

THIRD SEMESTER B.B.A. DEGREE EXAMINATION, NOVEMBER 2015
(CUCBCSS—UG)

Complementary Course

BBA IIC 03—QUANTITATIVE TECHNIQUES FOR BUSINESS

Time : Three Hours

Maximum : 80 Marks

Part I

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

Choose the correct answer from the choices given :

- 1 An event in probability is :
 - (a) Actual outcome.
 - (b) Random outcome.
 - (c) Expected outcome.
 - (d) Possible outcome.
- 2 The height of persons in a country is a random variable of the type :
 - (a) Discrete random variable.
 - (b) Continuous random variable.
 - (c) Continuous as well as discrete random variable.
 - (d) Neither discrete nor continuous random variable.
- 3 Sampling is inevitable in the solution of :
 - (a) Blood test of a person.
 - (b) When population is infinite.
 - (c) Test of life of dry battery cells.
 - (d) All the above.
- 4 Correlation of two variables is zero, it indicate :
 - (a) Positive correlation.
 - (b) Negative correlation.
 - (c) No correlation.
 - (d) None of these.
- 5 If X and Y are independent, the value of b_{yx} is equal to :
 - (a) 0.
 - (b) 1.
 - (c) ∞ .
 - (d) Any positive value.

A-5
3-13

Turn over

Fill in the Blanks :

- 6 The hypothesis complementary to null hypothesis is _____.
- ✓ 7 Two coins tossed simultaneously, probability of getting atleast one head is _____.
- 8 When observed frequency are given in the shape of contingency table then the degree of freedom is _____.
- 9 If both regression coefficients are negative, then the correlation coefficient would be _____.
- 10 If ratio of change in one variable is equal to the ratio of change in the other variable, the correlation is said to be _____.

(10 × 1 = 10 marks)

Part II

Answer any eight questions.
Each question carries 2 marks.

- ✓ 11 Explain the scope of quantitative techniques.
- ✓ 12 What is partial correlation ?
- 13 Distinguish between type I error and type II error.
- ✓ 14 Define regression analysis.
- ✓ 15 Distinguish between dependent event and independent event.
- ✓ 16 A fair coin is tossed ; find the chance of getting 3 heads.
- ✓ 17 The probability that a contractor will get a plumbing contract is $\frac{2}{3}$ and the probability that he will not get an electric contract is $\frac{5}{9}$. If the probability of getting atleast one contract is $\frac{4}{5}$. What is the probability that he will get both the contracts.
- ✓ 18 A computer while calculating the correlation coefficient between two variables X and Y from 17 pairs of observations obtained the following results.

$$n = 17 \quad \Sigma x = 544 \quad \Sigma x^2 = 19040 \quad \Sigma y = 244 \quad \Sigma y^2 = 3773 \quad \Sigma xy = 8413$$

Find the correlation coefficient b_{yx} .

- 19 Define standard normal distribution.
- 20 What is level of significance of a test ?

Part III

(8 × 2 = 16 marks)

Answer any six questions.
Each question carries 4 marks.

- 21 Explain different types of correlation.
- ✓ 22 State and prove addition theorem for two events. Deduce the results for three events.

game of
opposit
only one
= +5

opposit

✓) X $\Sigma x(y) - \Sigma x(\Sigma y)$

- 23 What do you mean by one way analysis of variance ? Explain procedure for carrying out analysis of variance in one way classification.
- 24 The average life of 26 electric bulbs were found to be 1,200 hours with a standard deviation of 150 hours. Test whether these bulbs could be considered as a random sample from a normal population with mean 1300 hours.
- 25 An urn A contains 2 white and 4 blackballs. Another urn B contains 5 white and 7 black balls. A ball is transferred from the urn A to urn B. Then a ball is drawn from urn B. Find the probability that it will be white.
- 26 Calculate coefficient of correlation between X and Y from the following data :
- $$n = 13 \quad \Sigma d_x = 117 \quad \Sigma d_x^2 = 1313 \quad \Sigma d_y = 260 \quad \Sigma d_y^2 = 6580 \quad \Sigma d_x d_y = 2827.$$
- 27 Eight coins were tossed together, 256 times. Find the expected frequencies of heads.
- 28 Coefficient of correlation between two variables is calculated to be -0.98 . Find the value of probable error and hence interpret the result ($n = 10$). Find the limits within which population correlation may lie.

(6 × 4 = 24 marks)

Part IV

Answer any two questions.
Each question carries 15 marks.

- 29 Explain the procedure generally followed in testing of a hypothesis, point out the difference between one tail and two tail tests.
- 30 The following table gives the yield of three varieties :

| Varieties | Yields | | | | |
|-----------|--------|----|----|----|----|
| 1 | 30 | 27 | 42 | | |
| 2 | 51 | 47 | 37 | 48 | 42 |
| 3 | 44 | 35 | 41 | 36 | |

Perform an analysis of variance on this data.

- 31 From the following data of the age of husband and the age of wife, form the two regression equations and calculate the husband's age, when the wife's age is 16.

| | | | | | | | | | | |
|---------------|---|----|----|----|----|----|----|----|----|----|
| Husband's age | : | 36 | 23 | 27 | 28 | 29 | 30 | 31 | 33 | 35 |
| Wife's age | : | 29 | 18 | 20 | 27 | 21 | 29 | 27 | 29 | 28 |

Also find the age of wife when husband's age is 40.

(2 × 15 = 30 marks)