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II Semester B.A. Degree (CCSS – 2014 Admn. – Regular)  
 Examination, May 2015

COMPLEMENTARY COURSE IN ECONOMICS  
 2C02 ECO : Mathematics for Economic Analysis – II

Time : 3 Hours

Max. Marks : 40

PART – A

Answer all the 4 questions. Each carries 1 mark.

1. The general and particular values of  $\int 2x \, dx$  are \_\_\_\_\_ and \_\_\_\_\_
2. A determinant is a compact form showing a set of numbers arranged in \_\_\_\_\_
3. Adjoint of a square matrix is the \_\_\_\_\_ of the matrix.
4. \_\_\_\_\_ is reverse process of differentiation. (4x1=4)

The Brilliant Man

PART – B

Answer any 7 questions. Each carries 2 marks.

5. Define Eigen value.
- ✓ 6. Marginal cost functions for some products is  $1 + x + 6x^2$  where  $x$  is the output. Find the total cost function if the fixed cost is Rs. 100 when the output is zero.
- ✓ 7. Find  $x$  and  $y$ , if  $[4 \ 5] + [x \ y] = [7 \ 3]$  ?
8. Explain co-factor of a determinant with an example.
9. What are the rules of Integration ?

$\frac{2x}{x+1}$   
 $\frac{2x}{x+1}$



✓ 10. Are the following two determinants equal?

$$\begin{vmatrix} 2 & 4 & 5 \\ 1 & 2 & 3 \\ 0 & 1 & 4 \end{vmatrix} \text{ and } \begin{vmatrix} 4 & 2 & 5 \\ 2 & 1 & 3 \\ 1 & 0 & 4 \end{vmatrix}$$

11. Total revenue of a firm is given by  $R = 21x - x^2$  where  $x$  is the output. Find the output at which the total revenue is maximum.

12. Find the rank of  $\begin{vmatrix} 5 & 2 & 1 \\ 0 & 1 & 3 \\ 2 & 1 & 0 \end{vmatrix}$ .

13. Explain consumer surplus.

14. Distinguish Symmetric and Skew symmetric matrices.

(7×2=14)

### PART - C

Answer any 4 questions. Each carries 3 marks.

✓ 15. Show that  $\begin{vmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{vmatrix}$  is idempotent.  $A^2 = A$

16. Explain five properties of a determinant.

17. Explain constraint optimization.

18. Integrate  $(x + 1)^5$ .

19. Explain the properties of definite integrals.

20. Explain the methods of Integration.

(4×3=12)



PART - D

Answer any 2 questions. Each carries 5 marks.

21. Integrate  $\frac{x}{(x-1)(2x+1)}$ .

22. The demand function is  $D = 250 - 50p$  and supply function is  $S = 25p + 25$ , calculate equilibrium price. Find consumer's and producer's surplus?

23. Solve the simultaneous equation using Cramer's rule :

$$5x - 6y + 4z = 15, 7x + 4y - 3z = 19, 2x + y + 6z = 46.$$

24. Find the product of  $A = \begin{vmatrix} 1 & 2 & 3 \\ 3 & 1 & 2 \\ -1 & 1 & 1 \end{vmatrix}$  and  $B = \begin{vmatrix} 1 & 1 & 4 \\ -2 & 3 & 2 \\ 3 & 1 & 1 \end{vmatrix}$ . (2x5=10)