

**3 SEM TDC ECO M 2**

**2 0 1 4**

( November )

**ECONOMICS**

( Major )

Course : 302

**( Statistical Methods in Economics )**

Full Marks : 80

Pass Marks : 32

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

1. Answer the following as directed :  $1 \times 8 = 8$

(a) 'The reciprocal of the arithmetic mean of the reciprocals of the given observations' is termed as

(i) geometric mean

(ii) harmonic mean

(iii) mode

(iv) median

( Choose the correct answer )

(b) The relative flatness of the top of a frequency curve is called 'kurtosis'.

( Write True or False )

(c) The value of  $b_{xy} \times b_{yx}$  is equal to

(i)  $r$

(ii)  $r^2$

(iii)  $\sqrt{r}$

(iv) None of the above

( Choose the correct answer )

(d) The mean of the binomial distribution is

(i)  $n$

(ii)  $np$

(iii)  $npq$

(iv) 0

( Choose the correct answer )

(e) Circular test is satisfied by

(i) Laspeyres' method

(ii) Paasche's method

(iii) Fisher's ideal method

(iv) None of the above

( Choose the correct answer )

(f) The probability of drawing a king in a draw from a pack of 52 cards is —.

( Fill in the blank )

(g) Mention one limitation of census method.

(h) Binomial distribution is associated with the name of

(i) de Moivre

(ii) Karl Pearson

(iii) J. Bernoulli

(iv) I. Fisher

( Choose the correct answer )

2. Write short notes on any *four* of the following (within 150 words each) : 4×4=16

(a) Characteristics of a good average

(b) Binomial distribution

(c) Type-I and Type-II errors

(d) Skewness and kurtosis

(e) Use of index numbers for deflating other series

(f) Spearman's rank correlation coefficient

3. (a) What do you mean by central tendency? Explain different methods of computing central tendency. 2+9=11

Or

- (b) From the following distribution, find the standard deviation and coefficient of variation. 6+5=11

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	5	10	20	40	30	20	10	4

4. (a) Distinguish between sampling and census. Describe briefly different types of sampling. 4+7=11

Or

- (b) In a survey, the following results were found in a town :

	Male	Female	Total
Taking tea	56	31	87
Not taking tea	18	6	24
Total	74	37	111

Discuss whether there is any significant difference between male and female in the matter of taking tea. [The value of  $\chi^2$  for 1 degree of freedom at 5% level of significance is 3.84.]

11

5. (a) A bag contains 4 red balls and 6 black balls. If two balls are drawn at a time, what is the probability that (i) both are red, (ii) both are black, and (iii) one is black and the other is red?  $4+4+3=11$

Or

- (b) State and prove the addition theorem of probability for any events  $A$  and  $B$ . Rewrite the law when  $A$  and  $B$  are mutually exclusive.  $8+3=11$

6. (a) Mention the properties of Karl Pearson's coefficient of correlation. Given that, the probable error of  $r = 0.125$  and  $n = 16$ , find the correlation coefficient and examine its significance.  $3+7+2=12$

Or

- (b) Based on the information given below, find (i) the two regression equations, and (ii) the most likely value of  $X$ , when the value of  $Y$  is 75 : 5+5+2=12

$$\bar{X} = 36, \bar{Y} = 85, \delta_x = 11, \delta_y = 8, r = 0.66$$

7. (a) From the following data relating to the prices and quantities of 4 commodities, construct (i) Laspeyres' index, (ii) Paasche's index, and (iii) Fisher's ideal index numbers of price for the year 2012 taking 2011 as the base year : 3+3+5=11

Commodities	2011		2012	
	Price	Quantity	Price	Quantity
A	5.00	100	6.00	150
B	4.00	80	5.00	100
C	2.50	60	5.00	72
D	12.00	30	9.00	33

( 7 )

Or

(b) Write notes on the following : 5+3+3=11

- (i) Time-reversal and factor-reversal tests
- (ii) Chain-base index number
- (iii) Splicing of index number

\*\*\*