SECOND SEMESTER M.A. DEGREE EXAMINATION, APRIL 2021 ECONOMICS FECO2C08: QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS II

Time: 3 Hours

Maximum Weightage: 30

Part A: Multiple Choice Questions. All questions can be answered. Each carries 1/5 weightage.

The classical definition a) Bernoulli	of probability was in b) Von Mises	troduced by: c) Kolmogorov	d)None of these
Probability of an impos a) 0	sible event is b) 1	c) -1	d) 0.5
If A and B are disjoint a) 0.5	events with P(A) = b) 0	0.5 and P(B) = 0.2, the c) 0.2	en P(A U B) is d) 0.7
If X is the number sho a) Discrete random variab	own up on throwing o iable b) C le d) N	f a fair die then X is a . ontinuous random varia one of these	ble
For a Binomial distribu a) Mean = Variance c) Mean < Variance	tion which of the foll b) M d) No	owing is always true? lean > Variance one of these	
Name a discrete probab a) Normal	ility distribution. b) Lognormal	c) Poisson	d) Exponential
The random variable X a) Binomial	follows lognormal di b) Poisson	istribution if logX is c) Uniform	d) Normal
The normal distribution a) Mesokurtic	i is always b) Leptokurtic	c) Platykurtic	d) None of these
The mean of a chi squa a) 0	re distribution with th b) 1	nree degrees of freedom c) 2	is d) 3
Standard error means th a) Mean	b) Median	pling distribution of a S c) Standard Deviation	tatistic. 1 d) Variance
Rejecting the null hypo a) Type I Error	thesis when it is actu b) Type II Error	ally true is termed as c) Standard Error	d) Power
To test the significance a) Z test	of single mean for a b) t test	large sample we use c) F test	d) None of these
For testing the equality a) F test	of proportions we us b) Z test	e c) t test	d) χ^2 test
	The classical definition a) Bernoulli Probability of an impose a) 0 If A and B are disjoint a) 0.5 If X is the number sho a) Discrete random variable c) Not a random variable For a Binomial distribut a) Mean = Variance c) Mean < Variance C) Mean < Variance Name a discrete probable a) Normal The random variable X a) Binomial The normal distribution a) Mesokurtic The mean of a chi squa a) 0 Standard error means th a) Mean Rejecting the null hypo a) Type I Error To test the significance a) Z test For testing the equality a) F test	The classical definition of probability was ina) Bernoullib) Von MisesProbability of an impossible event isa) 0b) 1If A and B are disjoint events with $P(A) =$ a) 0.5b) 0If X is the number shown up on throwing ofa) Discrete random variableb) Cc) Not a random variabled) NFor a Binomial distribution which of the folla) Mean = Varianceb) Mc) Mean < Variance	The classical definition of probability was introduced by:a) Bernoullib) Von Misesc) KolmogorovProbability of an impossible event isa) 0b) 1c) -1If A and B are disjoint events with $P(A) = 0.5$ and $P(B) = 0.2$, the a) 0.5 b) 0c) 0.2If X is the number shown up on throwing of a fair die then X is aa) Discrete random variableb) Continuous random variatea) Discrete random variableb) Continuous random variatec) Not a random variabled) None of theseFor a Binomial distribution which of the following is always true?a) Mean = Varianceb) Mean > Variancec) Mean < Variance

(PTO)

b) 1	c) 2	d) 4
statistic used in ANOVA is		
b) t	c) χ ²	d) F
	b) 1 statistic used in ANOVA is . b) t	b) 1 c) 2 statistic used in ANOVA is b) t c) χ^2

 $(15 \text{ x} ^{1}/_{5} = 3 \text{ weightage})$

Part B: Very short answer questions. All questions can be answered. Each carries one weightage (Ceiling 4 weightage).

- 16. Define mutually exclusive events with one example.
- 17. Write down the sample space for tossing three coins.
- 18. What is the chance of getting an odd number on throwing a fair die?
- 19. A taxi driver gains Rs.1000 on a rainy day while he loses Rs.100 otherwise. If the chance of raining on a day is 0.7, what is his expected earnings?
- 20. Define Binomial Distribution.
- 21. Define unbiasedness.
- 22. Define the two types of errors in testing of hypothesis.
- 23. Write down the test statistic for testing the equality of means using small samples.

Part C: Short answer questions. *All* questions can be answered. Each carries *three* weightage (Ceiling 15 weightage).

- 24. Explain classical and empirical definitions of probability and compare them.
- 25. Define conditional probability and independence of events. Also write the addition theorem of probability.
- 26. The probability mass function of a random variable X is given as:

x: -1 0 1 2

 $p(x): 2k \quad 0.4 \quad 0.3 \quad k$

Find k and E(X).

- 27. If X is a Poisson random variable such that P(X=1) = P(X=2), find its mean, variance and P(X=0).
- 28. Distinguish between point estimation and interval estimation. Write one example for each.
- 29. Define null hypothesis, alternative hypothesis, simple and composite hypothesis with one example for each.
- 30. If a random sample of size 16 has mean 90 and standard deviation 10, test whether the population mean is 88.

- 31. Explain the paired t test.
- 32. Explain the chi square test for independence of attributes.
- 33. Write down the null hypothesis and ANOVA table for one way classification.

Part D: Essay questions. All questions can be answered. Each carries four weightage. (Ceiling 8 weightage)

- 34. a) State Bayes' theorem.
 - b) Contents of three urns are given below.

	<u>Urn 1</u>	<u>Urn 2</u>	<u>Urn 3</u>
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2 black and 3 white balls 3 black and 7 white balls 6 black and 4 white balls

An urn was chosen at random and a ball is drawn from it. If it is found to be white ball, what is the chance that it is drawn from the second urn.

35. Test whether the following samples are drawn from the same normal population.

Sample A:	6	2	10	4	8
Sample B:	9	11	5	8	7

- 36. Among 64 offsprings of a certain cross between guinea pigs 34 were Red, 10 were Black and 20 were White. According to the genetic model these numbers should be in the ratio 9:3:4. Are the data consistent with the model at 5% level?
- 37. Perform an analysis of Variance for the following data

Variety A :	7	3	5	4	1
Variety B:	5	6	8	9	7
Variety C:	8	10	11	12	4