Study Programme: **Bachelor of Science Honours in Engineering Programme/Bachelor of Software Engineering**

Name of the Examination: **Final Examination**
Course Code and Title: **AGM4307/AGM4367 Economics and Marketing for Engineers**
Academic Year : **2023/24**

Date : **18-02-2025**
Time : **12.30 – 03.30**
Duration : **3 hours**

Answer any four (04) Questions from questions 2 to 6. Write your answers in the answer book.

Question 2:

The elected officials of the Western Provincial Council are concerned about the high rental costs for university students. In response, the town council plans to implement a rent ceiling of Rs. 5,000 per month per student for rooms in the city.

The demand and supply curves for rooms have been estimated as:

$QD = 30{,}200 - 4P$ $QS = 200 + P$, where P = monthly rent, and Q = number of rooms available for rent.

For purposes of this analysis, the rooms can be treated as identical.

i. Calculate the equilibrium price and quantity that would prevail without the price ceiling. *(4 marks)*
ii. Calculate producer and consumer surplus at this equilibrium. *(4 marks)*
iii. Sketch a diagram showing both consumer surplus and producer surplus. *(4 marks)*
iv. What quantity will eventually be available if the rent ceiling is imposed? *(4 marks)*
v. Graphically illustrate the new producer surplus and consumer surplus with price ceiling. *(4 marks)*

Question 3:

The table below shows data for the production of good X for an individual firm operating in a perfectly competitive market.

Quantity of Good X	Total Revenue	Total Costs	Marginal Revenue	Marginal Cost	Profits
0	0	10			
10	80	30			
20	160	40			
30	240	55			
40	320	85			
50	400	135			
60	480	215			
70	560	325			
80	640	470			

i. Complete the table and draw the graph representing the quantity produced against marginal revenue and marginal cost. *(10 marks)*

ii. Determine the profit maximizing quantity of the good by using the above graph. *(4 marks)*

iii. What is average cost at the profit maximizing quantity? *(3 marks)*

iv. What is marginal cost at the profit maximizing quantity? *(3 marks)*