



MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :.....

Name :.....

Third Semester B.A. Degree Examination, November 2016
First Degree Programme under CBCSS
Core Course: Economics – III
AUEC341: Basic Tools for Economics I
(for 2014 Admissions – Improvement Only)

Time: 3 Hours

Max. Marks: 80

SECTION – A

Answer ALL the following terms each in one or two sentences.

1. Homogeneous function.
2. Quadratic equation.
3. Limit of a function.
4. Demand curve.
5. Identity matrix.
6. Elasticity.
7. Continuous variable.
8. Marginal cost.
9. Order of a matrix.
10. Differentiate $y = 2x^3 + 3x$.

(10 × 1 = 10 Marks)

SECTION – B

Write short notes on any EIGHT of the following, not exceeding a paragraph.

11. If $A = \{1, 2, 3\}$ $B = \{1, 3, 4, 5\}$, Find i). $A \cup B$ ii). $A \cap B$
12. Find the determinant of the matrix $A = \begin{bmatrix} 2 & 1 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}$.

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13. The supply function is given as $Q_s = 10 + 2p$. Draw the supply curve.
14. Find $\frac{dy}{dx}$, if $y = e^{x^2}$.
15. The total cost function for a firm is $C = 50 - 2Q + 7Q^2 + Q^3$. Find the marginal cost when $Q = 5$?
16. Give an account of consumption function and savings function.
17. What do you mean by the domain of a function ?
18. Distinguish between symmetric and skew symmetric matrix with examples.
19. Give four applications of differentiation in economics.
20. Evaluate $\int (x^2 + 3x + 4) dx$.
21. Define market equilibrium.
22. Distinguish between demand function and inverse demand function.

(8 × 2 = 16 Marks)

SECTION – C

Short essay type : Answer any SIX questions, each not to – exceed one and a half page.

23. Solve
 - i). $x^2 - 2x - 80 = 0$
 - ii). $3x - 2y = 13$
 $5x + 3y = 66$
24. Find the inverse of the matrix $A = \begin{bmatrix} 0 & -1 & 2 \\ 1 & -2 & -3 \\ 3 & 1 & 1 \end{bmatrix}$
25. Integrate
 - i). $\int 7x^6 \cdot dx$
 - ii). $\int 4x^2(x^3 + 5)^3 \cdot dx$
26. The demand function is $Q = 10 - 2p$. Find the price elasticity when $P = 4$?
27. Verify the Euler's theorem to the following function $f(x, y, z) = x^3 + y^3 + z^3 - 3xyz$.
28. Explain the relationship between various shortrun cost curves.
29. i). Define marginal revenue.
ii). Find the marginal revenue if the demand function is $p = 100 - 2q$.
30. Given that $p_1 = 1$, $p_2 = 4$ and the budget of the consumer is 120, maximize the utility function $U = Q_1Q_2$.

31. i). Distinguish between increasing and decreasing functions;
 ii). Check whether the function $y = 3x^2 - 14x + 5$ is increasing or decreasing or stationary when $x = 4$.

(6 × 4 = 24 Marks)

SECTION – D

Long essay type : Answer any TWO questions, each not exceeding three pages.

32. i). Distinguish between consumers' surplus and producers' surplus.
 ii). The demand function is $P = 25 - 3x - 3x^2$, where the 'x' is the quantity demanded. What will be the consumers' surplus when quantity demanded is equal to 2 ?

33. i). Find the matrix of cofactors of $A = \begin{bmatrix} 5 & 2 & 1 \\ 2 & 1 & 4 \\ 0 & 5 & 6 \end{bmatrix}$.

- ii). Solve the following set of equations using Cramer's rule.

$$2x_1 + 3x_2 - x_3 = 9.$$

$$x_1 + x_2 + x_3 = 9.$$

$$3x_1 - x_2 - x_3 = -1.$$

34. i). Find the marginal products of labour and capital for the production function $Q = 20K^{0.4} \cdot L^{0.6}$.

- ii). State the conditions for a function $y = f(x)$ to be maximum or minimum.

- iii). Find the maxima and minima of the function $y = 2x^3 - 6x$.

35. i). Distinguish between linear and exponential functions.
 ii). Distinguish between simple interest and compound interest.
 iii). What is the difference between investing Rs.5000 at a rate of interest of 10% per annum at simple rate of interest and compound rate of interest for 3 years ?

(2 × 15 = 30 Marks)
