

TDC (CBCS) Even Semester Exam., 2019

BUSINESS ADMINISTRATION

(2nd Semester)

Course No. : BBACC-202T

(Statistics for Business Decision)

Full Marks : 70

Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

UNIT—1

1. Answer any *two* from the following questions : $2 \times 2 = 4$

- (a) Prove that the sum of deviations of a set of observations from the mean of the observation is zero.
- (b) Explain what is coefficient of variation and its significance.
- (c) In an asymmetrical set of observations mean = 24, mode = 32. Find the value of median and examine whether the values are positively or negatively skewed.

2. Answer any *one* from the following questions : 10

- (a) The scores of two batsman for 10 innings are given below :

Batsman A	56	87	22	65	66	87	89	12	45	33
Batsman B	57	98	33	66	87	55	12	77	87	99

Using appropriate statistical tool, determine which batsman between Batsman A and Batsman B is more consistent.

- (b) Prove that the standard deviation of a set of values is independent of the change of origin but dependent on the change of scale. The following table represents the marks of students in an examination of 70 marks. Calculate the standard deviation by changing the origin and scale :

Marks	No. of students
0-10	12
10-20	13
20-30	12
30-40	44
40-50	23
50-60	12
60-70	10

(3)

UNIT—2

3. Answer any *two* from the following questions :

2×2=4

- (a) Prove that the correlation coefficient is the geometric mean of the two regression coefficients.
- (b) Explain perfect positive correlation with the help of an example.
- (c) What do you mean by rank correlation?

4. Answer any *one* from the following questions : 10

- (a) The following are the marks secured by 10 students in Mathematics and Statistics :

Marks in Statistics	65	66	78	43	77	34	65	78	84	43
Marks in Mathematics	34	87	56	67	87	88	89	34	77	55

Rank the marks of the students for both the subjects and hence find rank correlation to determine the degree of association.

(4)

- (b) Prove that Karl Pearson correlation coefficient lies between -1 and $+1$. From the following figures of advertising cost and sales of the products for a company, fit a regression line :

Year	Advertising cost (in '000)	Sales (in units)
2013	10	20
2014	12	26
2015	12	25
2016	15	29
2017	13	25
2018	14	28

Predict the sale of the products for the company if the advertising cost is 20,000.

UNIT—3

5. Answer any *two* from the following questions :
2×2=4

- (a) Mention four components of time series.
- (b) What do you mean by cost of living index?
- (c) Discuss in brief the concept of base shifting in index number.

(5)

6. Answer any *one* from the following questions : 10

- (a) What are the steps in constructing an index number? Prove that Fisher's price index satisfies the time reversal and the factor reversal test.
- (b) Fit a trend line from the following set of values and hence predict the values of sales for the Company *X* for the year 2019 :

Year	Sale for the product <i>X</i> (in units)
2011	30
2012	33
2013	34
2014	37
2015	41
2016	43
2017	35
2018	32

UNIT—4

7. Answer any *two* from the following questions :

2×2=4

- (a) Mention two advantages of application of MS-Excel for data analysis.
- (b) What are the descriptive measures of statistics that can be computed with the application of MS-Excel?

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(Turn Over)

(6)

- (c) What are the limitations of MS-Excel when applied for data analysis in relation to other statistical softwares?

8. Answer any *one* from the following questions : 10

- (a) Analysis Tool Pak is a set of data analysis tool offered by Microsoft Excel 2000 (Version 9). Mention the steps of installing the same.
- (b) Discuss the steps involved in computing Karl Pearson correlation coefficient in MS-Excel.

UNIT—5

9. Answer any *two* from the following questions :

2×2=4

- (a) Define random experiment with the help of an example.
- (b) An unbiased coin is tossed twice. What is the probability of getting at least one head?
- (c) What do you mean by conditional probability?

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(Continued)

10. Answer any *one* from the following questions : 10

- (a) Arun and Barun gives a testimony in the court. The probability that Arun speaks the truth while giving the testimony is $2/5$, whereas the probability that Barun speaks the truth while giving the testimony is $3/4$. What is the probability that (i) both agree with each other while giving the testimony and (ii) both contradict with each other while giving the testimony?
- (b) Write down the conditions and the probability mass function of binomial distribution. In a class there are 5 students. The probability that each student passes an exam is 0.8 . What is the probability that (i) none pass the exam, (ii) at least 3 students pass the exam and (iii) at most 2 students pass the exam?

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