FOURTH SEMESTER B.A. DEGREE EXAMINATION, APRIL 2018

(CUCBCSS—UG)

Economics

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

Time : Three Hours

Maximum : 80 Marks

Use of Calculator is permitted.

Part A

Answer all the questions.

1. $\lim\limits_{x \to 4} \dfrac{x^2 - 16}{x - 4}$ is :

   (a) 8.

   (b) 4.

   (c) 6.

   (d) 0.

2. The derivative of $y = 5x^4$ with respect to x is :

   (a) $20x^3$.

   (b) $12x^4$.

   (c) $20x^5$.

   (d) $4x^3$.

3. Marginal function is :

   (a) Ratio of total function and price.

   (b) Product of total function and x.

   (c) Derivative of the total function.

   (d) Product of average function and x.

4. For the demand curve $x = 75 - 5p$, the price elasticity of demand at $p = 3$ is :

   (a) 2.

   (b) $\dfrac{3}{4}$.

   (c) 1.

   (d) $\dfrac{1}{4}$.

5. The average which is commonly used in index number is :

   (a) A.M.

   (b) G.M.

   (c) H.M.

   (d) Mode.

6. In Laspeyre's index number, the weight is :

   (a) Current year quantity.

   (b) Base year quantity.

   (c) Current year price.

   (d) Base year price.

Turn

7. Making allowances for the effect of changing price levels is called :

    (a) Splicing.
    (b) Deflating.

    (c) Base shifting.
    (d) None of these.

8. If in a population of 1000 people, male death is 260 and female death is 140, then CDR is

    (a) 120.
    (b) 140.

    (c) 260.
    (d) 400.

9. Fertility mainly depends on :

    (a) Male population.
    (b) No. of children.

    (c) Female population of age 15 – 49. (d) Total female population.

10. The relation between general reproduction rate and net reproduction rate is :

    (a) NRR ≤ GRR.
    (b) NRR > GRR.

    (c) NRR / GRR > 1.
    (d) GRR / NRR = 0.

11. If A and B are independent events and P (A) = 0.5, P (B) = 0.3, then $P(A \cup B)$ is :

    (a) 0.8.
    (b) 0.15.

    (c) 0.7.
    (d) 0.65.

12. The probability of getting a multiple of 2 or 4, in a throw of a die is :

    (a) $\dfrac{1}{2}$.
    (b) $\dfrac{4}{6}$.

    (c) $\dfrac{1}{6}$.
    (d) 1.

$(12 \times \tfrac{1}{2} = 6$

Part B (Very Short Answer Questions)

Answer any **ten** *questions.*

13. Find the derivative of $y = x^3 + 2 x^2 + 6$ with respect to x.

14. Define marginal revenue function.

15. Define continuity of a function ?

16. Define index numbers.

17. What is meant by BSE SENSEX ?

18. Define Paasche's index number.

19. What are the sources of vital statistics?

20. Define specific death rate.

21. Define sex ratio.

22. Define sample space.

23. Define equally likely events.

24. An unbiased die is thrown two independent times. Given that the first throw resulted in an odd number. Find the probability that the sum obtained is 6.

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

Part C (Short Essay Questions)

Answer any **six** *questions.*

25. Differentiate $\dfrac{(3x+1)^2}{x-2}$ with respect to x.

26. Find the maximum profit that a company can make, if the profit function is given by $p(x) = 40 - 20x - 12x^2$.

27. The revenue function is $R = 14x - x^2$ and the cost function is $T = x(x^2 - 2)$. Find the marginal functions.

28. What are the properties to be satisfied by an index number? Verify that Fisher's index number satisfies the properties.

29. Explain about vital statistics and vital records.

30. Distinguish between NRR and GRR.

31. Describe the terms mutually exclusive events and independence of events. Give examples for each of them.

32. If a card is drawn from a pack of playing cards, then find the probability of getting a (i) spade, (ii) king or queen.

$(6 \times 5 = 30 \text{ marks})$

Part D (Essay Questions)

Answer any **two** *questions.*

33. Given a firms demand function $x - 90 + 2p$ and its cost function $AC = x^3 - 8x^2 + 57x + 2$. Find the level of output which (i) maximizes total revenue, (ii) minimizes marginal costs; and (iii) maximizes profit.

Turn over