Multiple-Choice Test

Chapter 4.03
Binary Matrix Operations

1. If $[A] = \begin{bmatrix} 5 & 6 \\ 7 & -3 \end{bmatrix}$ and $[B] = \begin{bmatrix} 2 \\ -3 \end{bmatrix}$

   then $[A][B] =$

   (A) $\begin{bmatrix} -8 \\ 23 \end{bmatrix}$

   (B) $\begin{bmatrix} 10 & 12 \\ 14 & 9 \end{bmatrix}$

   (C) $\begin{bmatrix} -2 & 5 \end{bmatrix}$

   (D) not possible

2. For the product $[A][B]$ to be possible

   (A) the number of rows of $[A]$ needs to be the same as the number of columns of $[B]$

   (B) the number of columns of $[A]$ needs to be the same as the number of rows of $[B]$

   (C) the number of rows of $[A]$ and $[B]$ needs to be the same

   (D) the number of columns of $[A]$ and $[B]$ needs to be the same

3. If
   $$[A] = \begin{bmatrix} 50 & 60 \\ 20 & -30 \end{bmatrix}$$
   then $6[A]$ is equal to

   (A) $\begin{bmatrix} 50 & 360 \\ 120 & -180 \end{bmatrix}$

   (B) $\begin{bmatrix} 300 & 60 \\ 20 & -30 \end{bmatrix}$

   (C) $\begin{bmatrix} 300 & 360 \\ 120 & -180 \end{bmatrix}$

   (D) $\begin{bmatrix} 56 & 66 \\ 26 & -24 \end{bmatrix}$

4. $[A]$ and $[B]$ are square matrices of $n \times n$ order. Then $([A]-[B])([A]-[B])$ is equal to

    (A) $[A]^2 + [B]^2 - 2[A][B]$

    (B) $[A]^2 + [B]^2$

    (C) $[A]^2 - [B]^2$

    (D) $[A]^2 + [B]^2 - [A][B] - [B][A]$

5. Given $[A]$ is a rectangular matrix and $c[A] = [0]$, then choose the most appropriate answer.

    (A) $C = 0$

    (B) $C = 0$ and $[A] = [0]$

    (C) $C = 0$ or $[A] = [0]$

    (D) $C = 0$ and $[A]$ is a non-zero matrix

6. You sell Jupiter and Fickers Candy bars. The sales in January are 25 and 30 of Jupiter and Fickers, respectively. In February, the sales are 75 and 35 of Jupiter and Fickers, respectively. If a Jupiter bar costs \$2 and a Fickers bar costs \$7, then if

$$[A] = \begin{bmatrix} 25 & 30 \\ 75 & 35 \end{bmatrix}, \text{ and}$$

$$[B] = \begin{bmatrix} 2 \\ 7 \end{bmatrix},$$

the total sales amount in each month is given by

    (A) $[B][A]$

    (B) $[A][B]$

    (C) $2[A]$

    (D) $7[A]$