

**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  $P(A|B)$  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  $3 \times 3$  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 ' $\gamma$ ' is used to indicate.

(12  $\times$   $\frac{1}{4}$  = 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  $\times$  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  $P(A) = \frac{3}{14}$ ;  $P(B) = \frac{1}{6}$ ;  $P(C) = \frac{1}{3}$ ;  $P(A \text{ and } C) = \frac{1}{7}$ ; 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 × 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 in 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 × 4 = 8 weightage)