D 72351 (Pages : 3) Name.....

Reg. No.....

THIRD SEMESTER B.B.A. DEGREE EXAMINATION, NOVEMBER 2014

(UG-CCSS)

Complementary Course

BB 3C 03—QUANTITATIVE TECHNIQUE FOR BUSINESS MANAGEMENT

Time : Three Hours Maximum : 30 Weightage

Answer **all** *twelve questions.*

I. A. Fill in the blanks :

1 If A and B are mutually exclusive events, then P (A ∩ B) = ————.

2 If β is the probability of Type II error then (1 – β) is called ————.

3 The standard deviation of Poisson distribution with mean 4 is ————.

4 The regression equation of y on x is ————.

B. Choose the correct answer :

5 The mean of a Binomial distribution is 3 and $n = 9$, then its variance is

(a) 2. (b) ½.

(c) 2/3. (d) 3/2.

6 If P (A) = 0.40, P (B) = 0.30, P (A ∪ B) = 0.60, then P (A ∩ B) is :

(a) 0.70. (b) 0.01.

(c) 0.10. (d) 0.07.

7 $b_{xy} \times b_{yx}$ = ————.

(a) 1. (b) – 1.

(c) r. (d) $-r$.

8 P (A ∪ B) = P (A) + P (B) implies, A and B are :

(a) Independent. (b) Dependent.

(c) Exhaustive. (d) Mutually exclusive.

C. State whether True *or* False :

9 The probability of an impossible event is 1.

10 Variance of a Binomial distribution is always less than its mean.

11 The signs of two regression coefficients must be opposite.

12 Probability of type I error is called the level of significance.

(12 × ¼ = 3 weightage)

Turn over

Short Answer Type Questions.
Answer **all** *nine questions.*

II. 13 State the Multiplication theorem of probability for two events.

14 Let A and B be events with P (A) = ½, P (B) = 1/3 and P (A ∩ B) = 1/4. Find P (A/B).

15 Explain the two types of errors in testing of hypothesis.

16 If X follows Poisson distribution with parameter λ such that P (x = 1) = P (x = 2), find the mean of the distribution.

17 What is meant by correlation between two variables ?

18 Define Binomial distribution.

19 Write down the test statistic of Chi-square test, for testing the goodness of fit.

20 Write any four properties of Normal distribution.

21 What are the limitations of quantitative techniques ?

(9 × 1 = 9 weightage)

Short Essay **or** *Paragraph Questions.*
Answer any **five** *questions.*

III. 22 A bag contains 7 white and 9 black balls. Three balls are drawn at random. Find the probability that balls drawn are (i) 1 white and 2 black ; (ii) 2 white and 1 black.

23 The customer accounts at a certain departmental store have an average balance of Rs. 120 and standard deviation of Rs. 40. Assuming that the account balances are normally distributed.

(i) What proportion of the accounts as over Rs. 150.

(ii) What proportion of accounts in between Rs. 100 and Rs. 150 ?

24 Samples of sizes 10 and 14 were taken from 2 normal populations with standard deviations 3.5 and 5.2 and the sample means were found to be 20.3 and 18.6. Test whether the means of two populations are the same at 5 % level.

25 Fit a Poisson distribution to the following data :—

x :	0	1	2	3	4	
f :	123	59	14	3	1	($e^{-0.5}$ = 0.6065)

26 From the following information on values of two variables X and Y, find the two regression lines $n = 10, \sum x = 300, \sum y = 250, \sum x^2 = 9138, \sum y^2 = 6414, \sum xy = 7623$.

27 What are the properties of Correlation Coefficient ?

28 Explain in detail the procedure of hypothesis testing.

(5 × 2 = 10 weightage)

Essay Questions.
Answer any **two** *questions.*

IV. 29 A trucking company wishes to test the average life of each of the three brands of tyres. The company uses all branches on randomly selected trucks. The records showing the lives (thousands of miles) of tyres are as given. Using ANOVA, test the hypothesis that the average life for each brand is the same.

Brand I	Brand II	Brand III
6	6	2
1	3	5
5	4	6
0	3	7

30 Calculate the correlation coefficient for the following heights (in inches) of fathers and their sons :

X :	65	66	67	67	68	69	70	72
Y :	67	68	65	68	72	72	69	71

31 Three factories A, B, C supply respectively 25 %, 35 % and 40 % of the bricks mudded by a construction company. From past experience it is known that 5 %, 4 % and 2 % of the bricks supplied by these factories are defective. What is the probability that a brick found defective was supplied by B.

(2 × 4 = 8 weightage)