

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 × ½ = 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

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

36. (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)