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First Semester MBA Degree Examination, June/July 2013
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 non programmable calculator is allowed.

- 1 a. What are the limitations of statistics? (03 Marks)
 b. A series comprises of two numbers and its mean is 25 and GM is 20. Find the values of two numbers. (07 Marks)
 c. In a sample study about coffee-drinking habits in two towns; the following information was received:
 Town A: Female were 40%, total coffee drinkers were 45%, and male coffee drinkers were 20%.
 Town B: Male were 55%, male non coffee drinkers were 30% and female coffee drinkers were 15% represent the data in a tabular form. (10 Marks)
- 2 a. What is meant by primary data? Mention the methods of collecting primary data. (03 Marks)
 b. The data relating to the market price of the shares of the three companies are as follows:

Company	Average	SD
ONIDA	150	50
BPL	200	40
SONY	125	20

From the above statement:

- i) Which company shares has the more stability in price fluctuations?
 ii) Which one would you like to dispose and why? (07 Marks)
 c. The following distribution gives the pattern of overtime work per week done by 100 employees of a company. Calculate: i) Median; ii) Upper quartile; iii) Lower quartile; iv) 6th decile and v) 70th percentile.

Overtime: (hrs)	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of Employees:	5	8	7	12	28	20	10	10

(10 Marks)

- 3 a. What are the significance in measuring dispersion? And what are the various types of measure of dispersion? (03 Marks)
 b. From the following data compute the regression equation:
 $\sum X = 510$, $\sum Y = 7140$, $\sum X^2 = 4150$, $\sum XY = 54990$, $\sum Y^2 = 740200$, $N = 102$. (07 Marks)
 c. From the following data calculate the price index numbers for 2012 with 2010 as the base by i) Laspayer's method and ii) Paachi's method. (10 Marks)

Commodities	2010		2012	
	Price	Quantity	Price	Quantity
A	20	8	40	6
B	50	10	60	5
C	40	15	50	15
D	20	20	20	25

- 4 a. Distinguish between: i) Positive correlation and negative correlation.
 ii) Linear correlation and non linear correlation. (04 Marks)
 b. Comment on the following, for a binomial distribution mean=7 and variable=11. (06 Marks)

- c. Find the Sperman's co-efficient of correlation from the following data related to the ranks assigned by two judges on a certain competition: (10 Marks)

Candidate:	A	B	C	D	E	F	G	H	I	J
Marks by judge I:	26	25	38	37	41	45	60	42	53	57
Marks by judge II:	52	25	30	35	48	77	38	43	68	64

- 5 a. Define the following terms: i) Independent event; ii) Mutually exclusive event; iii) Equally likely event. (03 Marks)
 b. Explain the procedure of hypothesis testing. (07 Marks)
 c. Find the missing frequency of the following series, if the value of the arithmetic mean is 33: (10 Marks)

X:	10	12	60	70	40
Frequency:	5	10	?	2	5

- 6 a. Define the following terms: i) Census; ii) Sample. (04 Marks)
 b. A company has to appoint a person as its managing director, who must be an M.Com, MBA and PhD, the probability of which are one in twenty five, one in forty and one in fifty respectively. Find the probability of getting such a person to be appointed by the company. (06 Marks)
 c. Fit a Poisson's distribution to the following data by calculating the theoretical distribution:

X:	0	1	2	3	4
F:	123	59	14	3	1

(10 Marks)

- 7 a. Show that for any given series of positive values the geometric mean is smaller than the arithmetic mean. (03 Marks)
 b. In a large consignment of electric lamps 5% are defective. A random sample of 8 lamps are taken for inspection. What is the probability that it has one more defectives? (07 Marks)
 c. The following information is obtained concerning an investigation of 50 ordinary shops of small size:

	Shops in town	Shops in village	Total
Run by men	17	18	35
Run by women	3	12	15
Total	20	30	50

Can it be inferred that the shops run by women are relatively more in villages than in towns?

Use χ^2 test. Given $\gamma = 1$, $\chi_{0.05}^2 = 3.84$.

(10 Marks)

- 8 a. Define the following: i) Null hypothesis; ii) Two tailed test; iii) Type I error. (03 Marks)
 b. The mean and standard deviation of a set of 100 observations were worked out as 40 and 5 respectively by a computer which by mistake took the value 50 in place of 40 for one observation. Find the correct mean and standard deviation. (07 Marks)
 c. Set up an analysis of variance table for the following per acre production data for three varieties of wheat, each grown on 4 plots and state if the variety differences are significance (Take $F = 4.86$ for 5% level of significance and $v_1 = 2$, $v_2 = 9$). (10 Marks)

Plots	Per acre production data variety of wheat		
	A	B	C
1	6	5	5
2	7	5	4
3	3	3	3
4	8	7	4
