

FOURTH SEMESTER B.A. DEGREE EXAMINATION, APRIL 2017

(CUCBCSS—UG)

Economics

ECO 4B 05—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II

Time : Three Hours

Maximum : 80 Marks

Section A

*Answer all questions.
Each question carries ½ mark.*

1. The geometric mean of Laspeyre's index and Paasche's index is :
 - (a) Rao's index.
 - (b) Fisher's index.
 - (c) Marshall's index.
 - (d) Pascal's index.
2. Which of the following is an example of convex function for $x \in \mathbb{R}$?
 - (a) x^2 .
 - (b) $12x + 3$.
 - (c) $\frac{1}{x}$
 - (d) $\log x$.
3. Factor reversal test was suggested by :
 - (a) Fisher.
 - (b) Rao.
 - (c) Freund.
 - (d) Williams.
4. Making allowances for the effect of changing price levels is called
 - (a) Splicing.
 - (b) Deflating.
 - (c) Base shifting.
 - (d) None of these.
5. Marginal cost is the derivative of :
 - (a) Average cost.
 - (b) Cost function.
 - (c) Elasticity of demand.
 - (d) Price elasticity.
6. The second order derivative of $x^3 + 2x$ is :
 - (a) $6x$.
 - (b) 6.
 - (c) $3x^2$.
 - (d) None of these.

Turn over

7. Probability of getting an even face when a die is thrown is :
- (a) $\frac{1}{2}$ (b) $\frac{1}{6}$
(c) $\frac{1}{3}$ (d) $\frac{2}{3}$
8. Which of the following is true about NRR and GRR ?
- (a) $NRR \leq GRR$. (b) $NRR < GRR$.
(c) $GRR > NRR$. (d) $GRR \geq NRR$.
9. The term associated to the value of one season expressed as a percentage of the preceding other :
- (a) Deseasonalisation. (b) Seasonalisation.
(c) Link relative. (d) Random component.
10. The arithmetic mean of Laspeyre's index and Paasche's index is _____
- (a) Fisher's index. (b) Rao's index.
(c) Marshall's index. (d) None of these.
11. If A and B are independent events, then $P(A \cap B)$:
- (a) $P(A)P(B)$. (b) $P(A) + P(B)$.
(c) $P(A) + P(B) - P(A \cap B)$. (d) None of these.
12. In ratio to trend method, seasonal variation for any given month is constant factor of :
- (a) Trend. (b) Seasonal components.
(c) Cyclic components. (d) Random component.

(12 \times $\frac{1}{2}$ = 6 marks)

Section B (Very Short Answer Questions)

*Answer any ten questions.
Each question carries 2 marks.*

13. When does limit of a function exist ?
14. Write the working procedure to obtain the maxima of a function.
15. What is meant by Laspeyre's index number ?
16. What is a time series model ?

17. Give any *four* examples of Vital Statistics.
18. State the classical definition of probability
19. What do you mean by Crude birth rate ?
20. Give any *two* methods for measuring seasonal index.
21. State any *two* applications of derivatives in Economics.
22. Define curvature.
23. What are chain base index numbers ?
24. What is the probability that a leap year contains 53 Sundays ?

(10 × 2 = 20 marks)

Section C (Short Essay/Problem Type)

*Answer any six questions.
Each question carries 5 marks.*

25. What is meant by consumer price index ? What are its uses ?
26. What is meant by (i) Couple protection ratio ; (ii) Infant mortality rate.
27. Discuss the merits and demerits of trend fitting by principle of least squares.
28. A firm produces x units of output per week at a total cost of Rs. $\left(\frac{x^3}{3} - x^2 + 5x + 3\right)$.

Find the level at which the marginal cost and the average cost attain their respective minima.

29. Explain the following terms associated with Index numbers: (i) Base shifting ; (ii) Splicing.
30. Describe the uses of Vital Statistics
31. State addition theorem and multiplication theorem in probability.
32. Write short notes on BSE-SENSEX and NSE-NIFTY.

(6 × 5 = 30 marks)

Section D (Essay Questions)

*Answer any two questions.
Each question carries 12 marks.*

33. Describe the components of Time series model
34. (a) Convert the following fixed base index numbers in to chain base index numbers.

Year	1990	1991	1992	1993	1994	1995
FBI	376	392	408	380	392	490

Turn over

(b) Calculate the cost of living index from the following data :

<i>Items</i>	<i>Price</i>		<i>Weight</i>
	<i>Base year</i>	<i>Current year</i>	
Food	30	47	4
Fuel	8	12	1
Clothing	14	18	3
House rent	22	15	2
Miscellaneous	25	30	1

5. Discuss the problems involved in the construction of index numbers

6. (a) Explain the following : (i) Specific fertility rate ; (ii) GRR and NRR.

(b) Explain : (i) Joint probability ; and (ii) Marginal probabilities.

(2 × 12 = 24 marks)