Reg. No.....

FOURTH SEMESTER B.Com. DEGREE EXAMINATION, MAY 2011

(CCSS)

Complementary

BC 4C 04—QUANTITATIVE TECHNIQUES FOR BUSINESS

e : Three Hours

Maximum : 30 Weightage

I. Objective Type Questions. Answer *all twelve* questions :

Choose the correct answer :

1 If the two lines of regression are perpendicular to each other, then the value of correlation coefficient is :

(a) + 1.
(b) − 1.
(c) 0.
(d) any positive value.

2 The limiting relative frequency approach to probability is known as :

(a) Statistical probability.
(b) Classical probability.
(c) Mathematical probability.
(d) All the above.

3 A distribution in which mean is equal to variance is :

(a) Binomial distribution.
(b) Gamma distribution.
(c) Normal distribution.
(d) Poisson distribution.

4 Size of critical region is known as :

(a) power of the test.
(b) size of type II erorr.
(c) critical value of test statistic.
(d) size of the test.

II in the blanks :

5 The mean of binomial distribution $b(n, p)$ is ————.

6 The hypothesis that the population mean has a specified value can be tested by ———— test, if the sample size is large.

7 If there are two variables X and Y, there can be atmost ———— regression lines.

8 Totality of all possible outcomes of a random experiment is called ————.

swer the following :—

9 Give the limits within which probability lies.

10 What is the mean of *r.v.* X if X ~ N (5, 4) ?

11 What will be the value of correlation coefficient if X and Y are independent ?

12 What will be degrees of freedom for chi-square in case of contingency table of order 4 ×

(12 × ¼ = 3 we

II. Short Answer Questions. Answer all *nine* questions :

13 Define simple and composite hypothesis. Give examples.

14 Define (a) Mutually exclusive events and ; (b) Independent events. Give example.

15 Give the classical definition of probability.

16 Give the applications of Quantitative Techniques in business management.

17 In tossing tree coins at a time, what is the probability of getting at most one head.

18 A population is distributed as normal with mean μ and standard deviation, 10.24. A of 576 items has a mean 4.7. What is the value of the test statistic to test $H_0 : \mu = 5$

19 If $\bar{X} = 66.6$, $\bar{Y} = 66.3$, $b_{yx} = 0.507$ and $b_{xy} = 0.655$, with down :

(i) regression line of X on Y and

(ii) regression line of Y on X.

20 Write down the charactertics of a normal distribution.

21 If $X \sim b(n, p)$ with $E(X) = 4$ and $V(X) = \frac{4}{3}$, find $P(X > 5)$.

(9 × 1 = 9 wei

III. Short essays or paragraph questions. Answer any *five* questions from seven :

22 A problem is given to five students A, B, C, D and E. Their chances of solving it are :

$$\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5} \text{ and } \frac{1}{6}.$$

What is the probability that the problem is solved ?

23 What is the probability that a leap year will contain 53 Sundays ?

24 In an intelligence test administered to 1,000 students the score follows normal distri with mean 42 and standard deviation 24. Find the number of students exceeding a scor

25 The manufacturer claims that only 4% of the items supplied by him are defective. A r sample of 600 items contained 36 defectives. Test the claim of the manufacturer at 5% l significance.

26 Given the following information relating to a frequency distribution comprising 10 observations :—

$$\bar{X} = 5.5,\ \bar{Y} = 4.0,\ \sum X^2 = 385,\ \sum Y^2 = 192,\ \sum (X + Y)^2 = 947.$$

Find correlation between X and Y.

27 (a) State Bayes theorem.

(b) Define conditional probability and state multiplication theorem.

28 Distinguish between large sample and small sample test.

(5 × 2 = 10 weightage)

IV. Essay questions. Answer any *two* questions from three :

29 The following data relate to the sales, in a time of trade depression of a certain article in wide demand. Do the data suggest that the sales are significantly affected by depression :—

District where sales are :		*Districts*		
		Not hits by depression	*Hit*	*Total*
Satisfactory	...	140	60	200
Not satisfactory	...	40	60	100
Total	...	180	120	300

30 Fit a Poisson distribution to the following data :—

X	...	0	1	2	3	4	5	6	7	8
Frequency	...	56	156	132	92	37	22	4	0	1

31 The three samples below have been obtained from normal populations with equal variances. Test the hypothesis that the sample means are equal :

I	8	10	7	14	11
II	7	5	10	9	9
III	12	9	13	12	14

Table value of F at 5% level of signficance for (2, 12) df is 3.38.

(2 × 4 = 8 weightage