C 4027 (Pages : 4) Name.....

Reg. No.....

FOURTH SEMESTER B.A. DEGREE EXAMINATION, APRIL 2016

(CUCBCSS–UG)

Core Course—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. $\lim_{x \to 2} \frac{x^2 - 4}{x - 2}$ is :

   (a) 0. (b) 2.

   (c) 5. (d) 4.

2. The derivative of $y = 3x^2 + 4x$ with respect to x is :

   (a) $6x^3 + 4x^2$. (b) $6x + 4$.

   (c) $3/2x + 4$. (d) $3x + 4$.

3. For the cost function $c(x) = 1 + 5x + 3x^2$, the marginal cost of producing 10 units is :

   (a) 4. (b) 321.

   (c) 65. (d) 33.

4. Laspeyer's index measures changes in :

   (a) Current consumption. (b) Fixed market basket.

   (c) Both fixed and market. (d) None.

5. In Paasche's index number the weight is :

   (a) Current year quantity. (b) Base year quantity.

   (c) Current year price. (d) Base year price.

6. Bowley's index number is the ———— of Laspeyer's and Paasche's index numbers.

   (a) Arithmetic mean. (b) Harmonic mean.

   (c) Geometric mean. (d) Progressive mean.

Turn over

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

(a) Splicing. (b) Deflating.

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

8. Crude Birth Rate mainly depends on :

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

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

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

(a) NRR $\leq$ GRR. (b) NRR > GRR.

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

10. For any two events A and B, P (A) — P (B) is :

(a) $P(A \cap B)$. (b) $P(\bar{A} \cap B)$.

(c) $P(A \cap \bar{B})$. (d) $P(\bar{A} \cap \bar{B})$.

11. If A and B are two independent events then P (A/B) is :

(a) P (A). (b) $\frac{P(A \cap B)}{P(A)}$.

(c) P (B). (d) $\frac{P(\bar{A} \cap B)}{P(A)}$.

12. In tossing a coin probability of getting head is twice the probability of getting tail, then probability of head is :

(a) 0.2. (b) $\frac{1}{3}$.

(c) $\frac{2}{3}$. (d) 0.3

(12 × ½ = 6 marks)

Part B (Very short answer questions)

Answer any **ten** *questions.*

13. Find the derivative of $y = 3x^2 (2x - 5)$ with respect to x.

14. Define marginal function.

15. For the cost function $c(x) = 3x^2 + 2x$, find the marginal cost for an output of 4 units.

16. Define weighted index numbers.
17. What is meant by cost of living index number ?
18. Define Fisher's index number
19. What is meant by vital records ?
20. Define crude death rate.
21. Define age specific birth rate.
22. Define random experiment.
23. Define mutually exclusive events.
24. Find the probability of getting at least one head when two coins are tossed.

(10 × 2 = 20 marks)

Part C (Short essay questions)

Answer any **six** *questions.*

25. Differentiate $\frac{(5x-2)^2}{x-3}$ with respect to x.
26. Explain the concepts of total cost function, marginal cost function and average cost.
27. The revenue function is $R = 14x - x^2$ and the cost function is $T = x(x^2 - 2)$. Find the marginal functions, equilibrium position and profit function.
28. What is an index number. Define Laspeyer's and Paschee's Index numbers ? What the tests to be satisfied by an ideal index number ?
29. What are the different mortality rates used in vital statistics ? Explain.
30. What is meant by General fertility rate and specific fertility rate ?
31. State addition theorem on probability for two events. What will happen if the events are disjoint ?
32. Given $P(A)=\frac{1}{3}$, $P(B)=\frac{3}{4}$, $P(A \cup B)=\frac{11}{12}$. Find P (A/B).

(6 × 5 = 30 marks)

Part D (Essay questions)

Answer any **two** *questions.*

33. Find the maxima and minima of the total cost function :

$$TC = 31 + 24Q - 5.5Q^2 + \frac{1}{3}Q^3$$

Also give marginal costs at these points of maxima and minima.

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

	2010		2014	
Commodities	Price	Quantity	Price	Quantity
A	2	8	4	6
B	5	10	6	5
C	4	14	5	10
D	2	19	2	13

35. Calculate : (i) GFR ; (ii) SFR ; (iii) TFR and (iv) general reproduction rate from the following data :

Age group of child bearing females	: 15–19	20–24	25–29	30–34	35–39	40–44	45–49
Number of women ('000)	: 16	16.4	15.8	15.2	14.8	15	14.5
Total births	: 260	2244	1894	1320	916	280	145

36. An article manufactured by a company consists of two parts A and B. In the process of manufacture of part A. 9 out of 100 are likely to be defective. Similarly, 5 out of 100 are likely to be defective in the manufacture of part B. Calculate the probability that the assembled part will be defective.

(2 × 12 = 24 marks)