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05MBA13

**First Semester MBA Degree Examination, December 2012**  
**Statistics for Management**

Time: 3 hrs.

Max. Marks:100

**Note: 1. Answer any FIVE full questions.****2. Use of statistical tables and calculator is permitted.**

- 1 a. Define the term statistics and explain the applications of statistics. (06 Marks)  
 b. A college management wanted to give scholarships to B.Com. students securing 60% and above marks in the following manner.

Percentage of marks	Monthly scholarship in Rs.
60 – 65	250
65 – 70	300
70 – 75	350
75 – 80	400
80 – 85	450

The marks of 25 students who were eligible for scholarship are give below:

74, 62, 84, 72, 61, 83, 72, 81, 64, 71, 63, 61, 60,  
 67, 74, 66, 64, 79, 73, 75, 76, 69, 68, 78 and 67.

Calculate the monthly scholarship paid to the students. (08 Marks)

- c. The following data relating to the strength of the Indian merchant shipping fleet gives the gross registered tonnage (GRT) as on 31<sup>st</sup> December for different years.

Year	1961	1966	1971	1975	1976
GRT in 000	901	1972	2500	4464	5115

Source: Ministry of shipping and transport. Represent the data by suitable bar diagram.

(06 Marks)

- 2 a. Name the various measures of central tendency. Hence explain any one of them. (06 Marks)  
 b. Calculate the mean for the following frequency distributions:

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of students	6	5	8	15	7	6	3

- i) By the direct formula      ii) By the step deviation method. (08 Marks)  
 c. If the arithmetic mean and geometric mean of two observations are 10 and 8 respectively. Find the two values and their harmonic mean. (06 Marks)

- 3 a. What are the characteristics for an ideal measure of dispersion and name the various measure of dispersion. (06 Marks)  
 b. Find : i) Inter quartile range.    ii) Quartile deviation    iii) Coefficient of quartile deviation, for the following distribution.

Class interval	0-15	15-30	30-45	45-60	60-75	75-90	90-105
f	8	26	30	45	20	17	4

(08 Marks)

- c. Calculate the mean deviation from median of the following distribution:

Class interval	50-10	100-150	150-200	200-250	250-300	300-350
f	7	18	25	31	15	4

Also calculate the coefficient of mean deviation from median.

(06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- 4 a. Write all the relations between various measures of dispersion. (06 Marks)  
 b. Calculate the Karl Pearson's coefficient of skewness from the following data: (08 Marks)

Size	1	2	3	4	5	6	7
Frequency	10	18	30	25	12	3	2

- c. The lines of regression of a bivariate population are  $8x - 10y + 66 = 0$  and  $40x - 18y = 214$ . The variance of  $x$  is 9. Find  
 i) The mean values of  $x$  and  $y$     ii) Correlation coefficient between  $x$  and  $y$   
 iii) Standard deviation of  $y$ . (06 Marks)
- 5 a. Define index number. Explain the types of index numbers. (06 Marks)  
 b. From the following data calculate the price index numbers for 1980 with 1970 as base by  
 i) Laspeyre's method    ii) Paasche's method    iii) Fisher's ideal method. (08 Marks)

Commodities	1970		1980	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

- c. The weights of a calf taken at weekly intervals are given below. Fit a straight line using the method of least square and calculate the average rate of growth per week. (06 Marks)

Age (t)	1	2	3	4	5	6	7	8	9	10
Weight (y)	52.5	58.7	65	70.2	75.4	81.1	87.2	95.5	102.2	108.4

- 6 a. Explain the following terms:  
 i) Random experiment    ii) Sample space    iii) Mutually exclusive events. (06 Marks)  
 b. An urn contains 8 white and 3 red balls. If two balls are drawn at random, find the probability that  
 i) both are white    ii) both are red. (08 Marks)  
 c. Ten unbiased coins are tossed simultaneously. Find the probability of obtaining  
 i) Exactly 6 heads    ii) at least 8 heads    iii) No head. (06 Marks)
- 7 a. Define census method? Explain the merits of sample method over census method. (10 Marks)  
 b. The adjoining table of ten random numbers of 2 digit each is provided to the field investigator.

34	96	61	85	49
78	50	02	27	13

- How should he use this table to make a random selection of 5 plots out of 40? (10 Marks)
- 8 a. Define the terms:  
 i) Type I and type II errors    ii) One tailed and two tailed test. (06 Marks)  
 b. A radioshop sells, an average 200 radios per day with a standard deviation of 50 radios. After an extensive advertising campaign, the management will compute the average sales for the next 25 days to see whether an improvement has occurred. Assume that the daily sales of radios is normally distributed.  
 i) Write down the null and the alternative hypothesis.  
 ii) Test the hypothesis at 5% level of significance if  $\bar{x} = 216$ . (08 Marks)  
 c. Number of scooter accidents per month in a certain town were as follows:  
 12, 8, 20, 2, 14, 10, 15, 6, 9, 4  
 Are these frequencies in agreement with the belief that accident conditions were the same during this 10 months period. (06 Marks)

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