Can we reject her claim on the basis of 100 trials in which she demonstrates a mean of 116 words with a standard deviation of 15 words? Use 5% level of significance.

   b) A drug was administered to 10 patients and the increments in their blood pressure were recorded to be 6,3,–2,4,–3,4,6,0,0,2. Is it reasonable to believe that the drug has no effect on change of blood pressure? Use 5% significance level. (4,4)

10. Distinguish clearly between large sample and small sample tests of significance. Explain the assumptions in large sample theory.

UNIT-III

11. From the data given below find :

   a) The two regression equations.

   b) The coefficient of correlation between marks in Economics and Statistics.

   c) The most likely marks in Statistics when the marks in Economics are 30.

Marks in Economics :	25	28	35	32	31	36	29	38	34	32
Marks in Statistics :	43	46	49	41	36	32	31	30	33	39

(4,2,2)

OR

12. Construct Fisher's ideal Index Number for the following data and show how it satisfies the Time and Factor Reversal Tests :

Commodities	2010		2011	
	Quantity	Price	Quantity	Price
M	20	12	30	14
N	13	14	15	20
O	12	10	20	15
P	8	6	10	4
Q	5	8	5	6

UNIT-IV

13. a) Three groups of children contain 3 girls and 1 boy, 2 girls and 2 boys, 1 girl and 3 boys respectively. One child is selected at random from each group. Find the chance that the three selected comprise 1 girl and 2 boys.

b) Of a large number of group of children 5% are under 60 cm in height and 40% are between 60 and 65 cm. Assuming a normal distribution find the mean height and standard deviation. (4,4)

OR

14. Below are given the annual production figures (in thousand tonnes) of a fertilizer factory :

Year :	2008	2009	2010	2011	2012	2013	2014
Production :	70	75	90	91	95	98	100

i) Fit a straight line trend by the method of least squares and tabulate the trends values.

ii) Convert your annual trend equation into a monthly trend equation. (6,2)

SECTION-C

CASE STUDY

15. **Read the case carefully and answer the questions :**

An American Automobiles Association (AAA) study investigated the question of whether a man or a woman was more likely to stop and ask for directions. The situation referred to in the study stated the following: "If you and your spouse are driving together and become lost, would you stop and ask for directions?" A sample representative of the data used by AAA showed 300 of 811 women said that they would stop and ask for directions, while 255 of 750 men said that they would stop and ask for directions.

Questions :

a) The AAA research hypothesis was that women would be more likely to say that they would stop and ask for directions. Formulate the null and alternative hypotheses for this study.

b) What is the percentage of women who indicated that they would stop and ask for directions?

c) What is the percentage of men who indicated that they would stop and ask for directions?

d) At $\alpha = .05$ test the hypothesis. What is the p-value, and what conclusion would you expect AAA to draw from this study?