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Name.....

Reg. No.....

SECOND SEMESTER M.A./M.Sc./M.Com. DEGREE EXAMINATION
JUNE 2020
(CBCSS)
Economics
ECO2C08—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II
(2019 Admissions)

Time : Three Hours

Maximum : 30 Weightage

Part A

Multiple Choice Questions.
Answer **all** *questions.*
Each question carries ¼ weightage.

1. How many four digit numbers can be formed with the digits 3, 4, 5, 6, 7 ?

   (a) 120.
   (b) 60.
   (c) 100.
   (d) 150.

2. For a Poisson distribution :

   (a) Mean > variance.
   (b) Mean < variance.
   (c) Mean = variance.
   (d) Mean ≠ variance.

3. If X is a random variable with mean μ, then $E(X-\mu)^r$ is called :

   (a) r^{th} row moment.
   (b) r^{th} central moment.
   (c) Variance.
   (d) Standard deviation.

4. If the two events A and D are not independent, then :

   (a) $P(A \cap B) = P(A) \cdot P(B)$.
   (b) $P(A \cap B) = P(A) \cdot P(B|A)$.
   (c) $P(A \cap B) = P(A) + P(B)$.
   (d) None of these.

5. For a normal distribution, the measure of skewness is always :

   (a) Equal to zero.
   (b) Not equal to zero.
   (c) Equal to three.
   (d) Not equal to three.

Turn over

6. The expected value of a constant is :

(a) Zero.

(b) Constant itself.

(c) One.

(d) Cannot be determined.

7. The statistical measure of the population values is called :

(a) Estimator.

(b) Statistic.

(c) Parameter.

(d) None of these.

8. Square of a standard normal variate will follow :

(a) χ^2 distribution.

(b) t-distribution.

(c) F distribution.

(d) Normal distribution.

9. The distribution used for testing the equality of several means is :

(a) Normal distribution.

(b) t-distribution.

(c) F distribution.

(d) χ^2 distribution.

10. If the statistic t is an unbiased estimator of the parameter θ and its variance tends to zero as the sample size $n \to \infty$, then t is a ——— estimator.

(a) Sufficient.

(b) Consistent.

(c) Efficient.

(d) Likelihood.

11. Which of the following hypothesis shows a right tailed test ?

(a) $H_0 : \mu = \mu_0$.

(b) $H_0 : \mu \neq \mu_0$.

(c) $H_0 : \mu < \mu_0$.

(d) $H_0 : \mu > \mu_0$.

12. The standard error of mean of a random sample of size n from a population with variance σ^2 is:

(a) $\frac{\sigma}{n}$.

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

(c) $\frac{\sigma}{\sqrt{n}}$

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

(12 × ¼ = 3 weightage)

Part B (Short Answer Type)

Answer any **five** *out of eight questions.*
Each question carries 1 weightage.

18. Compute the values of the following :

    (a) ${}_{10}C_7$.

    (b) ${}_7P_5$.

    (c) ${}_4P_3$.

    (d) ${}_{10}C_4$.

14. Distinguish between mutually exclusive and exhaustive events.

15. Give the classical definition of probability.

16. A binomial distribution has mean 3 and variance 2, find the parameters n and p.

17. State the multiplication theorem of probability.

18. Define critical region.

19. Distinguish between estimator and estimate with example.

20. Mention any *two* uses of t-distribution.

(5 × 1 = 5 weightage)

Part C (Paragraph Type)

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

21. A bag contains 6 white marbles and 5 red marbles, Find the probability in which 4 marbles can be drawn from the bag if,

    (a) 2 must be white and 2 must be red.

    (b) they must be of the same colour.

22. In a factory , machine A, B, C manufacture respectively 25 %, 35 % and 40 % of the total. Of their output 6 %, 4 % and 2 % are defective. An item drawn at random was found to be defective. What is the probability that it is produced by machine B ?

23. A random variable has the following distribution :

X	0	1	2	3
$p(x)$	k	$2k$	$3k$	$4k$

Find (a) The value of k ; (b) E (X) ; and (c) V (X).

24. Explain the properties of normal distribution.

25. A car hire firm has two cars which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson variate with mean 2. Calculate the proportion of days on which

(a) Neither car is used ; and (b) Some demand is refused.

26. The income distribution of workers in a certain factory was found to be normal with mean 500 and standard deviation 50. There were 228 workers getting more than Rs. 600. How many workers were there in all?

27. Explain the test for independence of attributes.

28. Explain the desirable properties of an estimator.

29. The standard deviation of two samples of sizes 10 and 14 from two normal populations are 3.5 and 3 respectively. Examine whether the standard deviation of the first population is more than that of the second population.

30. Explain the procedure of testing a hypothesis.

(7 × 2 = 14 weightage)

Part D (Essay Type)

Answer any two *out of four questions.*
Each question carries 4 weightage.

31. Explain the technique of analysis of variance for one-way classification.

32. In a normal distribution 17 % of the items are below 30 and 17 % of the items are above 60. Find the mean and standard deviation.

33. Prices of shares of a company on different days in a month were found to be 66, 65, 69, 70, 69, 71, 70, 63, 64 and 68. Discuss whether the mean price of the shares in the month is 65.

34. Out of 800 persons, 25 % were literate and 300 had travelled beyond the limits of their district. 40 % of the literates were among those who had not travelled. Prepare a 2 × 2 contingency table and test at 5 % level whether there is any relation between traveling and literacy.

(2 × 4 = 8 weightage)