Code : 302304

BBA 3rd Semester Exam., 2019

BUSINESS MATHEMATICS AND STATISTICS—2

Time : 3 hours *Full Marks* : 60

Instructions :

*(i) **All** questions carry equal marks.*

*(ii) There are **SEVEN** questions in this paper.*

*(iii) Attempt **FIVE** questions in all.*

*(iv) Question Nos. **1** and **2** are compulsory.*

1. Choose the correct answer (any *six*) :

(a) A numerical value used as a summary measure for a sample, such as sample mean, is known as a

(i) population parameter

(ii) sample parameter

(iii) sample statistic

(iv) population mean

(v) None of the above

(b) Since the population size is always lar than the simple size, then the sam statistic can never be

(i) larger than the population parame

(ii) equal to the population parameter

(iii) zero

(iv) smaller than the population parame

(v) None of the above

(c) If two events (both with probability grea than 0) are mutually exclusive, then

(i) they also must be independent

(ii) they also could be independent

(iii) they cannot be independent

(d) The mean of a sample is

(i) always equal to the mean of population

(ii) always smaller than the mean of population

(iii) computed by summing the data val and dividing the sum by $(n-1)$

(iv) computed by summing all the da values and dividing the sum by number of items

(v) None of the above

(e) The sum of the percent frequencies for all classes will always equal to

(i) one

(ii) the number of classes

(iii) the number of items in the study

(iv) 100

(v) None of the above

(f) The sum of deviations of the individual data elements from their mean is

(i) always greater than zero

(ii) always less than zero

(iii) sometimes greater than and sometimes less than zero, depending on the data elements

(iv) always equal to zero

(v) None of the above

(g) Since the mode is the most frequently occurring data value, it

(i) can never be larger than the mean

(ii) is always larger than the median

(iii) is always larger than the mean

(iv) must have a value of at least two

(v) None of the above

(Turn Over)

(h) The difference between the largest and smallest data values is the

(i) variance

(ii) interquartile range

(iii) range

(iv) coefficient of variation

(v) None of the above

(i) Which of the following is not a measure central location?

(i) Mean

(ii) Median

(iii) Variance

(iv) Mode

(v) None of the above

(j) If a data set has an even number observations, then the median

(i) cannot be determined

(ii) is the average value of the two middle items

(iii) must be equal to the mean

(iv) is the average value of the two middle items when all items are arranged in ascending order

(v) None of the above

2. Answer any *three* of the following short answer-type questions :

(a) Given the data set

4, 10, 7, 7, 6, 9, 3, 8, 9

Find *(i)* the mode, *(ii)* the median, *(iii)* the mean and *(iv)* the sample standard deviation. If we replace the data value 6 in the data set above by 24, will the standard deviation increase, decrease or stay the same?

(b) Define judgement sampling, quota sampling and convenience sampling. Under what conditions can each of these designs be used to advantage?

(c) What do you mean by time series analysis? What are its main components?

(d) In two factories *A* and *B* engaged in the same industry, the average monthly wages and standard deviations are as follows :

Factory	*Average monthly wages* (₹)	*Standard deviation of wages* (₹)	*No. of wage earners*
A	4,600	500	100
B	4,900	400	80

(i) Which factory *A* or *B* pays larger amount as monthly wages?

(ii) Which factory shows greater variability in distribution of wages?

(e) Two coins are tossed, find the probability that two heads are obtained.

Answer any *three* of the following long answer-ty questions :

3. Discuss the terms *(a)* random experime *(b)* mutually exclusive events and *(c)* independe events.

4. State and prove Bayes' theorem. How is it used proper decision making?

5. Explain various methods of studying correlatio Interpret the meaning of the values of t coefficient of correlation as 0 and ±1.

6. Define *t*-test with its applications. An operati claims that he produces 40 articles in an hou A sample of 10 random hours shows the turn out as 43, 45, 38, 37, 41, 42, 44, 39, 43, and 3 Is the claim of the operative reasonab significant at 5% level of significance? (Us $t_9 = 1 \cdot 833$)

7. Calculate the coefficient of correlation using ran method from the following data :

X	5	4	3	6	7	8	1	2
Y	4	5	6	3	8	7	2	1

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