MASTER OF BUSINESS ADMINISTRATION
First Semester
Statistics & Quantitative Methods
(MBA - 04)

Duration: 3Hrs. **Full Marks: 70**

Part-A (Objective) =20
Part-B (Descriptive)=50

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins. **Marks: 50**

1. Answer the following questions (any *five*) **2×5=10**

a) Distinguish between relative frequency and cumulative frequency.
b) Distinguish between Primary data and secondary data.
c) What do you mean by mutually exclusive event? Give one example of it.
d) Prove that P (E/E) = 1
e) If $r_{xy} = 0.6$ and $b_{xy} = 0.8$, what is the value of b_{yx}
f) If E and F are two events such that P (E) = 1/4, P(F) =1/2 and P(E and F) = 1/8 then P(E or F)=?

2. Answer the following questions (any *five*) **3×5=15**

a) The following frequency distribution relates to the life in hours of 400 televisions colour tubes.

Life (In hours)	300 To 399	400 To 499	500 To 599	600 To 699	700 T0 799	800 To 899	900 T0 999	1000 T0 1099	1100 To 1199	Total
No. of tubes	14	46	58	76	68	62	48	22	6	400

Find i) upper limit of 4^{th} class ii) Relative frequency of 6^{th} class iii) Find the percentage of the number of tubes whose life length is greater than or equal to 500 hours but less than 1000 hours.

b) If A and B are two independent events then prove that $\bar{A}$ and B are also independent.

c) $x_1, x_2, \text{-------} ,x_n$ is a random sample of size n taken from a normal population. The population mean and standard deviation are respectively μ *and* σ. State the sampling distribution of the statistic $\bar{x} = \frac{1}{n}\sum_{i=1}^{n} x_i$

Taking n= 16, $\mu = 48.5$, $\sigma = 2$

Evaluate P($\bar{x} > 50$)

d) Prove that for two independent variables correlation coefficient is zero.

e) Find four yearly moving average from the following data

Year:	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Production:	12	14	16	13	16	19	20	22	23	21	24	25	27

(inTthousands ton)

f) What do you mean by measures of central tendency?

A factory has 100 workers, 60 of which work in the morning section and 40 in the evening section. The mean wage of all the workers is Rs.38. The mean weekly wage of the workers in the morning section is Rs. 40. What is the mean wage of the workers in the evening section?

3. Answer the following questions (any *five*) **5×5=25**

a) What are the different measures of dispersion? Why standard deviation is considered as the best measure of dispersion.

For a group of 200 candidates, the mean and standard deviation of scores were found to be 40 and 15 respectively. Later on it was discovered that the scores 43 and 35 were misread as 34 and 53 respectively. Find the corrected mean and standard deviation corresponding to the corrected figures.

b) An urn contains 7 black and 5 white balls. Two balls are drawn at random one after the other. Find the probability that both balls drawn are black if

i) When first ball drawn is not replaced before drawing the second and

ii) When first ball drawn is replaced before drawing the second ball.

c) Write the probability mass function of Binomial Distribution? Deduce mean and variance of the Distribution.

d) It is claimed that the average personal study hour of student is not different from 4 hours per day. A random sample gave the following information about daily personal study hours of selected student.

3.8, 4.7, 2.6, 3.2, 5.1, 1.9, 3.7, 4.9, 5.4, 3.6

State null and alternative hypotheses and carry out the test of significance.
(For 9 d.f. the tabulated value of t at 5% level of significance is 2.26)

e) What do you mean by correlation and regression of two variables? Find the line of regression of y on x from the following data.

X:	5	10	15	25	30	35	40	45
Y:	25	32	44	32	39	49	55	60

What will be the value of Yfor X= 48?

f) What do you mean by seasonal variations in a time series? Explain one method by which one can compute a seasonal index from the time series.

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REV-00
MBA/24/28 2014/01

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(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes **Marks – 20**

PART A- Objective Type

I. Choose the correct options from the following: **1×20=20**

1. Classification can be defined as the process of arranging the available matter into ____classes or groups

a. homogeneous b. symmetrical c. equal d. None of these

2. The frequency of a class when expressed as a ratio of the total frequency of the distribution is called the

a. cumulative frequency b. Relative frequency c. percentage frequency d. None of these

3. A table is a systematic arrangement of statistical data in _____ and _____

a. rows, columns b. Horizontal, vertical c. both of these d. None of these

4. The number of observations corresponding to a particular class is known as the _____ of the class

a. frequency b. tally c. class interval d. None of these

5. Classification and tabulation facilitate further _____

a. demographic analysis b. statistical analysis c. economical analysis d. None of these

6. In a histogram the height of the rectangles are always _____ to the respective class interval.

a. Proportional b. Reciprocal c. Equal d. None of these

7. In chorological classification, the data are classified on the basis of

a. time b. location c. situation d. None of these

8. If the mid points of the classes are 16, 24, 32, 40, and so on, then the magnitude of the class intervals is

a. 6 b. 7 c. 8 d. 9

9. Geometric mean of 2, 4 and 8 is

a.2 b. 3 c. 4 d. None of these

10. The algebraic sum of deviations of a set of n values from their arithmetic mean is

a. n b. 0 c.1 d. None of these

11. The point of intersection of the 'less than' and the 'more than' ogive corresponds to

a. The mean b. The median c. the geometric mean d.None of these

12._____ is the measure of dispersion which utilizes only extreme values.

a. range b. mode c standard deviation d. None of these

13. Exactly one of the event A & B occur is expressed as

a. $(A \cap B)$ b. $\bar{A} \cap B$ c. $\overline{(A \cap B)} U (A \cap \overline{B})$ d. None of these

14. $P(\bar{A} \cup \bar{B}) = ?$

a. $P(A \cap B)$ b. $1 - P(A \cap B)$ c. $P(\overline{A \cap B})$ d. None of these

15. If $P(A \cap B) = P(A).P(B)$ implies that A and B are

a. mutually exclusive b. independent c. both (a) and (b) d. None of these

16. For symmetrical curve

a. Mean= Median> Mode b. mean= median= mode c. mean>Median d.None of these

17. If one of the regression co-efficients is >1, then the other must be

a. = 1 b. < 1 c. = 0 d. None of these

18. The coefficient of correlation is independent of

a. change of scale only b. change of origin only

c. both change of scale and origin d. neither change of origin nor change of scale.

19. Prob. (H_0 is rejected when it is true) is

a. α b.β c. γ d. None of these

20. Mode of Chi-square is at

a. x = n-2 b. x= 2-n c. x= 2+n d. None of these

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