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.

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

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 $TC = 45 + 125q_1 + 84q_2 - 6q_1^2 q_2^2 + 0.8q_1^3 + 1.2q_2^3$. Find two relevant marginal cost functions.

36. (i) Explain the properties of Probability.

(ii) Briefly explain Bayes's Theorem.

(2 × 12 = 24 marks)