

**MASTER OF BUSINESS ADMINISTRATION  
FIRST SEMESTER [SPECIAL REPEAT]  
QUANTITATIVE TECHNIQUES  
MBA – 105**

**SET  
A**

**[USE OMR SHEET FOR OBJECTIVE PART]**

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

**(Objective)**

Marks: 20

*Choose the correct answer from the following:*

*1 × 20 = 20*

1. The measure \_\_\_\_\_ is not suitable for further mathematical treatments  
a. Mean  
b. Standard deviation  
c. range  
d. None of the above
2. Which of the following is the best measure of central tendency?  
a. Mean  
b. Median  
c. Mode  
d. Standard deviation.
3. 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
4. \_\_\_\_\_ is not affected by the extreme values.  
a. Mean  
b. Median  
c. Standard deviation  
d. None of the above
5. 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
6. 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
7. Paasche's index number has  
a. Upward bias  
b. Downward bias  
c. No bias  
d. None of the above
8. Lockdown of factory due to union strike, is an example of  
a. Secular trend  
b. Seasonal variation  
c. Cyclic variation  
d. Random variation
9. 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

10. If one of the regression coefficients is negative, the value of the correlation coefficient is
- Positive
  - Negative
  - Zero
  - None of the above
11. Which of the following statement is true for the probability of an event A, i.e.,  $P(A)$ ?
- $0 \leq P(A) \leq 1$
  - $0 < P(A) < 1$
  - $-1 \leq P(A) \leq 1$
  - $-1 < P(A) < 1$
12. Let, the random variable X follows a Poisson distribution with parameter 4, then the standard deviation of X, is \_\_\_\_\_
- 4
  - 16
  - 2
  - None of the above
13. If the events A and B are mutually exclusive, then
- $P(A \cup B) = 1$
  - $P(A \cup B) = 0$
  - $P(A \cap B) = 1$
  - $P(A \cap B) = 0$
14. Which of the following statement is true for a binomial distribution?
- Mean < variance
  - Mean > variance
  - Mean = variance
  - None of the above
15. In a normal distribution,
- Mean < median < mode
  - Mean > median > mode
  - Mean = median = mode
  - None of the above
16. The mean of the sampling distribution of the sample means, is
- The population variance
  - The population mean
  - The population proportion.
  - None of the above
17. The corresponding statistic of population variance, is
- Sample variance
  - Sample standard deviation
  - Sample mean
  - None of the above.
18. Which of the following is Type I error?
- Reject  $H_0$ , when it is not true.
  - Reject  $H_0$ , when it is true.
  - Accept  $H_0$ , when it is not true.
  - Accept  $H_0$ , when it is true.
19. 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?
- $\chi^2$
  - Z
  - t
  - F
20. To test the equality of two variances, the test statistic \_\_\_\_\_ is applied.
- F
  - $\chi^2$
  - Z
  - t

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**(Descriptive)**

Time : 2 Hr. 30 Mins.

Marks : 50

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

1. Determine mean, median, mode and standard deviation of the following distribution: 2+2+2+4=10

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. 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 8+2=10

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

4. a) Explain Time Reversal Test (TRT) and Factor Reversal Test (FRT). 4+6=10  
b) Show with the following data, Fisher's Index satisfies TRT and FRT.

2005		2010		
Commodity	Price	Quantity	Price	Quantity
A	4	50	1040	
B	3	10	9	2
C	2	5	4	2

5. The distribution of monthly income of 500 workers be assumed to be normal with mean ₹2000 and standard deviation of ₹200. Estimate the number of workers with incomes:- 3+4+3=10

- (i) Exceeding ₹2300 pm  
(ii) Between ₹1800 pm and ₹2300 pm  
(iii) Below ₹1800 pm

[Given Z = 0.67 1.00 1.5  
A = 0.75 0.8413 0.9322]

6. a) Explain the difference between Descriptive Statistics and Inferential Statistics. 5+5=10  
b) Distinguish between point estimation and interval estimation.

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, 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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