

FOURTH SEMESTER B.Com. DEGREE EXAMINATION, APRIL/MAY 2015

(U.G.—CCSS)

Complementary Course

BC 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

Time : Three Hours

Maximum : 30 Weightage

Part A*This part contains three bunches of questions carrying equal weightage.**Each bunch has four questions.**Answer all **twelve** questions.*

A. Choose the correct answer from bracket :

1 $P(A \cap B)$ is equal to :

(a) $\frac{P(A \cap B)}{P(A)}$

(b) $\frac{P(A \cap B)}{P(B)}$

(c) $\frac{P(A \cup B)}{P(A)}$

(d) $\frac{P(A \cup B)}{P(B)}$

2 Chi-square distribution is a :

(a) Symmetrical distribution. (b) Discrete distribution.

(c) Skewed distribution. (d) None of the above.

3 The area under the normal curve corresponding to $Z = 2.58$ is equal to :

(a) .4999 •

(b) .4950 •

(c) .4900 •

(d) .4500 •

4 From a study related to degree of association, the coefficient of correlation was equal to zero. It means that there is :

(a) Very high positive correlation.

(b) Very high negative correlation.

(c) No correlation.

(d) Perfect positive correlation.

Turn over

B. Fill in the blanks :

- 5 If one event prevents the occurrence of another event, then the two events are said to be _____ events.
- 6 When the probability of success in a Bernoulli process is 50 per cent ($p = .5$) its binomial distribution is _____
- 7 The standard error of the mean is calculated by the formula _____
- 8 In analysis of variance, the sum of the squares between samples is denoted by _____

C. Answer in *one word* :

- 9 The number of degrees of freedom in a 3 x 3 contingency table is :
- 10 The ' t ' distribution is used when the size of sample is less than :
- 11 The number of ordered arrangements that can be made by using some or all the items is referred to as :
- 12 The symbol ' γ ' is used to indicate.

(12 x ¼ = 3 weightage)

Part B

*Answer all **nine** questions.
Each question carries a weightage of 1.*

- 13 What is meant by Linear Programming ?
- 14 Define quantitative techniques.
- 15 State any four types of correlation.
- 16 Give any two uses of regression analysis in Business.
- 17 Distinguish between priory probability and posteriori probability.
- 18 Define Binomial distribution.
- 19 State the conditions for normal distribution being the approximation or limiting form of Binomial distribution.
- 20 What are Parametric tests ?
- 21 Define 'Chi-square'.

(9 x 1 = 9 weightage)

Part C

*Answer any **five** questions.
Each question carries a weightage of 2.*

- 22 Explain the technique of analysis of variance for a two-way classification.

23 Given that $P(A) = \frac{1}{14}$; $P(B) = \frac{1}{6}$; $P(C) = \frac{1}{7}$; $P(A \text{ and } C) = \frac{1}{7}$; and $P(B/C) = \frac{5}{21}$ Find the following probabilities :

- (a) $P(A/C)$. (b) $P(C/A)$.
 (c) $P(B \text{ and } C)$. (d) $P(C/B)$.

24 A box contains 10 bad apples and 40 good apples. Three apples are drawn at random from the box. Determine the probability that :

- (a) Atleast one is good. (b) Utmost two are good.

25 The per acre yield of crop in a particular area is observed to follow a normal distribution with mean 150 quintals and standard deviation 50 quintals. Find (i) the proportion of area yielding at least 250 quintals ; (ii) what extent of land under the crop can yield between 100 and 200 quintals, if the total area under crop is 100 acres.

26 From the following values of X and Y find the regression equation X on Y :

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

27 From the following data relating to yield of three varieties, sown in four blocks, test whether there is difference between varieties as far as output is concerned :

Blocks	Varieties		
	A	B	C
1	6	7	8
2	4	6	5
3	8	6	10
4	6	9	9
Total	<u>24</u>	<u>28</u>	<u>32</u>

28 Prices of shares of a company on different days in a month were found to be : 71, 70, 63, 68, 64, 69, 70, 65, 66 and 69. Discuss whether mean price of the share in the month is 65.

(5 X 2 = 10 weightage)

Turn over

Part D*Answer any two questions.**Each question carries a weightage of 4.***29. (a) What do you understand by the term probability ?****(b) State the addition theorem and multiplication theorem of probability.****(c) Explain Baye's theorem.****30 The following data relate to age of employees and the number of days they reported sick a month :**

Age of Employees X : 30 32 35 40 48 50 52 55 57 61

Sick days Y: 1 0 2 5 2 4 6 5 7 8

Calculate Karm Pearson's coefficient of correlation and interpret it.**31 Fit a Poisson distribution to the following data and calculate theoretical frequencies :**

No. of mistakes per page : 0 1 2 3 4 5

No. of pages : 142 156 69 27 5 1

(2 x 4 = 8 weightage)