

06 MAY 2016

Subject Code : ECO/VI/10

Booklet No. A

523

06 MAY 2016

ECO/VI/10

2016

(6th Semester)

ECONOMICS

TENTH PAPER

(Quantitative Techniques—II)

Full Marks : 75

Time : 3 hours

(PART : B—DESCRIPTIVE)

(Marks : 50)

The figures in the margin indicate full marks for the questions

Answer one question from each Unit

UNIT—I

1. (a) Compute the median for the following distribution : 6

No. of absent days	No. of students
More than 0	655
More than 5	625
More than 10	431
More than 15	190
More than 20	73
More than 25	21
More than 30	11
More than 35	5
More than 40	2

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(b) Define skewness and kurtosis. 2+2=4

2. The daily wages of workers in two cities, Aizawl and Shillong, are given as follows :

Measure	Aizawl	Shillong
Average Wages (₹)	210	320
Standard Deviation (₹)	8	9

- (a) Find combined mean. 4
- (b) Find combined standard deviation. 4
- (c) Which city is having more variations in wages? 2

UNIT—II

- 3. (a) State and prove the addition theorem of probability. 6
- (b) A bag contains 8 white and 4 red balls. 5 balls are drawn at random. What is the probability that 2 of them are red and 3 are white? 4
- 4. Discuss the properties of normal distribution. 10

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UNIT—III

5. Calculate Karl Pearson's coefficient of correlation between X and Y using the following data :

$$N = 13, \Sigma X = 117, \Sigma Y = 260, \Sigma X^2 = 1313, \Sigma Y^2 = 6580, \Sigma XY = 2827$$

Also give your comment. 8+2=10

6. Construct the two regression equations and estimate the value of Y when X = 12 using the following data :

X :	6	3	10	5	9
Y :	9	11	6	8	7

UNIT—IV

- 7. What is time series? Discuss the various components of time series. 2+8=10
- 8. What is price relative? Construct index number of prices by applying Fisher's method from the following data : 3+7=10

Commodity	2014		2015	
	Price	Quantity	Price	Quantity
A	5	9	7	5
B	7	6	4	10
C	2	12	4	11
D	10	8	9	4

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UNIT—V

9. From the data given below, calculate gross and net reproduction rates : 5+5=10

Age Group	No. of children born to 1000 women passing through the age group	Mortality Rate
16-20	150	120
21-25	1500	180
26-30	2000	150
31-35	800	200
36-40	500	220
41-45	200	230
46-50	100	250

(It is assumed that sex ratio, i.e., Male : Female is 52 : 48)

10. Explain the following : 5+5=10

- (a) Crude death rate (CDR) and Specific death rate (SDR)
- (b) Crude birthrate (CBR) and Net reproduction rate (NRR)

To be filled in by the Candidate

DEGREE 6th Semester
(Arts / Science / Commerce
) Exam., 2016

Subject

Paper

INSTRUCTIONS TO CANDIDATE

- The Booklet No. of this script should be quoted in the answer script for descriptive type questions and vice versa.
- This paper should be ANSWERED and submitted within 1 (one) hour of the commencement of Examination.
- While answering the questions in the booklet, any cutting, erasing, writing or furnishing more than one answer is prohibited. Any rough work, if required, should be done in a separate sheet and not in the main Answer Book. Instructions given in each question should be followed for answering that question only.

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2016

(6th Semester)

ECONOMICS**TENTH PAPER****(Quantitative Techniques—II)**

(PART : A—OBJECTIVE)

(Marks : 25)

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

(Marks : 10)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×10=10

1. The empirical mode is given by

(a) $\text{Mode} = 3 \text{ Mean} - 2 \text{ Median}$ ()

(b) $\text{Mode} = 3 \text{ Median} - 2 \text{ Mean}$ ()

(c) $\text{Mode} = 2 \text{ Median} - \text{Mean}$ ()

(d) $\text{Mode} > \text{Mean} > \text{Median}$ ()

2. Which of the following is a unit free measure of dispersion?

- (a) Standard deviation ()
- (b) Mean deviation ()
- (c) Quartile deviation ()
- (d) Coefficient of variation ()

