C 21359 (Pages : 4) Name...

Reg. No....................................

FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Economics

ECO4B05—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II

(2014—2018 Admissions)

Time : Three Hours   Maximum : 80 Marks

Use of calculator is permitted.

Part A

Answer **all** *questions.*

1. It is the responsiveness of economic variables to change in other economic variables:

    (a) Propensity.   (b) Elasticity.

    (c) Economic model.   (d) Function.

2. Find $\lim\limits_{x \to 0} \dfrac{e^x - 1}{x - 3}$:

    (a) 1.   (b) 0.

    (c) e^x.   (d) $e^x - 1$.

3. As the amount of change in the variable measured on Y axis with respect to change in the variable measured on the X axis :

    (a) Function.   (b) Slope

    (c) Intercept.   (d) Equation.

4. Find the derivative x^6 :

    (a) $6x^5$.   (b) x^6.

    (c) $6x^6$.   (d) $5x^5$.

5. Total revenue is $12x - 3x^2$, find MR :

    (a) $12 - 6x$.   (b) $12x - 3x^2$.

    (c) $12x - 3x$.   (d) None of these.

Turn over

6. Laspeyre's Index number is based on :

    (a) Average of current and base year quantities.

    (b) Current year quantities.

    (c) Base year quantities.

    (d) None of these.

7. The index used to measure changes in total money value is called :

    (a) Price index.   (b) Value index.

    (c) Quantity index.   (d) None of these.

8. The time series analysis helps :

    (a) To compare the two or more series.

    (b) To know the behaviour of business.

    (c) To make predictions.

    (d) All the above.

9. Least square method of fitting a trend is :

    (a) Most exact.   (b) Least exact.

    (c) Full of subjectivity.   (d) Mathematically unsound.

10. Consumer price index reflects on the price changes experienced by :

    (a) An individual.   (b) A particular family.

    (c) All families of a population.   (d) All the above.

11. Fertility rate mainly depends on :

    (a) Total female population.

    (b) Total population.

    (c) Female population of child bearing age.

    (d) Number of newly born babies.

12. Classical probability is measured in terms of :

    (a) A ratio.   (b) An absolute value.

    (c) Absolute value and ratio both. (d) None of these.

(12 × ½ = 6 marks)

Part B (Short Answer Type Questions)

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

13. Determine the maxima and minima values of $4x^3 + 9x^2 - 12x + 13$.

14. If the Marginal revenue is 25 and the elasticity of demand with respect to price is 2. Find average revenue.

15. Define Price elasticity of demand.

16. Find $\lim\limits_{x \to 3} \dfrac{x^3 - 27}{x - 3}$.

17. What do you meant by Optimization ?

18. Define Simple index number.

19. Define Deflating.

20. Explain the concept of Seasonal variations.

21. Define general fertility rate.

22. Explain Conditional probability.

23. A ball is drawn from a bag containing 4 white, 6 black and 5 green balls. Find the probability that a ball drawn is : (i) Black ; and (ii) Not green.

24. Write a note on Convexity and Concavity.

$(10 \times 2 = 20 \text{ marks})$

Part C (Short Essay Questions)

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

25. Find the first order partial derivative of $u = \log (x^2 + y^2)$.

26. Briefly explain the marginal concepts of Economics.

27. Explain the methods for construction of Index numbers.

28. Explain the concept of : (i) Sample space ; (ii) Sample point ; and (iii) Equally likely events.

Turn over

29. A bag contains 4 white, 2 black, 3 yellow and 3 red balls. What is the probability of getting a white or a red ball at random in a single draw of one.

30. Explain Crude death rate and Specific death rate.

31. Briefly explain the components of Time series.

32. Construct the index number for 2018 taking 2008 as base by price relative method using Arithmetic mean :

Commodities		A	B	C	D
Price in Rs. (2008)	...	10	20	30	40
Price in Rs. (2018)	...	13	17	60	70

(6 × 5 = 30 marks)

Part D (Essay Questions)

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

33. Fit a straight line of the form $y = a + bx$ to the following data :

Year	...	2012	2013	2013	2015	2016	2017	2018
Values	...	10	18	15	22	20	25	28

34. Calculate the Laspeyer's index, Paasche's index number and Fisher's index number from the following data :

Commodity	Price		Quantity	
	Base year	Current year	Base year	Current year
A	4	7	10	8
B	5	9	8	6
C	6	8	15	12
D	2	2	5	6

35. A firm produces two goods, with output levels q_1 and q_2 and faces the total cost function $TC = 45 + 125q_1 + 84q_2 - 6q_1^2q_2^2 + 0.8q_1^3 + 1.2q_2^3$. Find two relevant marginal cost functions.

36. (i) Explain the properties of Probability.

    (ii) Briefly explain Bayes's Theorem.

