

SECOND SEMESTER P.G. DEGREE EXAMINATION, APRIL 2019

(CCSS)

Economics

ECO 2C 07—STATISTICS FOR ECONOMICS

(2018 Admissions)

Time : Three Hours

Maximum : 80 Marks

Part A

*Answer all questions.**Each question carries 1 mark.*

Multiple choice Questions :

1. If moment generating function of a random variable is $m(t) = (0.6 + 0.4e^t)^{10}$ then the mean is given by :
(a) 6. (b) 5.
(c) 4. (d) 3.
2. The mode of a Poisson distribution with mean 4.5 is :
(a) $\frac{1}{2}$. (b) 2.
(c) $\frac{1}{4}$. (d) 4.
3. The skewness of a normal variable is _____.
(a) Positive. (b) Negative.
(c) Zero. (d) Any value.
4. The mean of a chi-square distribution with n degrees of freedom is :
(a) n. (b) 2n.
(c) 3n. (d) 4n.
5. Let $X_1, X_2, \dots, X_n$ be random sample of size n from $N(\mu, \sigma^2)$. Then the unbiased estimator of μ is :
(a) $2\bar{x}$. (b) Σx .
(c) Σx^2 . (d) $\bar{x}$.

Turn over

6. An estimator with smallest variance than another estimator is called
- (a) Unbiased. (b) Sufficient.
(c) Efficient. (d) Consistent.
7. Power of a test is related to :
- (a) Type I error. (b) Type II error.
(c) Type I error and Type II error. (d) None of these.
8. Probability of Type I error is called :
- (a) Level of significance. (b) Power.
(c) Critical value. (d) None of these.
9. Which of the following distribution utilizes Sign test :
- (a) Normal. (b) Poisson.
(c) Binomial. (d) Uniform.
10. The concept of ANOVA is due to :
- (a) Karl Pearson. (b) Prof. R.A. Fisher.
(c) J.Neyman. (d) Francis Galton.

(10 × 1 = 10 marks)

Part B (Very Short Questions)

Answer all questions.

Each question carries 2 marks.

Answer in one or two sentences each.

11. Write down the p.m.f of a geometric distribution.
12. Define sufficient estimator.
13. Define the two types of errors in a statistical hypothesis.
14. Give the mathematical model and null hypothesis of an ANOVA in one-way classification.
15. Define signed rank test.

(5 × 2 = 10 marks)

Part C (Short Answer Questions)

Answer any eight questions.

Each question carries 5 marks.

16. Obtain the mean and variance of Binomial distribution.
17. Ten coins are thrown simultaneously. Find the probability of getting exactly 8 heads.

18. Write down the features of normal distribution.
19. Obtain the relation between the normal, χ^2 , t and F distribution.
20. Define a chi-square distribution. Find its mean and variance.
21. State central limit theorem. Give any two applications of it.
22. Obtain the confidence interval for the proportion of a binomial population.
23. Define simple and composite hypotheses with example.
24. Give the test procedure for testing the significance of the mean of a normal population.
25. What do you mean by goodness of fit ? Explain.
26. Define Mann Whitney U Test.
27. Give Mathematical model, null hypothesis and ANOVA table of two way classified data.

(8 × 5 = 40 marks)

Part D (Essay Type Questions)

Answer any two questions.

Each question carries 10 marks.

28. For a normally distributed population, 10.03% of the items are under 25 and 89.97% of the items are under 70. What are the mean and standard deviation of the distribution ?
29. Obtain the maximum likelihood estimator of λ based on the following random sample taken from a Poisson distribution with parameter λ .
21, 16, 20, 18, 19, 22, 11, 24, 13, 15.
30. Describe Wilcoxon signed rank test.
31. Manures A, B and C are applied to 4 plots each in 12 identical plots in which the same variety of wheat was cultivated. The following table gives the yields per plots in quintals. Analyse the data and give your conclusion.

A	8	4	6	7
B	7	5	5	3
C	2	5	4	4

(2 × 10 = 20 marks)