3. What is the probability of getting Red Queen from a standard pack of 52 cards?

- (a) 1/52 ()
- (b) 2/52 ()
- (c) 3/52 ()
- (d) 4/52 ()

4. Which of the following is a continuous distribution?

- (a) Binomial distribution ()
- (b) Poisson distribution ()
- (c) Normal distribution ()
- (d) None of the above ()

5. In the regression line $Y = \alpha + \beta X$, β is called the

- (a) intercept of the line ()
- (b) slope of the line ()
- (c) correlation between X and Y ()
- (d) None of the above ()

6. If the value of correlation coefficient between X and Y is zero, it shows

- (a) perfect positive correlation ()
- (b) perfect negative correlation ()
- (c) absence of correlation ()
- (d) None of the above ()

7. Laspeyres' index number may be said to give

- (a) upper limit to the price change ()
- (b) lower limit to the price change ()
- (c) demand limit to the price change ()
- (d) supply limit to the price change ()

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8. In the measurement of trend, semi-average method is desired to be applied only when the trend is

- (a) linear or approximately linear ()
- (b) non-linear ()
- (c) quadratic and concave ()
- (d) cubic and circle ()

9. If maternal mortality rate (MMR) is 16 per 1000 and total number of live birth is 250 in a year, then the number of mother die at the birth of child is

- (a) 3 ()
- (b) 4 ()
- (c) 5 ()
- (d) 6 ()

10. Infant mortality rate (IMR) is defined as

- (a) $\frac{\text{No. of mother death}}{\text{Total live birth}} \times 1000$ ()
- (b) $\frac{\text{No. of mother}}{\text{No. of child death at birth}} \times 1000$ ()
- (c) $\frac{\text{Death of infants within one year of birth}}{\text{Total number of mother}} \times 1000$ ()
- (d) $\frac{\text{Death of infants within one year of birth}}{\text{Total number of live birth}} \times 1000$ ()

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SECTION—B
(Marks : 15)

Answer the following questions :

3×5=15

1. Define sample and population.

2. What are independent events?

Two events A and B are said to be independent if the occurrence of one event does not affect the probability of the occurrence of the other event. In other words, the probability of the occurrence of both events together is equal to the product of their individual probabilities.

Mathematically, if A and B are independent events, then

$$P(A \cap B) = P(A) \times P(B)$$

Example: A die is thrown. Let A be the event 'the number on the die is even' and B be the event 'the number on the die is less than 6'. Are A and B independent events?

- (a) Yes
- (b) No
- (c) Cannot be determined
- (d) None of these

3. Infant mortality rate (IMR) is defined as

$$\frac{\text{No. of infants who die before 5 years of age}}{\text{Total live births}} \times 1000$$

$$\frac{\text{No. of deaths}}{\text{Total live births}} \times 1000$$

Example: In a certain year, the number of live births was 1500 and the number of deaths was 100. Calculate the infant mortality rate.

$$\text{IMR} = \frac{100}{1500} \times 1000 = 66.67$$

3. Define partial correlation.

Partial correlation is a measure of the degree of association between two variables, after the effect of one or more other variables has been removed. It is used to determine the relationship between two variables when there are other variables that may be influencing the relationship.

Mathematically, the partial correlation coefficient between two variables X and Y, controlling for a third variable Z, is denoted by $r_{XY.Z}$.

Example: The following table shows the relationship between the number of hours spent studying and the marks obtained in an examination, after controlling for the effect of the student's intelligence.

Hours spent studying	Marks obtained
10	60
15	70
20	80
25	90
30	100

Calculate the partial correlation coefficient between the number of hours spent studying and the marks obtained, controlling for the effect of intelligence.

$$r_{XY.Z} = \frac{r_{XY} - r_{XZ}r_{YZ}}{\sqrt{(1 - r_{XZ}^2)(1 - r_{YZ}^2)}}$$

Example: The following table shows the relationship between the number of hours spent studying and the marks obtained in an examination, after controlling for the effect of the student's intelligence.

Hours spent studying	Marks obtained
10	60
15	70
20	80
25	90
30	100

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4. Explain the meaning of consumer price index.

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5. Explain the meaning of standardised death rate (SDR).

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