M A DEGREE END SEMESTER EXAMINATION MAY - 2015

M A ECONOMICS   SEMESTER 2

COURSE: P2ECOT10 – QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS – II

Time: 3 Hours   Max. Marks: 75

Use of Calculator is permitted

PART A
(Each question carries 2 marks)

1. Define probability density function of a random variable.
2. A random variable x takes values 1 and 2 with corresponding probability.

   1/3 and 2/3. Find E(x) and V (x).
3. Define null and alternative hypothesis.
4. What is the relation between a student's t distribution and F distribution?
5. Give the general idea of central limit theorem.

PART B

(Each questions carries 5 marks. Maximum marks from this part is 35)
6. Evaluate K if the following is a probability density function. Also obtain

   P (1≤x≤ 3).

x	0	1	2	3
P(x)	1/6	1/2	K/10	1/30

   Write any three properties of variance of a random variable.
7. A basket contains 30 bad oranges and 70 good oranges. Four are drawn at

   random from this basket. Find the probability that out of four 1) exactly two   2)

   atleast two are good.
8. Define lognormal distribution. Explain its role in economic analysis.
9. Distinguish between point estimation and interval estimation. Give a 95%

   confidence interval for mean of the normal population.
10. Explain the procedure for testing a hypothesis.
11. Distinguish between one tailed and two tailed tests.
12. Define standard error. Mention its uses in large sample theory.
13. Define chi-square statistic. Give the important uses of chi-square distribution
14. What are the assumptions of a student's 't' test? Mention the applications of

   't' test.

                                                                                    (PTO)

15. On inspection of random sample of 500 items produced by a machine, 30 are found to be defective. Does this justify the assumption that the machine is producing 2% defective items on an average? Test the hypothesis at 5% level of significance.

PART C

(Each question carries 15 marks. Maximum marks from this part is 30)

16. State the salient features of normal distribution. Marks of 600 students are found to be normally distributed with mean 40 and standard deviation 5. Estimate the number of students having marks a) less than 35   b) exactly equal to 38   c) between 32 and 50.

17. Describe how you would test the hypothesis of equality of two normal population means using student's t-statistic.
   Seven plants of wheat grown in plots and given a standard fertilizer treatment. Respective yields are 8.4, 4.5, 3.8, 6.1, 4.7, 11.2, 9.6 gram dry weight of seed. A further eight plants from the same source are grown in similar conditions but with a different fertilizer and respective yields are 11.6, 7.5, 10.4, 8.4, 13.0, 7.0, 9.6, 13.2 gram dry weight of seed. Test whether the two fertilizer treatments have different effects on seed production at the 5% level.

18. 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.

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