



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
AUEC342: Basic Tools for Economics – I

Time: 3 Hours

Max. Marks: 80

SECTION – A

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

1. Matrix
2. Linear Function
3. Elasticity of demand
4. Diagonal Matrix
5. Function
6. Venn Diagram
7. Transpose of a matrix
8. Optimization
9. Complement of a set
10. Marginal Revenue

(10 × 1 = 10 Marks)

SECTION – B

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

11. Solve: $2x^2 + 8x + 8 = 0$
12. Find the mean proportion to 3 and 12
13. Distinguish between variable and constant.

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14. Find the elasticity of demand for the demand function $q = \frac{27}{p^3}$
15. Dependant and independent variables
16. Ages of two people are in the ratio 3:4. After 10 years their ages would be in the ratio 4:5. Find their ages.
17. Power set.
18. Find the compound interest for rupees 7000/- for 4 years if interest is payable half yearly at 6% per annum.
19. Integrate $\frac{e^x - 1}{X}$
20. Solve $4x + 2y = 6$ and $5x + y = 6$
21. Show that $\begin{bmatrix} 3 & 4 & 2 \\ 0 & 1 & -3 \\ 2 & -2 & 8 \end{bmatrix}$ is non singular
22. Consumer surplus and producer surplus.

(8 × 2 = 16 Marks)

SECTION – C

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

23. Explain different types of sets.
24. Application of differentiation in economic analysis.
25. Differentiate a) $(x^2 + 1)^3$ b) $\frac{1}{\sqrt{(3 + 2x)}}$
26. Given cost function of a product $TC = 2q + 200$ and revenue function is $TR = 3q^2 + 4q - 2$. Find the profit function and the profit when 10 units are produced
27. Integrate $(x + 1)^2$
28. Find the rank of $\begin{bmatrix} 5 & 2 & 1 \\ 0 & 1 & 3 \\ 2 & 1 & 0 \end{bmatrix}$
29. If $A = \{1,3,5,7\}$ $B = \{5,9,13,17\}$. Find 1) $A \cup B$ 2) $A \cap B$

30. Let $P = \begin{bmatrix} 0 & 1 \\ 2 & 3 \end{bmatrix}$ $Q = \begin{bmatrix} -1 & 2 \\ 4 & 3 \end{bmatrix}$ $R = \begin{bmatrix} 2 & -1 \\ 6 & 5 \end{bmatrix}$

Prove that $P(Q + R) = PQ + PR$

31. Find the value of the determinant $\begin{vmatrix} 1 & 2 & -3 \\ 2 & -1 & 2 \\ 3 & 2 & 4 \end{vmatrix}$

(6 × 4 = 24 Marks)

SECTION – D

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

32. Solve the following equations using Crammers rule $3x + 2y + z = 6$, $2x - 3y + 3z = 2$
and $x + y + z = 3$

33. Illustrate the major economic functions.

34. Find the inverse of the matrix $\begin{bmatrix} 3 & 5 & 7 \\ 2 & -3 & 1 \\ 1 & 1 & 2 \end{bmatrix}$

35. a) Examine the conditions for maxima and minima

b) Determine the maxima and minima values of $x^3 - 6x^2 + 9x - 5$

(2 × 15 = 30 Marks)
