**1.** Let $A+2B=\begin{bmatrix}1 & 2 & 0\\ 6 & -3 & 3\\ -5 & 3 & 1\end{bmatrix}$ and $2A-B=\begin{bmatrix}2 & -1 & 5\\ 2 & -1 & 6\\ 0 & 1 & 2\end{bmatrix}$ then $tr(A)-tr(B)$ has the value equal to

(1) 0
(2) 1
(3) 2
(4) None of these

**2.** The trace $T_r(A)$ of a $3\times 3$ matrix $A=(a_{jj})$ is defined by the relation $T_r(A)=a_{11}+a_{22}+a_{33}$ (i.e, $T_r(A)$ is sum of the main diagonal elements). Which of the following statements cannot hold ?

(1) $T_r(kA)=kT_r(A)$($k$ is a scalar)
(2) $T_r(A+B)=T_r(A)+T_r(B)$
(3) $T_r(l_3)=3$
(4) $T_r(A^2)=(T_r(A))^2$

**3.** Let A $\begin{bmatrix}1 & 2\\ 3 & 4\end{bmatrix}$ and B $=\begin{bmatrix}a & b\\ c & d\end{bmatrix}$ are two matrices such that AB $=$ BA and c $\neq 0$ , then value of $\frac{a-d}{3b-c}$ is

(1) 0
(2) 2
(3) $-2$
(4) $-1$

**4.** If A $=\begin{bmatrix}i & -i\\ -i & i\end{bmatrix}$, B $=\begin{bmatrix}1 & -1\\ -1 & 1\end{bmatrix}$, then $A^8$ equals

(1) 4B
(2) 128B
(3) $-128$B
(4) $-$ 64B

**5.** If $A=\begin{bmatrix}0 & 5\\ 0 & 0\end{bmatrix}$ and $f(x)=1+x+x^2+\ldots\ldots+x^{16}$, then $f(A)$ is equal to -

(1) 0
(2) $\begin{bmatrix}1 & 5\\ 0 & 1\end{bmatrix}$
(3) $\begin{bmatrix}1 & 5\\ 0 & 0\end{bmatrix}$
(4) $\begin{bmatrix}0 & 5\\ 1 & 1\end{bmatrix}$

**6.** Let $I$ be an identity matrix of order $2\times 2$ and $P=\begin{bmatrix}2 & -1\\ 5 & -3\end{bmatrix}$. Then the value of $n\in N$ for which $P^n=5I-8P$ is equal to ___ .

**7.** Which of the following is correct?

(1) $B'\ AB$ is symmetric, if $A$ is symmetric
(2) $B'\ AB$ is skew symmetric, if $A$ is symmetric
(3) $B'\ AB$ is symmetric, if$A$ is skew symmetric
(4) None of these

**8.** The number of diagonal matrix $A$ of order $n$ for which $A^3=A$, is

(1) 1
(2) 0
(3) $2^n$
(4) $3^n$

**9.** The number of all $3\times 3$ matrices $A$, with entries from the set $\{-1,0,1\}$ such that the sum of the diagonal elements of $AA^T$ is 3, is ___________.

**10.** Let $A$ be the set of all $3\times 3$ symmetric matrices all of whose entries are either 0 or 1, five of these entries are 1 and four of them are zero. Then the number of matrices in $A$ is

(1) 3
(2) 6
(3) 9
(4) 12