

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2021**

Economics

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

Time : Two Hours and a Half

Maximum : 80 Marks

Section A (Short Answer Questions)

Answer at least ten questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 30.

1. Evaluate the limit of the function :

$$\lim_{x \rightarrow 3} \frac{x^2 - 2x - 3}{x^2 + x - 12}$$

2. Find the $\frac{dy}{dx}$ of the following functions :

(i) $y = 5x^4$; (ii) $y = 5e^{3x}$; (iii) $y = \frac{5}{2x^2}$; and (iv) $y = 4x^{-5}$.

3. What are the important conditions for Maxima and Minima ?
4. Explain the relationship between AR, MR and Elasticity.
5. Distinguish between WPI and CPI.
6. Mention the three important characteristics of Index Numbers.
7. What is Factor reversal test ?
8. What do you mean by Principle of least squares ?
9. Define Infant Mortality rate.
10. What is Sex ratio ?

11. Name different types of fertility rates.
12. Explain the term (i) Sample space ; and (ii) Sample point.
13. Explain Classical definition of Probability.
14. A box contains 2 white socks and 2 blue socks. Two socks are drawn at random.
Find the probability 'p' they are match (same colour).
15. What is a mutually exclusive event ?

(10 × 3 = 30 marks)

Section B (Short Essay Questions)*Answer at least five questions.**Each question carries 6 marks.**All questions can be attended.**Overall Ceiling 30.*

16. Find if $y = \frac{x^2 - 1}{x^2 + 1}$.
17. The cost function for the production of 'x' units of an item is given by $10 - 4x^2 + 3x^3$.
Find (i) Average cost ; and (ii) Marginal cost.
18. What are the general uses of index numbers ?
19. Calculate the index number for 2019 taking 2009 as base by price relative method using Arithmetic Mean :

Commodities	A	B	C	D
Price in Rs. (2009)	10	20	30	40
Price in Rs. (2019)	13	17	60	70

20. What are the important measurements of Mortality ?
21. Explain the concept of base shifting, splicing and deflating.
22. Two coins are tossed, what is the probability of getting (i) Both heads ; (ii) One head ; (iii) At least on head ; (iv) No head.
23. The letters of the word "STATISTICS" are written on 10 identical cards. If two cards are drawn at random, what is the probability that (i) one 'S' and one 'T' will occur ; (ii) two 'T' will occur.

(5 × 6 = 30 marks)

Section C (Long Essay Questions)

Answer any **two** questions.

Each question carries 10 marks.

24. What are the important components of Time Series ?
25. Calculate weighted index number by (i) Laspey's method ; (ii) Paasche's method ; (iii) Fisher index method ; and (iv) Marshall-Edge worth method from the data given below :

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	1	5	6

26. Briefly elaborate the main indicators of Vital statistics.
27. Examine the function $f(x) = (x - 1)^3 (x + 1)^2$ for maxima and minima.

(2 × 10 = 20 marks)