M 8645

Reg. No. : .....

Name : .....

II Semester B.A. Degree (CCSS – Supple./Improv.) Examination, May 2015
(2012/13 Admn.)
COMPLEMENTARY COURSE IN ECONOMICS
2 C02 ECO : Mathematics For Economic Analysis – II

Time : 3 Hours

Max. Weightage : 30

Instruction : *Answer may be written either in* ***English*** *or in* ***Malayalam.***

PART – A

I. Choose the correct answer.

1. If the rows and columns of a determinant are interchanged, then the determinant value.
   a) Remains the same
   b) Sign of the value is changed
   c) Becomes zero
   d) None of these

2. $\begin{vmatrix} a & 0 \\ b & -a \end{vmatrix}$ is
   a) ab
   b) 0
   c) $-a^2$
   d) b

3. Integration is
   a) Reciprocal of differentiation
   b) Reverse process of differentiation
   c) Deriving the derivatives
   d) Putting together

P.T.O.

4. $\int_2^3 2x\,dx =$ _____

a) 5 b) 10

c) 5+c d) 2 **(Weightage 1)**

II. 5. Optimisation means _____

a) Maximisation b) Minimisation

c) None of them d) Any of them

6. Profit is maximum when

a) $\frac{dp}{dx} = 0$ b) $\frac{d^2p}{dx^2}$ is negative

c) Both d) None of these

7. Solution of $3x = 6$ is

a) 2 b) 3

c) 9 d) 1

8. A diagonal matrix in which each of the diagonal elements is unity is called

a) Scalar matrix b) Unit matrix

c) Null matrix d) Raw matrix. **(Weightage 1)**

PART – B

9. Define orthogonal matrix.

10. Define eigen value.

11. If $A = \begin{bmatrix} 2 & -1 \\ 7 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 5 \\ -2 & 6 \end{bmatrix}$ then find (3A + 7B).

12. Can you differentiate consumer's surplus with producer's surplus.

13. Exemplify triangular matrix.

14. If MR = 21– 2x find TR when 10 units are sold.

15. Does the system

$7x_1 - 3x_2 - 3x_3 = 7$

$2x_1 + 4x_2 + x_3 = 0$

$-2x_2 - x_3 = 2$ Possess an unique solution ?

16. $\int (x+1)^5 \, dx$.

17. If $A = \begin{bmatrix} 5 & 3 \\ 0 & 5 \end{bmatrix}$ $B = \begin{bmatrix} -8 & 0 & 7 \\ 1 & 3 & 2 \end{bmatrix}$, test the commutative law of multiplication of matrices.

18. Without calculation show that $\begin{vmatrix} 5 & 7 & 2 \\ 2 & 3 & 1 \\ 10 & 14 & 4 \end{vmatrix} = 0$.

19. Prove that matrix addition is commutative as well as associative.

20. Define rank of a matrix. **(10×1=10)**

PART – C

21. P.T (A+B) (C+D) = AC + AD + BC + BD where A,B,C and D are matrices.

22. Find :

i) C = AB and

ii) D = BA if $A \begin{bmatrix} -2 \\ 4 \\ 7 \end{bmatrix}$, $B \begin{bmatrix} 3 & 6 & 2 \end{bmatrix}$.

23. Prove that $(AB)^T = B^T A^T$.

24. Find the rank of the matrix $C = \begin{bmatrix} 7 & 6 & 3 & 3 \\ 0 & 1 & 2 & 1 \\ 8 & 0 & 0 & 8 \end{bmatrix}$.

from its echelon matrix and comment on the question of non singularity.

25. What is Hawkins Simon condition ?

26. What are the necessary and sufficient conditions for a relative extremum of $y = f(x)$?

27. Integrate $x^2 e^{3x}$.

(5×2=10)

PART – D

28. Explain about matrix operation.

29. Integrate :

a) $e^x - \frac{1}{x}$

b) $x^2 + e^{5x}$

c) $\frac{\log x}{x}$

d) $\frac{x+12}{x^2-13x+42}$

30. Explain about basic properties of determinants.

31. Solve the following system of equation applying Crammer's rule.

$2x - 3y + 5z = 11$

$5x + 2y - 7z = -12$

$-4x + 3y + z = 5.$

(2×4=8)