

M. A. DEGREE END SEMESTER EXAMINATION - APRIL 2019**SEMESTER – 2: ECONOMICS****COURSE: 16P2ECOT10 –: STATISTICAL TOOLS FOR ECONOMIC ANALYSIS***(Common for Regular – 2018 Admission & Supplementary 2017/ 2016 Admission)*

Time: Three Hours

Max. Marks: 75

*(Use of Scientific Calculators and Statistical tables permitted)***PART - A***Answer **any eight** questions. Each question carries **2** marks*

1. Define random variable with examples.
2. Define lognormal distribution.
3. State any three properties of mathematical expectation.
4. Define null and alternative hypothesis.
5. Define mathematical expectation for discrete and continuous random variable
6. What is central limit theorem?
7. Define raw moments.
8. Define students 't' distribution.
9. Define Poisson distribution and point out its relevance.
10. Define F distribution.
11. Explain the concept of sampling distribution.
12. Distinguish between parameter and statistic with examples. (2 x 8 = 16)

PART - B*Answer **any seven** questions. Each question carries **5** marks*

13. If a discrete random variable has the probability function as,

x:	0	1	2	3	4	5	6	7	8
P(x):	c	2c	3c	5c	5c	4c	3c	2c	c

 Find i) the value of c ii) E(x)
14. What are the assumptions of a student's 't' test? Mention the applications of 't' test.
15. A machine produces 10% defective items. Ten items are selected at random. Find the probability of not more than two items being defective.
16. Three coins are tossed, Y represents the number of heads occurred. Determine the probability distribution of Y.
17. Explain i) Type I and Type II errors ii) Significance level and power of the test.
18. A random sample of size 16 has mean 53 and standard deviation 3. Obtain 95% confidence limits of the population mean.
19. What are the basic assumptions for Normal distribution?
20. Explain paired t-test.

21. Describe the procedure of testing the mean of the population based on large sample.
22. A manufacturer of dry cells claimed that average life of their cells is 24.0 hours. A sample of 10 cells had mean life of 22.5 hours with a standard deviation of 3.0 hours. On the basis of available information, test whether the claim of the manufacturer is correct.

(5 x 7 = 35)

PART - C*Answer any two questions. Each question carries 12 marks*

23. State the properties (at least 7) of normal distribution.

In an examination marks obtained by the students follow a normal distribution with mean 58 and standard deviation 10. Find the probability that student may get a) less than 63 marks b) between 41 and 63 marks c) between 50 and 60 marks d) greater than 60 marks.

24. Describe the Chi-square distribution and test of independence.

Data on the sex and preference for the colour are given in the table. Test whether there is any relationship between sex and preference for the colour.

colour	Sex		
	Males	Females	Total
Green	40	60	100
Yellow	30	20	50
White	30	20	50
Total	100	100	200

25. What is ANOVA? Write the assumptions.

Following are the weekly sales records of three sales man A, B, and C of a company .

A	300	400	300	500	
B	600	300	300	400	
C	700	300	400	600	500

Test whether the sales of three salesman are different, $\alpha=0.05$

26. Explain chi-square test of independence. The following table gives data regarding election of Candidates to an office.

Attitude of towards election	Economic Status		Total
	Rich	Poor	
Favourable	50	155	205
Not Favourable	90	110	200
TOTAL	140	265	405

Is attitude towards election influenced by economic status of workers? Test the hypothesis at 5% level.

(12 x 2 = 24)
