



PART - D  
(Long Essay)

Answer **any two** questions not exceeding **450 words**. Each question carries 4 weightage.

28. Solve the following equations using matrices :

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

29. Explain the method of constructing consumer price index in India.

30. Calculate regression lines and coefficient of correlation from the following data :

$$X: \quad 40 \quad 38 \quad 35 \quad 42 \quad 30$$

$$Y: \quad 30 \quad 35 \quad 40 \quad 36 \quad 29$$

31. Determine the maxima and minima values (if any) of

a)  $x^3 - 6x^2 + 9x - 5$

b)  $\frac{1}{3}x^3 - 2x^2 + 3x + 1$

(Weightage 4x2=8)

Reg. No. : .....

Name : .....

VI Semester B.A. Degree (CCSS – Reg./Supple./Improv.)

Examination, May 2015

CORE COURSE IN ECONOMICS/DEV. ECONOMICS

6B12 ECO : Basic Tools for Economic Analysis – II

(2011 and Earlier Admn.)

Time : 3 Hours

Max. Weightage : 30

PART - A

Choose the correct answer (in bunches of two) :

1)  $\begin{bmatrix} 3 & 0 & 0 \\ 4 & 5 & 0 \\ 3 & 2 & 1 \end{bmatrix}$  belongs to which of the following matrix ?

a) Upper triangular

b) Lower triangular

c) Diagonal

d) Symmetric matrix

2)  $\lim_{x \rightarrow a} \frac{(x^2 - a^2)}{x - a}$  is equal to

a) 0

b)  $-2a$

c)  $2a$

d) 2

3) The first and second order condition for a function  $y = f(x)$  to be a maximum is

a)  $y' = 0; y'' = 0$

b)  $y' < 0; y'' > 0$

c)  $y' > 0; y'' > 0$

d)  $y' = 0; y'' < 0$

4) First order differential of  $y = 10x^3$  is

a)  $30x^2$

b)  $10x^2$

c)  $\frac{10}{3}x^2$

d)  $\frac{5}{2}x^2$

(Weightage 1)

P.T.O.



II. 5) If  $2x + 4y - 5 = 0$  is the equation of  $y$  on  $x$ ,  $b_{yx}$  is

- a) -0.5      b) 0.5      c) 1.25      d) -2

6) If  $A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$  then  $A^3$  equals :

- a)  $\begin{bmatrix} 3 & 0 \\ 0 & 3 \end{bmatrix}$       b)  $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$       c)  $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$       d)  $3A$

7) If supply and demand functions are given by  $Q_s = -9 + P$  and  $Q_d = -3 - P$ , equilibrium price is

- a) 6      b) 12      c) 3      d) 0

8) If two rows or columns of a determinant are identical, value of the determinant is

- a) Zero      b) 1  
c) Both a) and b)      d) None of these      **(Weightage 1)**

#### PART - B

Short answer questions. Answer **any ten** questions of the following not exceeding **50 words each**. Each question carries 1 weightage.

9. Define unit matrix.
10. What do you mean by regression ?
11. Define coefficient of Alienation.
12. Define Time series.
13. When two matrices will be equal ?
14. Find the slope of  $y = x^3 - 12x + 13$  at  $(1, 2)$ .
15. Given  $A = \begin{bmatrix} 5 & 2 \\ 6 & 2 \end{bmatrix}$ ,  $B = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$  then find  $AB$ .
16. Find AC, MC, AR and MR for the revenue function,  $R = 14x - x^2$  and the cost function,  $T = x(x^2 - 2)$ .
17. Explain the concept of convex function. **(Weightage 1×10=10)**



#### PART - C (Short Essay)

18. Find the derivative of  $\left(\frac{1}{\sqrt{3+2x}}\right)$ .

19. Find  $(AB)^T$  when  $A = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 7 & 9 \\ -2 & 1 & 1 \end{bmatrix}$  and  $B = \begin{bmatrix} 4 & 0 & 5 \\ 1 & 2 & 0 \\ 0 & 3 & 1 \end{bmatrix}$ .

20. For a certain commodity the demand is given by  $d = 100(10 - p)$  and supply is  $S = 75(P - 3)$ . Find the equilibrium price and the quantity that will be bought and sold.

Answer **any five** questions not exceeding **150 words each**. Each question carries 2 weightage.

21. Explain the difference between correlation and regression.
22. What are the major components of time series ?
23. Calculate correlation coefficient for the following data :
 

$x :$	52	56	58	62	66	68
$y :$	33	36	42	42	45	51
24. Discuss the continuity of the function :
 

$f(x)$  at  $x = 1$  when

$$f(x) = x^2 + 2 \text{ for } x > 1$$

$$= 2x + 1 \text{ for } x \leq 1.$$
25. Differentiate  $x^{\log x}$ .
26. If  $A = \begin{bmatrix} 2 & 3 & 1 \\ 0 & -1 & 5 \end{bmatrix}$ ,  $B = \begin{bmatrix} 1 & 2 & -1 \\ 0 & -1 & 3 \end{bmatrix}$ , find  $2A - 3B$ .
27. Total revenue function of a firm is given by  $R = 21x - x^2$ , find marginal revenue when 10 units are sold. **(Weightage 2×5=10)**