

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION  
APRIL 2022**

Economics

ECO 4B 05—QUANTITATIVE METHODS FOR ECONOMIC ANALYSIS—II  
(2019 Admission onwards)

Time : Two Hours and a Half

Maximum : 80 Marks

**Section A**

*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 :

$$\lim_{x \rightarrow 3} \frac{x^2 - 3x + 2}{x^2 - 5x + 6}$$

2. Find the derivative for the following function 'y' first principles :

(i)  $4x^2 + 2x + 3$  ;

(ii)  $\frac{x+2}{x-1}$  ;

(iii)  $e^x$  ; and

(iv)  $\log x$ .

3. What are the important conditions for Maxima and Minima ?  
4. Explain the relationship between AC and MC.  
5. What are the important utilities of Consumer price indices ?  
6. What is Marshall- Edgeworth index number ?

Turn over

7. What do you mean by Moving average method ?
8. What do you mean by Vital Statistics ?
9. Define Crude death rate.
10. How to find the growth of population ?
11. Explain the term (i) Sample space ; and (ii) Random experiments
12. Explain the term (i) Equally like events ; and (ii) Exhaustive events
13. A die is thrown. Find the probability of getting (i) a '4' ; (ii) an even number ; (iii) less than 3 ; and (iv) '3' or '5'.
14. Explain the Classical definition of Probability.
15. From a bag containing 10 black and 20 white balls, a ball is drawn at random. What is the probability that it is black ?

(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 the Elasticity of demand for the demand function  $x = \frac{27}{p^3}$ .
17. (i) Find  $\frac{dy}{dx}$  if  $y = (x - 4)^5 + \log 3x + 7e^{x-1}$ .  
(ii) Find the value of  $\frac{dy}{dx}$  if  $2x^2 - 3xy + y^2 = 0$ .
18. Define Trend. What are the various methods of measuring it ?

19. From the data given below construct the Consumer Price index number :

Commodity	Price relatives	weights
Food	250	45
Rent	150	15
Clothing	320	20
Fuel and lighting	190	5
Miscellaneous	300	15

20. What are the important measurements of Fertility ?
21. What are the important methods of obtaining Vital Statistics in India ?
22. One card is drawn from a standard pack of 52. What is the probability that is either a king or a queen ?
23. Explain the concept of Mutually exclusive events with an example.

(5 × 6 = 30 marks)

### Section C (Long Essay Questions)

Answer any two questions.

Each question carries 10 marks.

24. Calculate Fisher's ideal index from the following data and prove that it satisfies both the time reversal and factor reversal tests :

Commodity	2018		2019	
	Price	Expenditure	Price	Expenditure
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	69
E	20	100	25	150

25. Define Probability. Briefly explain different types of Probability.

26. (i) What are the important uses of Vital Statistics?  
(ii) What are the different measurements of Mortality?

27. (i) Differentiate  $y = \frac{(x+1)(2x+1)}{(x-3)}$ .

(ii) Differentiate  $x^5 + e^x$ .

(2 × 10 = 20 marks)