Reg. No…….. Name…… **18P254**

M. A. DEGREE END SEMESTER EXAMINATION - APRIL 2018

SEMESTER – 2: ECONOMICS

COURSE: 16P2ECOT10 –: STATISTICAL TOOLS FOR ECONOMIC ANALYSIS

(Common for Regular – 2017 Admission & Supplementary - 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 discrete and continuous random variable with examples.
2. What do you understand by probability mass/ density function?
3. Define mathematical expectation for discrete and continuous random variable.
4. Define moments and its relevance in probability distributions.
5. State central limit theorem.
6. Define binomial distribution and point out its mean and variance.
7. Define F distribution.
8. Explain the concept of sampling distribution.
9. Define null and alternative hypotheses with examples.
10. Write the formula for finding confidence interval for population mean when sample size is large.
11. Define Normal distribution and its features.
12. If $f(x) = k\ x \quad 0 \le x \le 1$, find the value of k. (2 x 8 = 16)

Part - B

Answer any ***seven*** questions. Each question carries **5** marks

13. Derive the mean and variance of Poisson distribution.
    The number of mistakes counted in 100 typed pages of a typist revealed that he made 2.8 mistakes on an average per page. Find the probability that
    i) there is no mistake
    ii) there are two or less mistakes, in a page, typed by him.
14. What are the properties of mathematical expectation?
    If $f(x) = 2(1-x)$, $0 < x < 1$, Find $E(6x+3x^2)$.
15. Explain i) Type I and Type II errors ii) size and power of the test .
16. Define sampling distribution and standard error .
17. Distinguish between parameter and statistic with examples.
18. What are the basic assumptions for student's t test? Explain the paired t test.
19. Explain the method of moments. Obtain the moment estimate of the parameter λ of a Poisson distribution.
20. Differentiate between one tailed and two tailed tests, using examples.

21. Find the confidence interval for mean when sample size is small.

22. The diameter of 200 ball bearings made by a machine during a week were found to have a mean of 0.824 and standard deviation 0.042.Find 95% confidence interval for the mean diameter of ball bearings. (5 x 7 = 35)

Part - C

Answer any *two* questions. Each question carries 12 marks

23. Describe the Chi-square test of independence.

It is claimed that more IAS selections are made from cities rather than rural places. On the basis of the following data , do you agree with the claim?

	Selected	Not selected
From cities	500	200
From rural places	100	30

24. 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, α=0.05

25. What are the properties of standard normal distribution?

The hourly wages of 1000 workmen are normally distributed around a mean of Rs.70 and with a standard deviation of Rs.5.

Estimate the number of workers whose hourly wages will be

i) more than Rs.75 ii) between Rs.69 and Rs.72 iii) less than Rs.63

26. Explain independent t-test. In an experiment to compare the two types of pig feeds, the Following results of increase in weights were observed.

Pig no.	1	2	3	4	5	6	7	8
Food 1	49	53	51	52	47	50	52	53
Food 2	52	55	52	53	50	54	54	53

Assuming that two samples of pigs are independent. Can we conclude that food 1 is better than food 2.

(12 x 2 = 24)

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