C 81795 (Pages : 4) Name.....

Reg. No.....

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 ov

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 $(p = \cdot 5)$; 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 × 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 × 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 × 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	24	28	32

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)

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

$P(x) \frac{\mu^x \times e^{-\mu}}{x!}$

(2 × 4 = 8 weightage)

$r = \frac{N\Sigma xy - \Sigma x \cdot \Sigma y}{\sqrt{N\Sigma x^2 - (\Sigma x)^2} \times \sqrt{N\Sigma y^2 - (\Sigma y)^2}}$