2019/TDC/ODD/SEM/ECOH-502 (A/B)/254

TDC Odd Semester Exam., November—2019

ECONOMICS

(Honours)

(5th Semester)

Course No. : ECOH-502

Full Marks : 50

Pass Marks : 17

Time : 2 hours

The figures in the margin indicate full marks for the questions

Arts students will answer Option—A and Science students will answer Option—B

OPTION—A

(For Arts Students)

Course No. : ECOH-502 (A)

(Statistics for Economics—I)

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. *(a)* Define data. Distinguish between primary data and secondary data.   1+3=4

   (b) What is tabulation of data? Mention five essential requirements of a good table.

   1+5=6

(Turn Over)

2. *(a)* What is pie diagram? What are its uses?

$$1+3=4$$

(b) Draw a pie chart to represent the following data of expenditure in a particular fiscal year in India : 6

Heads of Expenditure	Volume of Expenditure (₹)
Agriculture	48·5
Industry	30·6
Irrigation	11·5
Transport	15·4
Miscellaneous	4·0

UNIT—II

3. *(a)* Show that for any two positive observations a and b, AM > GM > HM. 4

(b) In the following table, distribution of students is shown according to their weights in kg. Find the coefficient of variation of both the series and hence conclude which series is more consistent : 6

Weights (kg)	10–20	20–30	30–40	40–50	50–60
Class X	5	9	21	15	6
Class XI	7	10	20	18	7

(Continued)

4. (a) Define moments. Explain briefly the moments about arbitrary origin. 1+4=5

(b) Calculate the skewness from the following set of data : 5

x :	12·5	17·5	22·5	27·5	32·5	37·5	42·5	47·5
f :	28	42	54	108	129	61	45	33

UNIT—III

5. (a) Prove that correlation coefficient lies between −1 and +1. 5

(b) Given that $r_{xy} = 0.6$, cov$(X, Y) = 7.2$ and var$(Y) = 16$, find σ_x. 5

6. (a) Marks secured by five students in mathematics and Statistics are given below. Calculate the coefficient of correlation : 5

Mathematics :	76	96	86	80	82
Statistics :	62	76	86	66	70

(b) Compute the rank correlation coefficient between X and Y given in the following distribution : 5

X :	30	21	42	61	78	13
Y :	26	43	37	19	8	41

UNIT—IV

7. (a) Define regression. Show that if one of the regression coefficients is greater than unity, the other must be less than unity. 2+3=5

   (b) Given the following data, obtain the two lines of regression : 5

   $\overline{X} = 36, \overline{Y} = 85, \sigma_x = 11, \sigma_y = 8, r_{xy} = 0.66$

8. (a) Obtain the regression equation X on Y and Y on X from the data [Q. No. **8**(b)] given below the data on X and Y. 5

   (b) Calculate the correlation coefficient between X and Y from the following data : 5

X :	6	2	10	4	8	12	15	14	12
Y :	9	11	5	8	7	10	9	12	8

UNIT—V

9. (a) Define the following concepts : 2×4=8

   (i) Mutually exclusive events

   (ii) Independent events

   (iii) Equally likely events

   (iv) Sample point and sample space

(Continued)

(b) If A and B are independent events with $P(A) = 0.6$ and $P(B) = 0.2$, then find $P(A + B)$. 2

10. (a) A coin is tossed 10 times. Find the probability of getting—

(i) exactly 6 heads;

(ii) 9 heads and 1 tail. 3+3=6

(b) Let X be a random variable with probability distribution

X :	0	1	2	3
$P(X)$:	$\frac{1}{3}$	$\frac{1}{2}$	0	$\frac{1}{6}$

Find the expectation of X and X^2. 2+2=4

(6)

Course No. : ECOH–502 (B)

(Elements of Econometrics—I)

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. Define econometrics. Throw light on the methodology of econometric study.   2+8=10

2. Discuss the nature and scope of econometrics. State any two limitations of econometrics.   8+2=10

UNIT—II

3. Define random variable. Discuss the concepts of discrete random variable and continuous random variable. State the difference between random variable and non-stochastic variable.   2+6+2=10

4. Define mathematical expectation both for the discrete and continuous random variables. Let X be a discrete random variable and a and b are any two arbitrary constants. Then show that—

   (i) $E(aX) = aE(X)$

   (ii) $E(aX + bY) = aE(X) + bE(Y)$ 4+3+3=10

(Continued)

UNIT—III

5. Write short notes on any *two* of the following : 5×2=10

   (a) Probability mass function vs. Probability density function

   (b) Standard error

   (c) Parameter vs. Statistic

6. Explain the concept of sampling distribution of a statistic. Derive the sampling distribution of the mean of sample means in case of simple random sampling. 4+6=10

UNIT—IV

7. Define linear regression model. Give one example of linear regression model used in Economics. Show that OLS estimators are unbiased estimators. 10

8. Write a short note on maximum likelihood estimation of regression parameters. 10

(Turn Over)

UNIT—V

9. Define the following terms :　　　　　　　$2 \times 5 = 10$

   (a)　Null hypothesis

   (b)　Alternative hypothesis

   (c)　Type I error

   (d)　Type II error

   (e)　Level of significance

10. Outline the assumptions underlying a multiple linear regression model.

    10

★ ★ ★