MATRICES

1) The number of possible matrices of order 3 x 3 with each entry 0 x 1 is
   a) 18
   b) 81
   c) 512
   d) None of these

   Order of the rate 3 x 3 [Hints = (No. of entries) = 2 = $2^9 = 512$
2) The matrix A = $\begin{matrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 1 & \mathrm{m} & -1 \end{matrix}$ is
   a) Idempotent
   b) Nil potent
   c) Equal to inverse
   d) None $[=\mathrm{A}^2 = \mathrm{I}]$
3) If R(+) $\begin{matrix} \cos t & \sin t \\ -\sin t & \cos t \end{matrix}$ then R(S)R(+) equals
   a) R(S+T)
   b) R(S+)
   c) R(S)+R(+)
   d) None of these
4) If f(x) x^2-rx-5, Then F(A), where A = $\begin{matrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{matrix}$
   a) 0
   b) I
   c) –I
   d) 2I
5) The possible number of different order which a matrix can have when it has 24 elements =
   a) 6
   b) 8
   c) 4
   d) None of these
6) The number of entries in a matrix is 60. The number of possible dimension of the matrix is
   a) 12
   b) 16
   c) 8
   d) 24
7) If the matrix A = $\begin{matrix} y+a & b & c \\ a & y+b & c \\ a & b & y+c \end{matrix}$ has rank 3. Then
   a) y≠(a+b+c)
   b) y≠1
   c) y=0
   d) y≠+ca+b+c

8) If A, B are two square matrices such that AB = A and BA = B then
   a) Only B is idempotent
   b) A, B are idempotent
   c) On A is idempotent
   d) None of these
9) If A and B are two matrices such tat AB = B and BA = A then $A^2 + B^2$ is equal to
   a) AB
   b) 2BA
   c) A+B
   d) AB
10) If A =$\begin{bmatrix} 1 & -1 \\ 2 & 1 \end{bmatrix}$, B = $\begin{bmatrix} a & 1 \\ b & -1 \end{bmatrix}$and (A+B)$^2 = A^2 + B^2 + 2AB$, then the values of 'a' and 'b' are
   a) A=1, B=2
   b) A=1, B=-2
   c) A=-1, B=2
   d) A=-1, B=-2
11) If A = $\begin{bmatrix} 1 & a \\ 0 & 1 \end{bmatrix}$ then A^n (where n ϵ n) equals
   a) $\begin{bmatrix} 1 & na \\ 0 & 1 \end{bmatrix}$
   b) $\begin{bmatrix} 1 & n^2a \\ 0 & 1 \end{bmatrix}$
   c) $\begin{bmatrix} 1 & na \\ 0 & 0 \end{bmatrix}$
   d) $\begin{bmatrix} n & na \\ 0 & n \end{bmatrix}$
12) If A = $\begin{bmatrix} 2 & 4 & 1 \\ 5 & -6 & 2 \\ 2 & 1 & 5 \end{bmatrix}$ then trace of A is
   a) -3
   b) 1
   c) 8
   d) -8
13) If A $[a_{ii}]$ is a scale matrix of order n x n such that $(a_{ii}) = K$ for all i then trace of A is equal to
   a) K^n
   b) $\frac{n}{k}$
   c) nk
   d) None of these
14) Let A = $\begin{matrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{matrix}$ then A^n is equal to
   a) $\begin{bmatrix} a^n & 0 & 0 \\ 0 & a^n & 0 \\ 0 & 0 & 0 \end{bmatrix}$
   b) $\begin{bmatrix} a^n & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$

c) $\begin{bmatrix} a^n & 0 & 0 \\ 0 & a^n & 0 \\ 0 & 0 & a^n \end{bmatrix}$

d) $\begin{bmatrix} a & 0 & 0 \\ 0 & a & 0 \\ 0 & 0 & a \end{bmatrix}$

15) If A = $\begin{bmatrix} 0 & c & -b \\ -c & 0 & a \\ b & -a & 0 \end{bmatrix}$ and B = $\begin{bmatrix} a^2 & ab & ac \\ ab & b^2 & bc \\ ac & bc & c^2 \end{bmatrix}$ the AB is equal to

a) B
b) A
c) 0
d) I