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EXECUTIVE MBA (EXMBA)

Term-End Examination

December, 2011

MCT-053 : QUANTITATIVE TECHNIQUES

Time : 3 hours

Maximum Marks : 100

Note : Answer any five questions. All questions carry equal marks.

1. (a) Bring out the application of statistics in economics and business administration, as a scientific tool. Also point out any two limitations of statistics. 10
- (b) Define classification of data. Briefly explain the different methods of classification of statistical data. 10

2. (a) (i) The mean of marks obtained in an Examination by a group of 100 students was found to be 49.96. The mean of the marks obtained in the same Examination by another group of 200 students was 52.32. Find the mean of the marks obtained by both the groups of students taken together. 5
- (ii) Compare Mean, Mode and Median of measures of location of a distribution. 5

- (b) Explain with suitable example the term 'dispersion'. State the relative and absolute measure of dispersion and describe the merits and demerits of standard deviation. **10**

3. (a) Compute **10**
- (i) Laspeyres'
- (ii) Paasches' and
- (iii) Fisher's quantity index numbers from the following data :

Article	2002		2004	
	Price	Quantity	Price	Quantity
A	5	10	4	12
B	8	6	7	7
C	6	3	5	4

- (b) What is an index number ? Explain, with example, the shifting and splitting technique in index numbers. **10**

4. (a) A, B, C, D cut a pack of cards successively in the order mentioned. Find their channel of first cutting a spade. **10**

- (b) A speaks the truth in 60% and B in 75% of the cases. In what percentage of cases are they likely to contradict each other in stating the same fact ? **10**

5. (a) A student is given a true - false examination with 8 questions. If he corrects at least 7 questions, he passes the examination. Find the probability that he will pass if he guesses all questions. **10**

- (b) The number of accidents in a year involving taxi drivers in a city follows a Poisson distribution with mean equal to 3. Out of 1000 taxi drivers, find approximately the number of drivers with
- no accidents
 - more than 3 accidents in a year.
- 10
6. (a) Derive normal distribution as a limiting case of Binomial distribution. 10
- (b) The life of army shoes is normally distributed with mean 8 months and standard deviation 2 months. If 5000 pairs are insured, how many pairs would be expected replacement after 12 months. 10
7. (a) Two variables x and y have zero means, the same variance 6^2 and zero correlation show that 10
- $u = x\cos\alpha + y\sin\alpha$ and $v = x\sin\alpha - y\cos\alpha$ have the same variance 6^2 and zero correlation.
- (b) The following data regarding the heights (y) and weights (x) of 100, college students are given $\Sigma x = 15000$ $\Sigma x^2 = 2272500$ $\Sigma y = 6800$ $\Sigma y^2 = 463025$ and $\Sigma xy = 1022250$. Find the two lines of regression and estimate the height when weight is 20 units. 10

8. (a) Explain the concept of regression and point out the usefulness in dealing with business problems. 10
- (b) State and explain Chebyshev's theorem. 10
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