

MASTER OF ARTS EXAMINATION, 2025

(2nd Year, 1st Semester)

ECONOMICS

(MICROECONOMICS-2)

Time : Two Hours

Full Marks : 30

Attempt Question no. 1 and any one from the rest.

1. (a) Two rational ice cream vendors, A and B , must locate their carts along a beach that is 600 yards long. There are seven possible equally spaced locations ($x_i : i = 1, \dots, 7$), separated by 100 yards, as depicted below :

.....the beach.....
 $x_1 \dots x_2 \dots x_3 \dots x_4 \dots x_5 \dots x_6 \dots x_7$
.....the ocean.....

There are 100 customers in each of those 100 yards and they are distributed uniformly. Vendor A is an early riser and always arrives at the beach before vendor B . So, A gets to choose any location he wants, though he realizes that when B finally arrives, B will choose his best option from among the six locations that are not taken.

- (i) Find the equilibrium locations for the vendors. How many customers does A get in equilibrium?

(2)

(ii) Suppose now that no customer is willing to walk more than 200 yards to buy ice cream. Where will vendor *A* choose to locate and how many customers will he have? 4+5

(b) There are three voters 1, 2, 3 who have to vote for either candidate *A* or candidate *B*. The candidate who get at least two votes wins the election. If *A* wins, all voters get a pay-off of 1; if *B* is elected, all of them get 0. Which of the following strategy profiles constitute a Nash equilibrium?

- (i) Voter 1 votes for *B* while 2 and 3 vote for *A*.
- (ii) Voter 2 votes for *A* while the other two vote for *B*.
- (iii) All three voters vote for *A*.
- (iv) All three voters vote for *B*.

Do any of the Nash equilibria involve players playing weakly dominated strategies?

(Explain your answer briefly) 1+1+1+1+2

2. (a) Consider a simple Cournot duopoly model (complete information) where the market demand is given by $P = a - q_1 - q_2$. Each firm has constant marginal cost given by c_1 and c_2 respectively, where $c_1 < a \forall i = 1, 2$. Find the Nash equilibrium of the game, if $0 < c_i < \frac{a}{2}$ for each firm, what if $c_1 < c_2 < a$ but $2c_2 > a + c_1$. 4+6

(b) Explain the following concepts :

- (i) Relative performance contracts 2.5+2.5
- (ii) Team Contracts

(3)

3. (a) Suppose the players in Rubinstein's alternating-offers bargaining game with infinite-horizon, have different discount factors : δ_1 for player 1 and δ_2 for player 2. Show that in the backward-induction outcomes, player 1 offers the following settlement :

$$\left(\frac{1-\delta_2}{1-\delta_1\delta_2}, \frac{\delta_2(1-\delta_1)}{1-\delta_1\delta_2} \right)$$

to player 2, who accepts. 9

(b) Explain briefly the following concepts :

- (i) Degenerate Mixed Strategy
- (ii) Folk Theorem 3+3

