B. COM
Third Semester
BUSINESS STATISTICS
(BCM – 11)

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

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

(PART-B: Descriptive)

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

Answer any *five* of the following questions:

1. a. Give two definitions of statistics which you think to be the best.   (2+3+5=10)

   b. Distinguish between primary and secondary data.

   c. Explain the advantages of graphic representation of statistical data.

2. a. Define mode for ungrouped and grouped frequency.   (2+3+5=10)

   Which measure of central tendency is commonly used in the following cases?

   i. In computing rate of population growth.

   ii. Computing the average speed.

   iii. Sale of a commodity in every week.

   c. Following are the daily wages of 40 workers.

   10 26 24 16 26 23 28 23 35 18 10 11 20 21 19 18 15 13 22 45
   15 29 29 12 34 15 14 18 22 24 30 38 17 32 36 20 19 27 33 34

   i. Form a frequency distribution table taking 5 as the class interval.

   ii. Find the percentage of workers getting wage below Rs.35.

3. a. Calculate co-efficient of variation from the following data.   (5+5=10)

Marks	10-20	20-30	30-40	40-50	50-60
Frequency	2	5	10	5	3

b. Draw an ogive from the following data and find median from it.

Marks:	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Frequency:	5	15	30	32	48	45	37	26	12	7

4. a. What do you mean by positive and negative correlation? Explain with examples.

$$(2+3+5=10)$$

b. Prove that two independent variables are uncorrelated.

c. Find the correlation coefficient between X and Y from the following data and interpret the result.

X :	16	20	24	28	32
Y :	30	40	25	35	45

5. a. Why there are two regression lines? $(2+3+5=10)$

b. If $r_{xy} = 0.6$ and $b_{xy} = 0.8$, what is the value of b_{yx}?

c. Find the regression line 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 Y for X = 42?

6. a. Discuss briefly the problem of selection of base period, commodities and average for construction of price index number. $(5+5=10)$

b. Using Fisher's ideal index number formula calculate the price index number. Also show that it satisfies both Time Reversal test and Factor Reversal Test.

Commodities	2000		2012	
	Price	Quantity	Price	Quantity
A	4	50	10	40
B	3	10	9	12
C	2	5	4	3
D	5	20	6	8

7. a. Define time series. What are its components? $(2+3+5=10)$

b. Which component of time series is mainly applicable in the following cases?

i. Fire in a factory.

ii. An era of prosperity.

iii. Weekly sales of cold drinks.

c. Determine 5 yearly moving averages from the following data:

Year	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Production (in, 000 tones)	30	32	33	35	34	32	35	35	37	40

8. a. Define certain event and mutually exclusive event. (2+3+5=10)

b. A die is thrown find the probability of getting an even number greater than 4.

c. Deduce mean and variance of Binomial distribution.

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Duration: 20 minutes   **Marks – 20**

(PART A - Objective Type)

I. Choose the correct answer: 1×20=20

1. Schedule is the method of getting answers to the questions in a form which are filled by _____.
   - a. the interviewers
   - b. the respondents
   - c. local correspondents
   - d. None of these

2. If a interval is such that the lower as well as the upper class limits are included in the same class interval, it is called
   - a. inclusive
   - b. exclusive
   - c. open
   - d. none of these

3. Mailed questionnaire method cannot be used when the informants are_____.
   - a. illiterate
   - b. minor
   - c. literate
   - d. none of these

4. The classification must be
   - a. exhaustive
   - b. mutually exclusive
   - c. homogeneous
   - d. all of these

5. The difference between the upper limit and the lower limit of a class is known as
   - a. class limits
   - b. class boundaries
   - c. class interval
   - d. none of these

6. Data taken from a research journal will be considered as_____.
   - a. secondary data
   - b. primary data
   - c. both a) and b)
   - d. none of these

7. 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

8. Using ogive we can determine a particular measure of central tendency, namely_____.
   - a. mean
   - b. median
   - c. mode
   - d. all of these

9. 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

10. 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

11. Median is an average of _____.
   a) position   b) location
   c) both a) & b)   d) None of these

12. What is the G.M. of 0,1,2, 3,1/2, 1/3 ?
   a) 1   b) 1/5   c)1/7   d) 0

13. Quartiles are measures of _____.
   a) location   b) position
   c) both a) & b)   d) none of these

14. Mode = _____ - 2 mean.
   a) Median   b) 3 Median
   c) 4Median   d) None of these

15. Standard deviation is the positive_____ of variance.
   a) positive square root   b) square root
   c) cube root   d) none of these

16. When two variables are uncorrelated then r=?
   a) 1   b) -1   c) 0   d) none of these

17. Both Time Reversal and Factor Reversal test is satisfied by
   a) Laspeyre's Index number   b) Paasche's Index Number
   c) Fisher's Index Number   d) none of these

18. If A and B are mutually exclusive events then P(AUB) = ?
   a) P(A) + P(B)   b) P(A) - P(B)
   c) P(A) + P(B) – P(AB)   d) None of these

19. If $P(A \cap B) = \varphi$ implies that A and B are
   a) mutually exclusive   b) independent
   c) both a) and b)   d) none of these

20. _____distribution has mean and variance are same.
   a) Normal   b) Poisson
   c) Binomial   d) None of these

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