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3 SEM TDC ECO M 2

2013

(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 : 1×8=8

(a) Maximum frequency of a series is associated with

(i) arithmetic mean

(ii) harmonic mean

(iii) mode

(iv) median

(Choose the correct answer)

(Turn Over)

(b) Correlation coefficient between $-X$ and $-Y$ is negative.

(Write True or False)

(c) Fisher's ideal index number does not satisfy

(i) time reversal test

(ii) factor reversal test

(iii) unit test

(iv) None of the above

(Choose the correct answer)

(d) Skewness is positive when mean is

(i) 1

(ii) 0

(iii) > mode

(iv) < mode

(Choose the correct answer)

(e) Poisson distribution is a limiting form of —— distribution.

(Fill up the blank)

(f) The value of r is equal to

(i) $b_{xy} \times b_{yx}$

(ii) $\sqrt{b_{xy} \times b_{yx}}$

(iii) $(b_{xy} \times b_{yx})^2$

(iv) None of the above

(Choose the correct answer)

(Continued)

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(g) Mention one limitation of geometric mean.

(h) The probability of drawing a black card from a well-shuffled pack of 52 cards is

(i) $\frac{1}{52}$

(ii) $\frac{1}{13}$

(iii) $\frac{1}{2}$

(iv) $\frac{1}{4}$

(Choose the correct answer)

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

(a) Distinction between sampling and census

(b) Properties of standard deviation

(c) Fixed-base and chain-base index numbers

(d) Probable error of r

(e) Normal distribution

3. (a) What do you understand by skewness and kurtosis? Point out their roles in analysing frequency distribution. 4+7=11

(Turn Over)

Or

(b) For a certain frequency table, the median was found to be 30 and $N = 100$. Calculate the missing frequencies : 11

Marks	0–10	10–20	20–30	30–40	40–50	50–60
No. of students	10	?	25	30	?	10

4. (a) Explain the following terms : 4+4+3=11

(i) Testing of hypothesis

(ii) Type–I and Type–II errors

(iii) Level of significance

Or

(b) In a certain sample of 2000 families, the following results were observed :

No. of families	Hindu	Non-Hindu	Total
Consuming tea	1236	164	1400
Not consuming tea	564	36	600
Total	1800	200	2000

State whether there is any significant difference between consumption of tea among Hindu and non-Hindu families. [The value of χ^2 for 1 degree of freedom at 5% level of significance is 3·84.] 11

(Continued)

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5. (a) A coin is tossed 8 times. What is the probability of getting (i) no head, (ii) 2 heads and (iii) at most 3 heads? 3+3+5=11

Or

(b) If two cards are drawn one-by-one, what is the probability that the first card is either King or Queen, and second card is either Spade or Club (i) with replacement and (ii) without replacement? 6+5=11

6. (a) Calculate correlation coefficient from the following and examine its significance : 8+4=12

$$N = 10, \quad \Sigma X = 100, \quad \Sigma Y = 150,$$
$$\Sigma (X-10)^2 = 180, \quad \Sigma (Y-15)^2 = 215,$$
$$\Sigma (X-10)(Y-15) = 60$$

Or

(b) Write a note on regression coefficients. From the data given below, find (i) regression equation Y on X and (ii) the most likely value of Y when the value of X is 15 : 4+6+2=12

X :	16	12	18	4	3	10	5	12
Y :	87	88	89	68	78	80	75	82

(Turn Over)

7. *(a)* Construct Fisher's ideal index from the data given below, and show that it satisfies both time reversal test and factor reversal test : 5+3+3=11

Commodities	2011		2012	
	Quantity	Price	Quantity	Price
A	12	10	15	12
B	15	7	20	5
C	24	5	20	9
D	5	16	5	14

Or

(b) *(i)* Describe the use of index numbers for deflating time series data.

(ii) Explain the problems of construction of index numbers. 6+5=11

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