(2 × 12 = 24 marks)

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FOURTH SEMESTER (CUCBCSS—UG) DEGREE EXAMINATION, APRIL 2022

Economics

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

(2014—2018 Admissions)

(Multiple Choice Questions for SDE Candidates)

Time : 15 Minutes	Total No. of Questions : 20	Maximum : 20 Marks

INSTRUCTIONS TO THE CANDIDATE

1. This Question Paper carries Multiple Choice Questions from 1 to 20.

2. The candidate should check that the question paper supplied to him/her contains all the 20 questions in serial order.

3. Each question is provided with choices (A), (B), (C) and (D) having one correct answer. Choose the correct answer and enter it in the main answer-book.

4. The MCQ question paper will be supplied after the completion of the descriptive examination.

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

(Multiple Choice Questions for SDE Candidates)

1. Which one of the following is line reversal list ?

   (A) $P_{01} \times Q_{01} = \dfrac{\sum p_1 q_1}{\sum p_0 q_0}.$

   (B) $P_{01} \times P_{10} = 1.$

   (C) $P_{01} \times P_{12} \times P_{20} = 1.$

   (D) $P_{01} \times P_{10} \neq 1.$

2. Which one of the following statement is correct ?

   (A)   Laspeyres' index shows an upward bias.

   (B)   Paastes' index shows an upward bias.

   (C)   Laspeyres' index shows an downward bias.

   (D)   Paasches' index shows an downward bias.

3. Which one of the following indices satisfies both time reversal and factor reversal list ?

   (A)   Lasperyres index number.   (B)   Fischer's index number.

   (C)   Paasches index number.   (D)   Bowley's index number.

4. Which one of the following index numbers is based on Geometric Mean ?

   (A)   Lasperyres index number.   (B)   Fischer's index number.

   (C)   Paasches index number.   (D)   Bowley's index number.

5. The major purpose of price index is to measure change in the ——————.

   (A)   Standard of living.   (B)   Cold content of money.

   (C)   Buying power of money.   (D)   Capacity to produce.

6. In consumer price index number weights are determing on the basis of ——————.

   (A)   Actual price of the index.

   (B)   The consumption pattern til the class of population.

   (C)   Actual consumption Expenditure.

   (D)   Both price and consumption expenditure.

7. Fishers ideal index is obtained as :

    (A)   The sum of Laspeyre's and paasche's indices.

    (B)   The geometric mean of Laspeyer's and paasche's indices.

    (C)   The arithemetic mean of Laspeyer's and paasche's indices.

    (D)   The harmonic mean of Laspeyre's and paasche's indices.

8. Laspeyres index measures change in :

    (A)   Fixed market basket.

    (B)   Current consumption.

    (C)   Both fixed and current market basket.

    (D)   None.

9. The consumer price index Numbers is also known as ——————.

    (A)   Cost of living index number.   (B)   Price of living index.

    (C)   Retail index.   (D)   All the above.

10. Factor reversal list permits the interchange of

    (A)   Base periods.   (B)   Price and quantity.

    (C)   Weights.   (D)   None of these.

11. Cost of living index is known as :

    (A)   Consumer price index.   (B)   Whole sale price index.

    (C)   Quantity index.   (D)   None.

12. The formula, $P_{01} \times Q_{01} = \dfrac{\sum p_1 q_1}{\sum p_0 q_0}$ shows :

    (A)   Factor reversal test.   (B)   Time reversal test.

    (C)   Unit test.   (D)   None.

13. $x \xrightarrow{\text{Lt}} 2x^2 + 7$ is :

    (A)   32.   (B)   39.

    (C)   8.   (D)   None of the above.

Turn over

14. $x \xrightarrow{\text{Lt}} 1 \dfrac{4x^4 + 3x^3 - 1}{x^2 + 1}$ is :

    (A) $4/5$.
    (B) $4/3$.

    (C) $4/7$.
    (D) $3/4$.

15. Derivative of $1/x^2$ is :

    (A) $-x^2$.
    (B) -2^{x-3}.

    (C) $2x^{-3}$.
    (D) None of these.

16. A function is said to be maximum at x - a if :

    (A) $f(a)$ is negative and $f''(a)$ is zero .
    (B) $f(a)$ is zero and $f''(a)$ is negative.

    (C) $f(a)$ is zero and $f''(a)$ is zero.
    (D) $f(a)$ is negative and $f''(a)$ is negative.

17. The function $2x^2 - 8x + 10$ is minimum at 'x' is equal to :

    (A) 4.
    (B) -8.

    (C) $2x$.
    (D) 2.

18. Increasing function if and only if its derivatives on (a, b) is :

    (A) Negative.
    (B) Non-Negative.

    (C) Non-positive.
    (D) None of the above.

19. Complete count of the heads of people of a country is known as :

    (A) Census.
    (B) Vital statistics.

    (C) Demography.
    (D) None of these.

20. In India, the collection of vital statistics started for the first time in :

    (A) 720.
    (B) 1886.

    (C) 1969.
    (D) 1946.