MAR IVANIOS COLLEGE (AUTONOMOUS)
THIRUVANANTHAPURAM

Reg. No. :…… **Name :……**

Third Semester B.A. Degree Examination, November 2015
First Degree Programme under CBCSS
Core Course: Economics – III
AUEC341: 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. Variable.
2. Types of matrix.
3. Power function rule.
4. Define consumer surplus.
5. Write a demand function.
6. Lagrange multiplier.
7. Difference between definite and indefinite integration.
8. Write down the partial derivates of $z = 4x^2 + 4xy + y^2$.
9. What is meant by adjoint of a matrix ?
10. What is a determinant ?

(10 × 1 = 10 Marks)

SECTION – B

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

11. Draw the graph of $4x - 3y = 12$.
12. A bank offers 5% compound interest calculated on half – yearly basis. A customer deposits Rs.1600 each on 1st January and 1st July of a year. Calculate the amount of interest he would have gained at the end of the year.

13. If A = {1, 2, 3, 4} B = {6, 7, 8} . Find i). A∪B ii). A∩B.
14. Find determinant value of Matrix $\begin{bmatrix} 3 & 4 & 7 \\ 2 & 1 & 3 \\ 7 & 2 & 1 \end{bmatrix}$
15. solve $\begin{bmatrix} 2 & 0 \\ -5 & 6 \end{bmatrix} + \begin{bmatrix} -3 & 6 \\ 4 & 1 \end{bmatrix}$
16. For a new product, a manufacturer spends Rs.1,00,000 on the infrastructure and the variable cost is estimated as Rs.150 per unit of the product. The sale price per unit was fixed at Rs.200. Find i). Cost function ii). Revenue function iii). Profit function and iv). the breakeven point.
17. Compare discrete and continuous variable.
18. If the demand law is $x = \frac{20}{p} + 1$, find elasticity of demand with respect to price at point where p = 3.
19. What is an identity matrix ?
20. MR curve.
21. Isoquants.
22. Explain sum rule in integration.

(8 × 2 = 16 Marks)

SECTION – C

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

23. Find the maximum or minimum value of each quadratic function.
    i). $f(x) = x^2 + 4x$ ii). $g(x) = -2x^2 + 4x - 5$
24. Solve the following using Cramer's rule.
    $x + 2y - z = 0$
    $2x + 2y - 2z = 2$
    $3x + 0 = 4z = 2$
25. Integrate $\int \frac{x-1}{2x-1}\, dx$.
26. What is an idempotent matrix ? Elucidate with an example ?
27. Discuss the properties of demand and supply curves.

28. Explain the importance of integration in economics.
29. Define derivatives and write down the properties of derivatives.
30. Examine Euler's Theorem with an example of your own.
31. Discuss the application of functions in Economic analysis.

(6 × 4 = 24 Marks)

SECTION – D

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

32. Integrate $\frac{(x^2+4)}{(x^2-3x+2)}$.

33. Find the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 3 & 5 \\ 1 & 5 & 12 \end{bmatrix}$.

34. Find i). The first and second order total differentials $Z = x^2 - 2xy + y^2$

    ii). Total differential of $z = \frac{(x^2-y^2)}{(x^2+y^2)}$.

35. Write on different curves used in Economics.

(2 × 15 = 30 Marks)

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