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First Semester MBA Degree Examination, Dec.2013/Jan.2014
Statistics for Management

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions.
2. Statistical tables are permitted.

- 1 a. What is classification of data? List out types of classification. (03 Marks)
 b. The following are the ranks obtained by 10 students in statistics and mathematics. To what extent is knowledge of students in statistics related to knowledge in mathematics. (07 Marks)

Statistics	1	2	3	4	5	6	7	8	9	10
Mathematics	2	4	1	5	3	9	7	10	8	6

- c. The following table gives the distribution of monthly income of 600 families in a certain city:

Monthly income	Below 75	75-150	150-225	225-300	300-375	375-450	450 and above
Number of families	60	170	200	120	50	40	20

Draw 'less than' and 'more than' ogive curve for the above data on the same graph and from these read the median income. (10 Marks)

- 2 a. There are two branches of a company employing 280 and 320 persons respectively. If A.M of the salaries of the two branches are Rs.750 and Rs.937.5 respectively. Find A.M. of the salaries of the employees of the companies as a whole. (03 Marks)
 b. A manufacturer of light bulbs claims that an average 2% of the bulbs manufactured by his firm are defective. A random sample of 400 bulbs contained 13 defective bulbs. On the basis of this sample, can you support the manufacturer's claim at 5% level of significance? (07 Marks)
 c. Classify the sampling methods. Brief about probability sampling methods. (10 Marks)

- 3 a. What are index numbers? List any four uses of index numbers. (03 Marks)
 b. Three machines all turnout non ferrous castings. Machine A produces 1% defective and machine B-2% and machine C-5%. Each machine produces 1/3 of the output. An inspector examines a single casting, which he determines as non defective. Estimate the probabilities of its having been produced by each machine. (07 Marks)
 c. A computer, while calculating the correlation coefficient between x and y from 25 pairs of observations, obtained the following:

$$n = 25, \sum x = 125, \sum x^2 = 650, \sum y = 100, \sum y^2 = 460, \sum xy = 508.$$

It was however, later discovered at the time of checking that they have copied down two pairs as (6, 14) and (8, 6), while the correct values were (8, 12) and (6, 8). Obtain the correct value of the correlation coefficient. (10 Marks)

- 4 a. What is 'law of statistical regularity'? (03 Marks)
 b. Differentiate between correlation and regression. (07 Marks)
 c. Calculate the trend values by the method of least squares. Also calculate the sales for the years 2012 and 2013.

Year	2005	2006	2007	2008	2009	2010	2011
Sales (in lakhs)	125	128	133	135	140	141	143

(10 Marks)

- 5 a. Differentiate between sampling and non-sampling errors. (03 Marks)
 b. Calculate the cost of living index number from the given data: (07 Marks)

Items	Base year price	Current year price	Weights
Food	30	47	4
Fuel	08	12	1
Clothing	14	18	3
House rent	22	15	2
Miscellaneous	25	30	1

- c. A certain drug is claimed to be effective in curing cold. In an experiment of 500 persons with cold, half of them were given the drug and half of them were given the sugar pills. The patients reactions to the treatment are recorded in the following table:

	Helped	Harmed	No effect
Drug	150	30	70
Sugar pills	130	40	80
Total	280	70	150

On the basis of data can it be calculated that there is a significant difference in the effect of the drug and sugar pills. (10 Marks)

- 6 a. Write any three real life examples where poisson distribution is used? (03 Marks)
 b. Explain the usage of statistics in business management. (07 Marks)
 c. The following is the distribution of 1000 persons working in a large industrial house:

Age-group	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65
Number of persons	30	160	240	180	145	105	70	60	40

Due to continuous heavy losses, the management decides to bring down the strength to the following scheme:

- To retrench the first 15% from the lower group.
- To absorb the next 45% in other branches.
- To make 10% from the highest age group retire permanently.

Calculate the age limits of the persons retained and those to be transferred to other depts. Find the average age of retained. (10 Marks)

- 7 a. Differentiate between relative and absolute measures of dispersion. (03 Marks)
 b. An incomplete frequency distribution is given below:

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Frequency	12	30	-	65	-	25	18

Given that the total frequency is 229 and median is 46. Find the missing frequencies. (07 Marks)

- c. The weekly wages of 1000 workers are normally distributed with mean of Rs.70 and SD of Rs.5. Estimate the number of workers whose weekly wages will be
- Between Rs.70 and Rs.72
 - More than Rs.75 and
 - Less than Rs.65.
- (10 Marks)

- 8 a. What is 'coefficient of determination'? (03 Marks)
 b. Define kurtosis. Differentiate between measure of dispersion and skewness. (07 Marks)
 c. The following are the scores of two batsmen A and B in a series of innings:

A	32	28	45	61	70	40	10	50	90	24
B	20	30	48	53	60	70	30	62	40	80

Find, who is better scorer and who is more consistent? (10 Marks)