

time : 1 hour

Do all 4 questions. All count equally.

1. **One** of the following four statements is true. Which one? Explain why the statement is true. (You do **not** need to explain why any of the other three statements are false.)

(i) An industry cannot be perfectly competitive if all firms have U -shaped average cost curves.

(ii) An industry cannot be perfectly competitive if the technology in the industry exhibits increasing returns to scale at all levels of output.

(iii) An industry can be perfectly competitive only if all firms produce using constant returns to scale.

(iv) An industry must be perfectly competitive if all firms' marginal cost curves slope up.

2. What is the long-run cost function for a firm with a production function

$$f(x_1, x_2) = \min(x_1, 4x_2)$$

where x_1 and x_2 are the quantities used of the two inputs to production?

3. Is it possible that a firm's short-run supply curve could have a negative slope? Explain.

4. What prices should a monopoly charge in Canada and the United States, if it can charge different prices in Canada and the United States, if the demand curve for its product is

$$y_C = 12 - p_c$$

in Canada, and

$$y_{US} = 24 - p_{US}$$

in the US, if its total cost of producing Y units of output is

$$TC(Y) = 2Y \quad ?$$