Total Marks - 20

Pass Marks-10

Master's Degree
Mathematical Methods for Economics

First Semester

Group A

Attempt any *ONE* question

1.a) What is Nash equilibrium? What is the importance of Nash Equilibrium? (5 Marks)

2.b) Imagine two competing companies: John and Sam are registering for the new semester. They both have the option to choose either a finance course or a psychology course. They only have 30 seconds before the registration deadline, so they do not have time to communicate with each other. If John and Sam register for the same class, they will benefit from the opportunity to study for the exams together. However, if they choose different classes, neither of them will get any benefit.

John \ Sam	Finance	Psychology
Finance	1 / 1	0 / 0
Psychologist	0 / 0	1 / 1

Find the Nash Equilibrium and interpret (5 Marks)

2 a. What is input-output model? What is it's importance? (5 Marks)

b.Given the technology matrix

$$\begin{bmatrix} 0.8 & 0.2 \\ 0.9 & 0.7 \end{bmatrix}.$$

Test whether it fulfills Simon-Hawkins condition or not ? (5 Marks)

Group A

Attempt any *TWO* question

3.The demand function for a certain commodity is $p(x)=10-0.001x$,where p is measured in dollars and x is the number of units produced and sold. The total cost of producing x items is $C(x)=50+5x$.Determine the level of production that maximizes the profit.(10 marks)

4.Given the payoff matrix

$$\begin{bmatrix} 5 & 0 & 8 \\ 7 & 5 & 3 \\ 2 & 3 & 5 \end{bmatrix}$$

Find the saddle point.   (5 Marks)

5.Differentiate the given function. (5 Marks)

$$y = \sqrt{13x^2 - 5x + 8}$$