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Name..........................................

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# FIRST SEMESTER M.B.A. DEGREE EXAMINATION DECEMBER 2019

(CUCSS)

M.B.A.

## BUS 1C 07—QUANTITATIVE TECHNIQUES

(2016 Admissions)

Time : Three Hours

Maximum : 36 Weightage

## Part A

*Answer* **all** *the questions.*
*Each question carries 1 weightage.*

1. What are independent events ? State an example.

2. What is expected value ?

3. For a pair of variables X and Y, it was computed that $b_{XY} = 0.85$ and $b_{YX} = 0.89$. Establish the relationship between the variables X and Y.

4. Compare positive and negative correlation.

5. State two reasons for non-sampling errors.

6. Explain data view and variable view in SPSS.

(6 × 1 = 6 weightage)

## Part B

*Answer any* **four** *questions.*
*Each question carries 3 weightage.*

7. A Merchant's file of 20 accounts contains 6 delinquent and 14 non-delinquent accounts. An auditor randomly selects 5 of these accounts for examination. What is the probability that the auditor finds exactly 2 delinquent accounts ?

8. Explain Simple, Partial and Multiple correlations.

9. What is the probability that a randomly chosen card from a deck of cards will be either a king or a heart ?

10. Explain the commands for conducting a one sample $t$-test in SPSS.

**Turn over**

11. Explain convenience sampling, purposive sampling and judgement sampling.

12. Explain ANOVA.

(4 × 3 = 12 weightage)

## Part C

*Answer any **three** questions.*
*Each question carries 4 weightage.*

13. The following is a SPSS output of daily returns of stock market in period 1 and period 2. Interpret the values :

*Descriptive Statistics*

|  | | Period 1 | Period 2 |
|---|---|---|---|
| Minimum | ... | − 10.809 | − 11.604 |
| Maximum | ... | 7.931 | 15.990 |
| Mean | ... | 0.0681 | 0.0211 |
| Median | ... | 0.1402 | 0.0558 |
| Standard deviation | ... | 1.6153 | 1.3928 |
| Skewness | ... | − 0.402 | 0.195 |
| Kurtosis | ... | 3.367 | 11.994 |
| N | ... | 2498 | 2722 |

14. The following data presents the exports of Cotton and the import of manufactured goods into India for 7 years :

| Exports (in crores of Rs.) | : | 42 | 44 | 58 | 55 | 89 | 98 | 60 |
|---|---|---|---|---|---|---|---|---|
| Imports (in crores of Rs.) | : | 56 | 49 | 53 | 58 | 67 | 76 | 58 |

Obtain the two regression equations and estimate the imports when exports in a particular year were to the value of Rs. 70 crores.

15. A sample of 100 dry battery cells tested to find the length of life produced the following results :

$\bar{X} = 12$ hours, $\sigma = 3$ hours. Assuming that the data are normally distributed, what percentage of battery cells are expected to have life :

   (a) More than 15 hours.

   (b) Less than 6 hours.

   (c) Between 10 and 14 hours.

16. Three machines are used in the packaging of 10 kg. of wheat flour. Each machine is designed so as to pack on an average 10 kg. of flour per bag. Samples of six bags were selected from each machine and the amount of wheat packaged in each bag is shown below :

   | Machine 1 | : | 15.8 | 15.9 | 16.2 | 15.7 | 16.3 | 15.8 |
   | Machine 2 | : | 16.5 | 16 | 15.4 | 15.9 | 16.2 | 16.1 |
   | Machine 3 | : | 15.7 | 16.4 | 16.2 | 15.9 | 15.7 | 16.3 |

Use a 5 percent level of significance to test the hypothesis that the amount of wheat packaged by the three machines is the same.

17. The following table gives the number of good and defective parts produced by each of the three shifts in a factory :

   | Shift | Good | Defective | Total |
   |-------|------|-----------|-------|
   |       | Rs.  | Rs.       | Rs.   |
   | Day ... | 900 | 130 | 1,030 |
   | Evening ... | 700 | 170 | 870 |
   | Night ... | 400 | 200 | 600 |
   | Total ... | 2,000 | 500 | 2,500 |

Is there any association between the shift and the equality of the parts produced ? Use a 0.05 level of significance.

(3 × 4 = 12 weightage)

## Part D

*Answer the* **compulsory** *questions.*

*6 weightage.*

18. The following table give the performance of three detergents and three different water temperatures using the 'whiteness' readings obtained with specially designed equipment :

| Water temperature | Detergent A | Detergent B | Detergent C |
| --- | --- | --- | --- |
| Cold water ... | 57 | 55 | 67 |
| Worm water ... | 49 | 52 | 68 |
| Hot water ... | 54 | 46 | 58 |

Perform a two-way analysis of variance, using a 5 percent level of significance.

(6 weightage)