SECOND SEMESTER M.A. DEGREE EXAMINATION, JUNE 2017

(CUCSS—PG)

Economics

EC 02 C08—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II

(2015 Admissions)

Time : Three Hours

Maximum : 36 Weightage

Part A (Multiple Choice)

Answer all the twelve questions.
Each question carry a weightage of ¼.

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

   (a) 12.

   (b) 3.

   (c) 9.

   (d) 6.

2. For a Poisson distribution with parameter 4, variance is :

   (a) 2.

   (b) 4.

   (c) 16.

   (d) 8.

3. A distribution for which mean less than variance :

   (a) Exponential.

   (b) Binomial.

   (c) Poisson.

   (d) Geometric.

4. If X and Y are independent normal variates with mean 1 and – 1 and standard deviations 3 and 4 respectively. Then $Z = X - Y$ is normal with :

   (a) Mean 2 and standard deviation 5.

   (b) Mean 2 and standard deviation 1.

   (c) Mean 0 and standard deviation 7.

   (d) Mean 2 and standard deviation 7.

5. A distribution for which mean and variance are equal :

   (a) Exponential.

   (b) Binomial.

   (c) Poisson.

   (d) Geometric.

Turn over

6. Standard error of mean based on a sample of size n is :

    (a) $\dfrac{\sigma}{\sqrt{n}}$.

    (b) $\dfrac{\sigma^2}{\sqrt{n}}$.

    (c) $\dfrac{\sigma^2}{n}$.

    (d) $\dfrac{\sigma^2}{2n}$.

7. If X follow standard normal then X^2 follows :

    (a) F-distribution.

    (b) Chi-square distribution.

    (c) Normal distribution.

    (d) t-distribution.

8. Type-I error is :

    (a) Accepting a false null hypothesis.

    (b) Accepting a true null hypothesis.

    (c) Rejecting a false null hypothesis.

    (d) Rejecting a true null hypothesis.

9. To test the significance of proportion, we use :

    (a) F-test.

    (b) t-test.

    (c) Normal test.

    (d) Chi-square test.

10. To test the equality of proportions. we use :

    (a) t-test.

    (b) F-test.

    (c) Normal test.

    (d) Chi-square test.

11. To test the independence of attributes, we use :

    (a) t-test.

    (b) F-test.

    (c) Paired t-test.

    (d) Chi-square test.

12. In ANOVA we test :

    (a) The equality of several variances.

    (b) The equality of several means.

    (c) Significance of mean.

    (d) Significance of proportion.

($12 \times \frac{1}{4} = 3$ weightage)

Part B (Very Short Answer)

Answer any **five** *questions.*
Each question carries 1 weightage.

13. If X has a binomial distribution with parameters 12 and $\frac{3}{4}$, find mode.

14. For a Poisson distribution mean is 4 and standard deviation is 2. Find (i) P(X = 1) ; and (ii) P(at least one success).

15. Define standard normal distribution.

16. Define log normal distribution.

17. What is meant by standard error?

18. What is meant by estimation ?

19. Define level of significance ?

20. State Neymann Pearson lemma.

(5 × 1 = 5 weightage)

Part C (Short Answer)

Answer any **eight** *questions.*
Each question carries 2 weightage.

21. Define Poisson distribution and binomial distribution. Give their properties.

22. For a Poisson distribution mean is 4 and standard deviation is 2. Find (i) P(X = 1) ; (ii) P(at least one success) ; and (iii) skewness.

23. Describe Normal distribution and give its properties.

24. Define central limit theorem. What is its importance in Statistical theory ?

25. What are the desirable properties of a good estimation ? Give example for an estimator which is consistent but not unbiased ?

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

27. What is meant by sampling distribution error ? Give the sampling distribution of sample mean. What is the standard error of sample mean.

28. Explain the procedure of testing of hypothesis.

29. Explain the procedure of testing of significance of proportion.

30. A random sample of size 16 has 54 as mean. The sum of the squared deviations from the mean is 135. Can the sample be regarded as taken from the population having 52 as mean.

31. What is meant by ANOVA ? Give model for two-way ANOVA ? What are its assumptions ?

(8 × 2 = 16 weightage)

Turn over
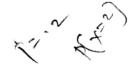
Part D (Essay)

Answer any **three** *questions.*
Each question carries 4 weightage.

32. The incidence of a certain disease is such that on the average 20 % of workers suffer from it. If 10 workers are selected at random, find the probability that :

    (a) Exactly 2 workers suffer from the disease.

    (b) Not more than 2 workers suffer from the disease. Also find mean number of workers suffering from the disease.

33. A random sample of 10 boys had the following I.Q's 70, 120, 110, 101, 88, 83, 95, 98, 107, 100. Do these data support the assumption of a population I.Q. of 100 ? Find reasonable range in which most of the mean I.Q. values of the samples of 10 boys lie ?

34. Two samples are drawn from two normal populations. From the following data test whether the two samples have the same variance.

Sample 1	:	63	62	72	74	75	82	85	87		
Sample 2	:	64	63	67	85	78	63	85	86	89	90

35. In an anti-malarial campaign in a certain area, quinine was administered to 812 persons out of a total population of 3248, the number of fever cases is shown below :

Treatment		Fever	No fever
Quinine	...	20	792
No quinine	...	220	2,216

    Discuss the usefulness of quinine in checking malaria.

36. Test whether the given varieties are homogeneous.

Variety 1	:	68	62	72	74	75	74	80	82	
Variety 2	:	64	63	68	75	78	73	78	76	79
Variety 3	:	68	66	62	72	70	76	72	75	78

    $(3 \times 4 = 12$ weightage)