

B.COM.
THIRD SEMESTER (SPECIAL REPEAT)
BUSINESS STATISTICS
BCM-304

(Use separate answer scripts for Objective & Descriptive)

Duration : 3 hrs.

Full Marks : 70

[PART-A : Objective]

Time : 20 min.

Marks : 20

Choose the correct answer from the following:

1 × 20 = 20

- What is the median of the numbers 6, 3 and 5?
a. 3
b. 5
c. 6
d. None of the above.
- Which of the following statements is not true for any two positive values?
a. AM = 9, GM = 8 and HM = 7
b. AM = 9, GM = 7 and HM = 6
c. AM = 9, GM = 7 and HM = 5.33
d. None of the above
- The standard deviation of the numbers 5, 5, 5, 5, 5 is
a. 0
b. 5
c. $\sqrt{5}$
d. None of the above
- The range of the numbers 6, -1, 4, 3, 8, 5, 0 is
a. 8
b. 9
c. 6
d. None of the above
- For two events A and B, if $P(A) = 0.7$, $P(B) = 0.5$ and $P(A \cup B) = 0.9$, then $P(A \cap B) = \dots\dots\dots$
a. 0.4
b. 0.2
c. 0
d. 0.3
- If X be a Poisson variate with mean 4, the standard deviation is:
a. 16
b. 4
c. 2
d. None of the above
- For a Binomial variate X with parameter $n=6$ and $p=0.5$, the standard deviation of X is
a. 1.22
b. 1.5
c. 3
d. $\sqrt{1.5}$
- If X be a normal variate with mean 32 and variance 36, then the standard normal value of Z for $X = 40$ is:
a. 1.33
b. -1.33
c. 0.22
d. -0.22
- If the value of one of the regression coefficients, is -1.32 and the correlation coefficient is 0.85, what is the value of the other regression coefficient?
a. 0.52
b. 0.55
c. -0.55
d. -0.52

10. If the value of one of the regression coefficients is 2.12, then the possible value of the other regression coefficient is :
- | | |
|---------|----------|
| a. 0.45 | b. -0.45 |
| c. 0.48 | d. -0.48 |
11. The point of intersection of the two lines of regression is:
- | | |
|-------------|-------------------------|
| a. (-1, -1) | b. (1, 1) |
| c. (0,0) | d. (\bar{X}, \bar{Y}) |
12. If the values of the Laspeyre's and Paasche's indices are respectively 132.23 and 135.45, then the value of the Fisher's index is:
- | | |
|-----------|----------------------|
| a. 133.84 | b. 133.83 |
| c. 133.82 | d. None of the above |
13. Which of the following indices is used in the construction of Consumer's Price Index?
- | | |
|---------------------|----------------------|
| a. Fisher's index | b. Paasche's index |
| c. Laspeyre's Index | d. None of the above |
14. Which of the following averages is not used in the construction of an ideal index number?
- | | |
|--------------------|----------------------|
| a. Harmonic Mean | b. Geometric Mean |
| c. Arithmetic Mean | d. None of the above |
15. The number of crimes in India during the long period, is an example of
- | | |
|-----------------------|-----------------------|
| a. Irregular movement | b. Secular trend |
| c. Cyclical variation | d. Seasonal variation |
16. The lockdown period due to COVID 19, is an example of
- | | |
|-----------------------|-----------------------|
| a. Secular trend | b. Cyclical variation |
| c. Irregular movement | d. Seasonal variation |
17. The sales of crackers in Diwali, is an example of
- | | |
|-------------------------|-----------------------|
| a. Secular trend | b. Cyclical variation |
| c. Irregular variation. | d. Seasonal variation |
18. A sample mean is a
- | | |
|---------------------------------|----------------------|
| a. Statistic | b. Parameter |
| c. The estimator of a parameter | d. None of the above |
19. A population variance is a
- | | |
|--|----------------------|
| a. Hypothetical value of the parameter | b. Statistic |
| c. Parameter | d. None of the above |
20. Which of the following statistic is a good estimator of population mean?
- | | |
|------------------|----------------------|
| a. Sample median | b. Sample mean |
| c. Sample mode | d. None of the above |

(PART-B : Descriptive)

Time : 2 hrs. 40 min.

Marks : 50

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

1. Calculate mean, median, standard deviation and coefficient of variation from the following data: 3+3+3+1=10
Age under (years) : 10 20 30 40 50 60 70 80
No. of persons
Dying : 15 30 53 75 100 110 115 125
2. a. Explain addition and multiplication theorem of probability. 5
b. A bag contains 5 black and 6 white marbles. Four marbles are drawn at random without replacement. What is the probability that first ball is black, second ball is white, third ball is black and the fourth ball is white? 5
3. a. Compare the properties of Binomial and Poisson distribution. 4
b. A machine produces on average 3% defective items. Find the probability that in a sample of 6 items chosen at random, (i) less than 2 items are defective (ii) more than 1 items are defectives. 6
4. a. Define standard normal variate and write the expression of the standard normal distribution. 4
b. In a normal distribution, 31% of the items are under 45 and 8% are over 64. Find mean and standard deviation of the distribution. 6
[Given, $Z = 0.496$, Area = 0.69 and $Z = 1.405$, Area = 0.92]
5. a. Distinguish between Descriptive statistics and Inferential statistics. 5
b. Write in brief the criteria of a good point estimation. 5
6. a. Explain the components of time series. 8
b. Write short notes on additive and multiplicative models of time series. 2
7. a. Distinguish between Seasonal and Cyclical variation of Time series data. 4
b. Fit a linear trend to the following data by the least squares method 6
Year : 2009 2011 2013 2015 2017
Production (in '000 units): 18 21 23 27 16
Also estimate the production for the year 2018
8. a. Distinguish between parameter and statistic. 5
b. A sample of 100 gave a mean of 7.4 kg and a standard deviation of 1.2 kg. Find 95% and 99% confidence limits for the population mean. 5
[Given, $Z_{0.05} = 1.96$, $Z_{0.01} = 2.58$]