

**PARUL UNIVERSITY**  
**FACULTY OF ARTS**  
**B.A Summer 2017 – 18 Examination**

Semester: 2

Subject Code: 15101152

Subject Name: Mathematical methods for Economics-I

Date: 09/05/2018

Time: 10:30AM TO 01:00PM

Total Marks: 60

**Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Do as directed.****(08)****A. Multiple choice type questions. (Each of 0.5 mark)**

- 1 \_\_\_\_\_ is express function.  
a) 4    b) 25    c)  $33x^3$     d) 25
- 2 An expression such as  $4x^3$  is a \_\_\_\_\_.  
a) Variable    b) Function    c) both a and b    d) None
- 3 A \_\_\_\_\_ tries to define these relationships.  
a) Variable    b) Function    c) Dependent Variable    d) Monomial
- 4 \_\_\_\_\_ means the change occurs in dependent variable due to change in independent variable.  
a) slope    b) Shape    c) log    d) None
- 5 \_\_\_\_\_ function is one which has no breaks in its curve.  
a) limits    b) Continuity    c) Both a and b    d) None
- 6 In Natural logarithms “e” is \_\_\_\_\_.  
a) Euler’s Number    b) Equation    c) Both a and b    d) None
- 7 Logarithm is \_\_\_\_\_ of power.  
a) equal    b) opposite    c) same    d) none
- 8 \_\_\_\_\_ is the process of finding the relative maximum and minimum of a function.  
a) variable    b) optimization    c) both a and b    d) none
- 9 The derivative of the function  $z(x,y)$  with respect to  $x$  at fixed  $y$  is called the \_\_\_\_\_.  
a) total derivative    b) Partial derivative    c) both a and b    d) None
- 10 Non-linear functions are those which do not form a straight line. (true / false)
- 11 Polynomial comes from the greek word, poly which means many. (true/false)
- 12 if the line is horizontal straight line to X axis, than slope is zero.(true / false)
- 13 What is  $\log_2(64) =$  \_\_\_\_\_?  
a) 8    b) 9    c) 0    d) 1
- 14 Input-output technique was invented by \_\_\_\_\_.  
a) Gunnar Myrdal    b) Wassily Leontief    c) Hollis B. Chenery    d) Robert Solow
- 15 What is  $\log_3(729) =$  \_\_\_\_\_?  
a) 8    b) 6    c) 9    d) 10
- 16 What is  $\log_{10}(100) = 2$  (True/False)

**B. Explain Terms (Each of 01 mark)****(07)**

1. Variable
2. Slop
3. Function
4. Derivatives
5. Matrix
6. Point of inflexion
7. Symmetric matrix

**Q.2 Answer the following.**

A. Find the equilibrium price and quantity. (04)

$$Q_s = 4 + 8P$$

$$Q_d = 8 - 16P$$

B. Find the equilibrium price and quantity. (04)

$$Q_s = -45 + 8P$$

$$Q_d = 125 - 2P$$

C. Explain different types of variables. (04)

**OR**

C. Write rules of logarithmic function. (04)

**Q.3 Answer the following.**

A. What is increasing and decreasing function? (05)

B. What is function? Explain linear and non-linear function with example. (05)

C. Write rules of exponential function. (05)

**OR**

C. A Rewrite to logarithm notation:

1.  $4^5 = 1024$

2.  $13^0 = 1$

3.  $5^{-2} = 0,04$

4.  $10^2 = 100$

5.  $2^{10} = 1024$

B. solve it. (05)

1.  $\log_{17} 1 = ?$

2.  $\log_3(81) = ?$

3.  $1 \circledast_{\mathbb{R}} 1 \circledast = ?$

4.  $\log_7(49) = ?$

5.  $\log_6(216) = ?$

Q.4 Find the sum of A + B of the following (06)

A. 1)

$$\begin{bmatrix} 0 & 1 & 2 \\ 9 & 8 & 7 \end{bmatrix} + \begin{bmatrix} 6 & 5 & 4 \\ 3 & 4 & 5 \end{bmatrix}$$

2)

$$\begin{bmatrix} 2 & 3 \\ 4 & 1 \end{bmatrix} + \begin{bmatrix} 5 & 0 \\ 1 & -1 \end{bmatrix} =$$

3)

$$\begin{bmatrix} 2 & 5 & 3 & 0 \\ 4 & 1 & 1 & -1 \\ 2 & 0 & 4 & 5 \end{bmatrix} + \begin{bmatrix} 7 & 3 & -6 & 2 \\ 5 & 0 & 1 & 0 \\ 2 & 4 & 2 & 5 \end{bmatrix} =$$

B Find the subtraction of A – B of the following. (06)

1)

$$\begin{bmatrix} 4 & 2 \\ 3 & 3 \end{bmatrix} - \begin{bmatrix} 1 & 0 \\ 5 & 2 \end{bmatrix} =$$

2)

$$\begin{bmatrix} 2 & 5 & 3 \\ 4 & 0 & 1 \\ 2 & 0 & 4 \end{bmatrix} - \begin{bmatrix} 1 & 2 & -3 \\ 2 & 0 & -1 \\ 4 & 1 & 0 \end{bmatrix} =$$

3)

$$\begin{bmatrix} 4 & 1 & 2 & 0 \\ 3 & 5 & 3 & 2 \end{bmatrix} - \begin{bmatrix} 3 & 2 \\ -2 & 1 \end{bmatrix}$$

C. What is matrix? Explain different types of matrices. (06)

**OR**

C. What is derivative? Explain rules of differentiation. (06)