### MASTER OF BUSINESS ADMINISTRATION
#### FIRST SEMESTER [SPECIAL REPEAT]
#### QUANTITATIVE TECHNIQUES
#### MBA – 105
### [USE OMR SHEET FOR OBJECTIVE PART]

| SET |
| :---: |
| **A** |

Duration: 3 hrs.

**Objective**

Time: 30 mins.

Full Marks: 70

Marks: 20

*Choose the correct answer from the following:*          $1 \times 20 = 20$

1. Which of the following statement is true for the probability of an event A, i.e., P(A)?
   a. $0 \leq P(A) \leq 1$
   b. $0 < P(A) < 1$
   c. $-1 \leq P(A) \leq 1$
   d. $-1 < P(A) < 1$

2. Let, the random variable X follows a Poisson distribution with parameter 4, then the standard deviation of X, is _____
   a. 4
   b. 16
   c. 2
   d. None of the above

3. If the events A and B are mutually exclusive, then
   a. $P(A \cup B) = 1$
   b. $P(A \cup B) = 0$
   c. $P(A \cap B) = 1$
   d. $P(A \cap B) = 0$

4. Which of the following statement is true for a binomial distribution?
   a. Mean < variance
   b. Mean > variance
   c. Mean = variance
   d. None of the above

5. In a normal distribution,
   a. Mean < median < mode
   b. Mean > median > mode
   c. Mean = median = mode
   d. None of the above

6. The mean of the sampling distribution of the sample means, is
   a. The population variance
   b. The population mean
   c. The population proportion.
   d. None of the above

7. The corresponding statistic of population variance, is
   a. Sample variance
   b. Sample standard deviation
   c. Sample mean
   d. None of the above.

8. Which of the following is Type 1 error?
   a. Reject $H_0$, when it is not true.
   b. Reject $H_0$, when it is true.
   c. Accept $H_0$, when it is not true.
   d. Accept $H_0$, when it is true.

9. If a sample of size n < 30 with known sample standard deviation S, is drawn from a normal population, which of the following test statistic is applied?
   a. $\chi^2$
   b. Z
   c. T
   d. F

10. To test the equality of two variances, the test statistic _____ is applied.
    a. F
    b. $\chi^2$
    c. Z
    d. t

11. The measure _____ is not suitable for further mathematical treatments
    a. Mean
    b. Standard deviation
    c. range
    d. None of the above

12. Which of the following is the best measure of central tendency?
    a. Mean
    b. Median
    c. Mode
    d. Standard deviation.

13. The most suitable measure which is used to compare the consistency of two or more sets of data, is
    a. Mean
    b. Standard deviation
    c. Variance
    d. Coefficient of variation

14. _____ is not affected by the extreme values.
    a. Mean
    b. Median
    c. Standard deviation
    d. None of the above

15. Which of the following is not suitable for measures of central tendency?
    a. The variation of the incomes of employees in a firm
    b. The marks obtained by the students
    c. Heights of a group of students
    d. None of the above

16. If the value of one of the regression coefficients is 2.75, what is the possible value of the other regression coefficient?
    a. 0.56
    b. 0.24
    c. 0.45
    d. 0.42

17. Paasche's index number has
    a. Upward bias
    b. Downward bias
    c. No bias
    d. None of the above

18. Lockdown of factory due to union strike, is an example of
    a. Secular trend
    b. Seasonal variation
    c. Cyclic variation
    d. Random variation

19. Decline of mortality rate due to new medical policy, is an example of
    a. Random variation
    b. Seasonal variation
    c. Secular trend
    d. Cyclic variation

20. If one of the regression coefficients is negative, the value of the correlation coefficient is
    a. Positive
    b. Negative
    c. Zero
    d. None of the above

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USTM/COE/R-01

## (Descriptive)

[ Answer question no.1 & any four (4) from the rest ]

1.  Determine mean, median, mode and standard deviation of the following distribution:

    Age (less than in years): 10  20  30  40  50  60  70  80
    Number of persons:      2   5   10  18  28  37  47  50

    2+2+2+4=10

2.  What is skewness? What are the various measures of skewness? Differentiate positive and negative skewness. Explain kurtosis.

    2+3+2+3=10

3.  From the data given below fit a straight line trend by the method of least squares

    Year          : 2010  2011  2012  2013  2014  2015  2016  2017
    Production
    (thousand tones):12    15    22    26    32    41    39    45
    Estimate the production in 2018

    8+2=10

4.  a)  Write the various steps in testing of hypothesis.
    b)  The cost of an item in different markets is given in following table.

    | Markets: | A  | B  | C  | D  | E  | F  |
    |----------|----|----|----|----|----|----|
    | Cost(₹): | 33 | 26 | 29 | 33 | 31 | 28 |

    Test at 5% level of significance, whether the costs are uniformly distributed among the different markets. [Given, $\chi^2_{0.05,5} = 11.07$]

    5+5=10

5.  a)  Write the Classical and Axiomatic approaches of probability.
    b)  A candidate is applied three posts of management trainee. The chances of selecting the first post are 1/3, the second post is ¼ and the third post is ½. What is the probability that the candidate will be selected at least one of the post?

    2+2+6=10

6.  a)  Explain the difference between Descriptive Statistics and Inferential Statistics.
    b)  Distinguish between point estimation and interval estimation.

    5+5=10

7. a) What are null and alternative hypothesis?  5+5=10
   b) Write the steps of the testing of hypothesis.

8. A random sample of 10 students had I.Q's 70, 120, 110, 101, 88, 83,  10
   95, 98, 107 and 105. Do these data support the assumption of
   population mean IQ less than 100 at 5% level of significance?
   [Given, the critical value of t at 5% level of significance for 9 and
   10 degrees of freedom are 1.833 and 1.812 respectively.]

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