

M. COM DEGREE END SEMESTER EXAMINATION : OCTOBER 2022

SEMESTER 3 : COMMERCE

COURSE : 21P3COMT15 : ECONOMETRICS FOR FINANCE

(For Regular - 2021 Admission)

Duration : Three Hours

Max. Weights: 30

PART A

Answer any 8 questions

Weight: 1

1. What are the properties of a probability density function of a discrete random variable? (U, CO 1)
2. Define variance of a random variable. Give the expression for variance of a random variable in terms of expectation of a random variable. (A)
3. Differentiate biased and unbiased estimator. (U, CO 1)
4. Write down the joint probability density function of X and Y, where X is the number of heads and Y is the number of tails among the first two coins when three coins are tossed at a time. (A, CO 1)
5. Define covariance between two random variables X and Y. Give the expression of covariance of a random variable in terms of expectation of random variable. What is the value of covariance between two random variables which are independent. (A)
6. What is time series data? (U, CO 1)
7. What is an econometric model? (U, CO 1)
8. What is Dickey Fuller Test? (U, CO 3)
9. What do you mean by linearity? (U, CO 1)
10. Distinguish type I and type II error? (U, CO 1)
(1 x 8 = 8)

PART B

Answer any 6 questions

Weights: 2

11. If X follows a normal distribution with mean 5000 and standard deviation 2000, find the following
 (a) $P(3000 < X < 9000)$ (A, CO 2)
 (b) $P(X > 8000)$
 (c) $P(X < 4000)$
12. Briefly explain the principle of least squares. How is it used in OLS estimation? (An, CO 3)
13. The probability density function of a discrete random variable is given below

X:	1	2	3	4	5	6	7
f(x):	a	3a	11a	22a	16a	5a	2a

Find:

- (a) The value of a
- (b) $P(3 < X < 6)$

(A, CO 2)

14. What are the goals of econometrics? (Cr)
15. Explain what are dummy variables and what are its uses. (An, CO 4)
16. Briefly explain the methodology of econometrics. (An)
17. Explain the reasons for heteroskedasticity? (An, CO 4)
18. What is the standard sequence of steps for dealing with non stationary time series? (An, CO 3)
- (2 x 6 = 12)**

PART C

Answer any 2 questions

Weights: 5

19. Obtain the OLS estimates of the parameters of the model $Y_i = b_0 + b_1 X_i + U_i$ and show that they are linear functions of Y_i (A)
20. Explain the reasons for autocorrelation, its consequences. Explain the Durbin Watson test for detecting autocorrelation in econometric model. (E, CO 6)
21. Out of the 2500 students appeared in an examination, 500 failed and 700 passed with distinction. Assuming normal distribution, find the mean and standard deviation of marks if the minimum mark for a pass is 400 and those who score above 1200 are declared to have a pass with distinction. (A, CO 2)
22. The following table gives the gross national product (X) and demand for food (Y). Estimate the parameters of the model $Y_i = b_0 + b_1 X_i + U_i$ (A)
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|-----|----|----|----|----|----|----|----|----|----|----|
| X : | 6 | 7 | 8 | 10 | 8 | 9 | 10 | 9 | 11 | 10 |
| Y : | 50 | 52 | 55 | 59 | 57 | 58 | 62 | 65 | 68 | 70 |
- (5 x 2 = 10)**

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Enable students to understand the basics of econometrics	U	1, 3, 4, 6, 7, 9, 10	7
CO 2	Create an understanding of how econometric methods are applied in finance	An	11, 13, 21	9
CO 3	Impart working knowledge of financial time series	A	8, 12, 18	5
CO 4	Familiarise the software with which analysis is performed	An	15, 17	4
CO 6	Understand the basic regression models	E	20	5

Cognitive Level (CL): Cr - CREATE; E - EVALUATE; An - ANALYZE; A - APPLY; U - UNDERSTAND; R - REMEMBER;