1. A monopolist faces a demand function that can be described by the equation $P = 410 - 10Q$ where $P$ is the price that the monopolist charges per unit of output and $Q$ is the number of units that the monopolist can sell at that price. The monopolist’s total costs are $30Q$ and its marginal cost is 30. The following expression states the monopolist’s profit as a function of the number of units sold:

(a) $410 - 10Q - 30$
(b) $410 - 20Q$
(c) $410Q - 10Q^2 - 30Q$
(d) $410Q - 10Q^2 - 10$
(e) None of the above

2. The monopolist found in the previous problem has a marginal revenue curve that is given by the equation (where $MR$ stands for marginal revenue):

(a) $MR = 410 - 10Q$
(b) $MR = 410 - 30Q$
(c) $MR = 420 + 30Q$
(d) $MR = 410 - 20Q$
(e) $MR = 440 - 40Q$

3. In order to maximize its profits, the monopoly of the preceding questions should sell a quantity of

(a) 38 units
(b) 19 units
(c) 202 units
(d) 101 units
(e) 47.50 units
4. Bozoworks, a software company, has exclusive rights to sell the game Space Morons. Bozoworks spent $2500 getting the program ready to market. Its only remaining expenses are the cost of distributing the copies of Space Morons to buyers. This costs $4 per copy. If Bozoworks sells $Q$ copies, its total costs will be $2500 + 4Q$.

Nobody is willing to pay more than $50 for a copy of Space Morons. If Bozoworks offers to sell Space Morons at price $p$, all buyers with buyer values of $p$ or greater will buy and all buyers with buyer values below $p$ will not buy. There are 0 demanders who have buyer values of $50$ for a copy of Space Morons. For every dollar that the price falls below $50$, Space Morons picks up one more buyer. Thus there is 1 demander with buyer value $49$, one with buyer value $48$, one with buyer value $47$, and so on. Bozoworks’ marginal revenue from increasing its sales from 0 to 1 is:

(a) $50$
(b) $0$
(c) $25$
(d) $49$
(e) $100$

5. Which of the following formulas gives the highest price at which Bozoworks can sell $Q$ copies of Space Morons, where $0 < Q < 50$?

(a) $P = 50 - 2Q$
(b) $P = 50 - Q$
(c) $P = 50 - 2Q$
(d) $P = 50 - Q$
(e) None of the above

6. Where $0 < Q < 50$, if Bozoworks wants to increase its sales from $Q$ to $Q+1$, it will have to reduce its price on the $Q$ units it was previously selling by one unit. This effect would reduce its revenue from the first $Q$ units sold by $Q$. On the other hand, it could sell this extra unit for a price of $50 - (Q+1)$. So its extra revenue from increasing its sales from $Q$ to $Q+1$ is given by:

(a) $MR = 50 - Q$
(b) $MR = 5Q$
(c) $MR = 49 - 2Q$
(d) $MR = 50 - Q$
(e) $MR = 50 - 2Q$
7. Bozoworks can increase its profits by increasing its sales from $Q$ to $Q + 1$ if and only if

(a) the price is greater than $5$.
(b) the price is greater than its average cost.
(c) marginal revenue is greater than $5$.
(d) marginal revenue is greater than average revenue.
(e) average cost will decrease when an extra unit is produced.
Exam
Question
Number  Answer
1        C
2        D
3        B
4        D
5        B
6        C
7        C