4813 (Pages : 4) Name.....

Reg. No.....

SECOND SEMESTER M.A. DEGREE EXAMINATION, JUNE 2016

(CUCSS)

Economics

ECO 2C 07—QUANTITATIVE TECHNIQUES—II

(2010 Admissions)

me : Three Hours Maximum : 36 Weightage

Part A

Answer **all** *the questions.*
Each bunch of **four** *questions carries a weightage of* 1.

A) Multiple Choice :

1 If F (x) is the cumulative density function of a discrete random variable X, then

(a) $F(+\infty) = 1$. (b) $F(+\infty) = \infty$.

(c) $F(+\infty) = 0$. (d) $F(+\infty)$ does not exist.

2 For a binomial distribution mean is 6 and variance is 3 then n is :

(a) 12. (b) 3.

(c) 9. (d) 6.

3 A distribution for which mean and variance are equal is :

(a) Poisson. (b) Binomial.

(c) Exponential. (d) Geometric.

4 If the distribution of X is normal with mean 0 and variance 1 with $P(X \leq 1) = 0.84$, then value of $P(|X| \leq 1)$ is :

(a) 0.68. (b) 0.32.

(c) 0.34. (d) 0.16.

B) Multiple Choice :

5 Type-I error is committed by way of :

(a) Accepting a false null hypothesis.

(b) Rejecting a true null hypothesis.

(c) Rejecting a false null hypothesis.

(d) Accepting a true null hypothesis.

Turn over

6 A test is one tailed or two tailed, depending on the :

(a) Alternative hypothesis. (b) Null hypothesis.

(c) Composite hypothesis. (d) Simple hypothesis.

7 To test the goodness of fit, we use :

(a) t-test. (b) F-test.

(c) Paired t-test. (d) Chi-square test.

8 To test the equality of proportions, we use :

(a) KS-test. (b) F-test.

(c) Normal test. (d) Chi-square test.

(C) Fill in the blanks :

9 For a Poisson distribution mean is 4 and standard deviation is 2. Then P (X =

10 Standard error of sample mean is ————.

11 If X follow standard normal then X^2 follows ————.

12 For testing a simple H_0 against simple H_1, Neyman Pearson lemma gives —

(D) State True or False :

13 The mean of a binomial distribution is less than variance.

14 The probability of Type-I error is called level of significance.

15 Consistency is a large sample property.

16 To test the significance of variance, we use F test.

(4 × 1 =

Part B

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

17 Define mathematical expectation. The probability that there is at least one error statement prepared by A is 0.4 and for B and C they are 0.3 and 0.6 respectiv prepared 10, 16 and 20 statements respectively. Find the expected number of com in all.

18 For a Binomial distribution mean is 12 and variance is 3. Find (i) p ; (ii) n ; and one success).

19 Describe Normal distribution. Give its properties and importance.

20 Define log normal distribution and give its mean and variance.

21 Define standard error and give the standard error of sample mean based on a sample of size n ?

22 Define t distribution. Give its applications.

23 What is confidence interval for a parameter ?

24 Define point estimation. What are the desirable properties of a good estimator ?

25 A random sample of 64 observations has standard deviation 2.5 and mean of 80. Calculate 95 percentage confidence interval for the population mean.

26 Distinguish between (i) Simple and composite hypothesis ; (ii) Null and alternative hypothesis.

27 Explain the terms Level and power of a test.

28 Explain Chi-square test for independence of attributes.

29 Give the procedure for testing the significance of population proportion.

30 Explain paired t-test.

(10 × 2 = 20 weightage)

Part C

Answer any **three** *questions.*

Each question carries a weightage of 4.

31 A random variable X assumes the values – 4, – 2, –1, 0, 1, 2, 4 such that P (X = – 4) = P (X = –2) = P (X = –1), P (X = 1) = P (X = 2) = P (X = 4) and P (X = 0) = P (X > 0) = P (X < 0). Obtain the probability mass function, and mean and variance of X.

32. (a) For a binomial distribution mean is 3 and variance is 2.

Find (i) P (X = 3) ; and (ii) P (at least one success).

(b) What is meant by sampling distribution and standard error ? What are the uses of standard error ?

33 (a) Explain the various steps in testing of hypothesis.

(b) In a simple random sample of 600 men taken from a big city 400 are found to be smokers. In another simple random sample of 900 men taken from another city 450 are smokers. Do the data indicate that there is a significant difference in the habit of smoking in th two cities ?

Turn ov

4 (a) Explain Chi-square test for goodness of fit.

(b) What is meant by ANOVA ? Give model for two-way ANOVA ? Wh assumptions ?

5 (a) In an anti-malarial campaign in a certain area, quinine was administered to out of a total population of 3248. The number of fever cases is shown below

Treatment	*Fever*	*No fever*
Quinine ...	22	790
No quinine ...	220	2,216

Discuss the usefulness of quinine in checking malaria.

(b) A random sample of size 16 has 54 as mean. The sum of the squared deviatio mean is 135. Can the sample be regarded as taken from the population h mean. Also find probable limits in which the mean is expected to lie.

(3 × 4 =12