



First Semester MBA Degree Examination, December 2011
Statistics for Management

Time: 3 hrs.

Max. Marks:100

Note: 1. Answer any FIVE full questions.
2. Use of statistical table is permitted.

- 1 a. List the differences between primary data and secondary data. (03 Marks)
 b. Quotations of index numbers of security prices of a certain joint stock company are given below:

Year	2004	2005	2006	2007	2008	2009	2010
Debenture (₹)	97.8	99.2	98.8	98.3	98.4	96.7	97.1
Share (₹)	73.2	85.8	78.9	75.8	77.2	87.2	83.8

Using Spearman's rank correlation method, determine the relationship between debenture price and share prices. (07 Marks)

- c. The lifetime of 3 electric bulbs of four brands, measured in hundred hours are presented below. Perform one-way ANOVA, to test the hypothesis that mean lifetimes of the four brands of bulbs are the same. (10 Marks)

BRAND			
A	B	C	D
20	25	24	23
19	23	20	20
21	21	22	20

- 2 a. What are the differences between a dependent event and an independent event, with reference to probability? (03 Marks)
 b. For the following frequency distribution, draw the less than and more than "ogive curves".

CI	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	6	11	9	7	5	2

- (07 Marks)
 c. A brokerage survey reports that 30% of individual investors have used a discount broker. In a random sample of 9 investors, what is the probability that
 i) exactly two used a discount broker?
 ii) not more than 3 used a discount broker?
 iii) at least three of them used a discount broker? (10 Marks)

- 3 a. List the relationship between arithmetic mean, geometric mean and harmonic mean. (03 Marks)
 b. In a bolt factory, machines A, B and C manufactures 25%, 35% and 40% of the total output respectively. Of the total output, 5, 4 and 2 percent are defective bolts. A bolt is drawn at random and is found to be defective. What is the probability that it was made by machine A or B or C? (07 Marks)
 c. The data on the profit (lakhs) earned by 60 companies is given below.

Profit	Below 10	10-20	20-30	30-40	40-50	50 & above
No. of companies	5	12	20	16	5	2

- i) Obtain Q_1 and Q_3 .
 ii) Calculate the Bowley's coefficient of skewness. (10 Marks)
 4 a. What do you mean by Type I error and Type II error, with reference to hypothesis testing? (03 Marks)
 b. For a group of 50 male workers, the mean and standard deviation of their monthly wages are ₹6300 and ₹900 respectively. For a group of 40 female workers these are ₹5400 and ₹600 respectively. Find the standard deviation of monthly wages for the combined group of workers. (07 Marks)

- c. The lifetimes of certain electronic devices have a mean of 300 hours and standard deviation of 25 hours. Assuming that the distribution of these lifetimes follows normal distribution:
- Find the probability that electronic devices will have a life more than 350 hours.
 - What percentage will have lifetime 300 hours?
 - What percentage will have lifetime between 220 and 260 hours? (10 Marks)

- 5 a. What should be the sample size, necessary to estimate population at 95% confidence with a sampling error of 5 and standard deviation of 20? (03 Marks)
- b. What do you mean by measures of dispersion? What are the different measures of it? List the differences between absolute measures and relative measures of dispersion. (07 Marks)
- c. List any three uses of index numbers. Also compute Laspeyre's, Paasche's and Fisher's ideal index numbers for the following data. (10 Marks)

Item	1998		1999	
	Price	Quantity	Price	Quantity
A	5	25	6	30
B	3	8	4	10
C	2	10	3	8
D	10	4	3	5

- 6 a. What do you mean by time series analysis? List the various components of it. (03 Marks)
- b. The demand for certain product on time scale is presented in below table. Fit a straight line trend by linear regression least square method and hence estimate the next period demand.

Year	2004	2005	2006	2007	2008	2009	2010
Demand	18	20	23	25	24	28	30

- c. Differentiate between coefficient of correlation and coefficient of determination. Calculate the Karl Pearson's coefficient of correlation and interpret it. (10 Marks)

Age	30	32	35	40	48	50	52	55	57	61
Sick days	1	0	2	5	2	4	6	5	7	8

- 7 a. List the different stages involved in hypothesis testing. (03 Marks)
- b. List the different probability sampling methods. Explain any two methods. (07 Marks)
- c. The weekly sales of A and B products are recorded in below table. Determine out of these two products, which one shows greater fluctuation in sales. (10 Marks)

Product-A	59	75	27	63	27	28	56
Product-B	150	200	125	310	330	250	225

- 8 a. List the managerial applications of statistics. (03 Marks)
- b. A firm believes that the tyre produced by process-A, on an average, has a longer life than by process-B. To test this belief, sampling data is collected and presented in below table. Test the hypothesis at 95% confidence level. (07 Marks)

Process	Sample size	Avg. life time (km)	Standard deviation (km)
A	50	22,400	1000
B	50	21,800	1000

- c. Differentiate between one-dimensional and two dimensional diagram, with examples. Draw the percentage sub-divided diagram for the following data. (10 Marks)

Item of Expenditure	Family - A	Family - B
	(Monthly income ₹ 30,000)	(Monthly income ₹ 40,000)
Food	5,500	7,280
Cloth	5,100	6,880
House rent	4,800	6,480
Fuel and light	4,740	6,320
Education	4,950	6,640
Other expenses	4,860	6,400
Total (₹)	30,000	40,000
