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First Semester MBA Degree Examination, June 2012
Statistics for Management

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FOUR full questions from Q.No.1 to 7.

2. Q.No. 8 is compulsory.

3. Use of statistical tables is permitted.

- 1 a. If the class midpoints in a frequency distribution of age of a group of persons are 25, 32, 39, 46, 53 and 60 respectively, find the class limits assuming that the age quoted is the age completed last birthday. (03 Marks)
- b. Find the class-intervals if the arithmetic mean of the following distribution is 33 and the assumed mean is 35: (07 Marks)

Step deviation	-3	-2	-1	0	1	2
Frequency	5	10	25	30	20	10

- c. For a set of 10 pairs of values of x and y, the regression line of x on y is $x - 2y + 12 = 0$; mean and standard deviation of y being 8 and 2 respectively. Later it was known that a pair (3, 8) was wrongly recorded as (8, 3). Find the correct regression line of x on y. (10 Marks)
- 2 a. In two large population there are 30% and 25% fair haired people. Is this difference likely to be hidden in the samples of 1,200 and 900 from the two populations? Use 5% level of significance. (06 Marks)
- b. There are 12 balls in a bag, out of which 8 are red and 4 are green. Three balls are drawn successfully without replacement. What is the probability that they are alternately of the same colour? (06 Marks)
- c. What are index numbers? What are the problems faced while constructing index numbers? (08 Marks)
- 3 a. In a office, a letter is typed by A in 4 minutes. The same letter is typed by B, C and D in 5, 6 and 10 minutes respectively. What is the average time taken in completing one letter? How many letters do you think would be typed in one day comprising of 8 working hours? (03 Marks)
- b. What are the characteristics of an ideal measure of dispersion? Explain. (07 Marks)
- c. Explain in detail the procedure for testing a hypothesis. (10 Marks)
- 4 a. In 1981 for working class people what was selling at an average price of ₹16 per 10 kg; cloth at ₹4 per meter; house rent at ₹50 per house and miscellaneous items at ₹20 per unit. By 2011 cost of wheat rose to ₹24 per 10 kg; house rent by ₹20 per house and miscellaneous items doubled the price. The weights of the groups in order were in the ratio of 1:2:4:1. The working class cost of living index number for the years 2011 with 1981 as base was 175%. How much cloth price rose during the period 1981-2011? (06 Marks)
- b. Explain the importance of normal distribution. (06 Marks)
- c. A group of 5 patients treated with medicine 'A' weigh 42, 39, 48, 60, 41 kgs. Second group of 7 patients from the same hospital treated with medicine 'B' weigh 38, 42, 56, 64, 68, 69, 62 kgs. Do you agree with the claim that medicine 'B' increases the weight significantly? The value of 't' at 5% level of significance at 10 degrees of freedom is 1.81 (one tail). (08 Marks)

- 5 a. “After settlement, the average weekly wage in a factory had increased from ₹800 to ₹1200 and standard deviation from ₹100 to ₹150. After settlement, the wage has become higher and more uniform”. Comment. (03 Marks)
- b. Explain the properties of correlation coefficient. (07 Marks)
- c. In a survey of 200 boys of which 75 were intelligent, 40 had educated fathers, while 85 of the unintelligent boys had uneducated fathers. Do these figures support the hypothesis that educated fathers have intelligent boys? Value of χ^2 at 1 degree of freedom is 3.841. (10 Marks)

- 6 a. List the limitations of averages. Explain. (06 Marks)
- b. What are the different types of statistical enquiries? Explain. (07 Marks)
- c. A systematic sample of 100 pages was taken from the concise oxford dictionary and the observed frequency distribution of foreign words per page was found as follows:

No. of words	0	1	2	3	4	5	6
Frequency	48	27	12	7	4	1	1

Calculate the expected frequencies using Poisson’s distribution. ($e^{-\lambda} = 0.3716$). (07 Marks)

- 7 a. Explain any three characteristics of a good estimator. (03 Marks)
- b. A survey of 370 students from commerce and 130 students from science revealed that 180 students were studying for only CA examinations, 140 for only costing examinations and 80 for both CA and costing examinations. The rest had offered part-time management courses of those studying for costing only 13 were girls and 90 boys belonged to commerce out of 80 studying for both CA and costing examinations, 72 were commerce of which 70 were boys. Amongst those who offered part time management courses. 50 boys were from science and 30 boys and 10 girls are from commerce. In all there were 110 boys in science. Present the above information in the form of a table. Find out all the possible missing values (07 Marks)
- c. Explain the errors in statistics. (10 Marks)

- 8 a. The mean of 5 observations is 4.4 and the variance is 8.24. If three of the 5 observations are 1, 2 and 6, find the value of the other 2 numbers. (07 Marks)
- b. What is sampling? Explain the principles of sampling. (07 Marks)
- c. Calculate four yearly moving average for the following data:

Year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Y	242	250	252	249	253	255	251	257	260	265	262

(06 Marks)

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