M. A. DEGREE END SEMESTER EXAMINATION - JULY 2021

SEMESTER **2: ECONOMICS**

COURSE: **16P2ECOT10 –: STATISTICAL TOOLS FOR ECONOMIC ANALYSIS**

(For Regular 2020 admission & Supplementary 2019/2018/2017/2016 admission)

Time: Three Hours   Max. Marks: 75

(Use of Scientific Calculators and Statistical tables permitted)

PART A
Answer any 8 (2 marks each)

1. Define standard error.
2. Define pdf.
3. State central limit theorem.
4. Differentiate simple and composite hypothesis.
5. Define interval estimation.
6. What is the importance of normal Distribution?
7. Distinguish between one- tailed and two- tailed tests.
8. Define power of a test.
9. Distinguish between small sample test and large sample test.
10. Define normal Distribution and its properties.
11. Define Mathematical Expectation.
12. What do you mean by type I and type II errors?   (2 x 8 = 16)

PART B
Answer any 7 (5 marks each)

13. The mean and variance of a binomial random variable X are 6 and 3 respectively. Find $P(X = 0)$.
14. Define log-normal distribution? Explain its role in economic analysis.
15. A sample of size 17 taken from $N(\mu,\sigma^2)$. Mean of the sample is 15 and the sample variance is 9. Using the data, find a 90% confidence interval for μ.
16. Explain the large sample test of testing the mean of a population when the population standard deviations known and unknown.
17. Explain the role of central limit theorem in large sample tests.
18. Define χ^2, t and F distributions.
19. Heights of 1000 students are found to be normally distributed with mean 66 inches and SD 5 inches. Find the number of students with the heights (i) between 65 and 70 inches (ii) more than 72 inches.
20. Explain the method of maximum likelihood estimates in estimator of parameters.

21. Estimate a 95% confidence interval for μ, based on 10 random samples 22,25,30,21,24,26,24,28,25,26 taken from N(μ,25).

22. Write the test statistics involved in small sample test of equality of variance of two normal populations.   (5 x 7 = 35)

PART C
Answer any 2 (12 marks each)

23. The yield in kgs. from 12 plots by using three varieties of seeds A, B and C of wheat are listed

    A : 14   16   18

    B : 14   13   15   22

    C : 18   16   19   19   20

    Is there any significant difference between the productions from these seeds?

24. In a certain experiment to compare two types of animal foods A and B, the following results of increase in weights is observed in animals. The same sets of eight animals were used in both the foods.

Animal Number		1	2	3	4	5	6	7	8	Total
Gain in weight	Food A	49	53	51	52	47	50	52	53	407
	Food B	52	55	52	53	50	54	54	53	423

Can we conclude that food B is better than food A?

25. A sample of 900 items produced by a company is found to have a mean weight of 3.4 kgs and standard deviation 2.61 kgs. Test whether the sample is from a population with mean weight 3.25 kgs at 1% level of significance.

26. A group of 200 boys and girls are selected for an IQ test and they are classified as given below. Examine whether there is any dependency between the intelligence level and the gender.

	Below average	Average	Above average	Genius	Total
Boys	86	60	44	10	200
Girls	40	33	25	2	100
Total	126	93	69	12	300

(12 x 2 = 24)

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