KALAIMAGAL MATRIC HIGHER SECONDARY SCHOOL, MOHANUR.

STD : XI | **MATHEMATICS** | **MARKS: 20**

DATE: | **ONE MARK TEST-2 (BB FULLY)** | **TIME: 15 min**

Choose the correct answer: **20 x 1 = 20**

1. The function $f: [0, 2\pi] \to [-1,1]$ defined by $f(x) = \sin x$ is
   1) bijection 2) cannot be defined 3) one –to – one 4) onto

2. If $\rho(A) = \rho([A|B])$, then the system $AX = B$ of linear equation is
   1) Consistent and has infinitely many solution 2) Inconsistent
   3) Consistent and has a unique solution 4) Consistent

3. The value of $log_3 \frac{1}{81}$ is
   1) – 9 2) – 4 3) – 8 4) – 2

4. If $\frac{kx}{(x+2)(x-1)} = \frac{2}{x+2} + \frac{1}{x-1}$, then the value of k is
   1) 4 2) 3 3) 1 4) 2

5. $\frac{\sin(A-B)}{\cos A \cos B} + \frac{\sin(B-C)}{\cos B \cos C} + \frac{\sin(C-A)}{\cos C \cos A}$ *is*
   1) cosA+cosB + cosC 2) 0 3) 1 4) sin A + sin B +sinC

6. In a ΔABC, if i) $\sin\frac{A}{2}\sin\frac{B}{2}\sin\frac{C}{2} > 0$ ii) sinA sinB sinC > 0 then
   1) Neither (i) nor (ii) is true 2) Only (ii) is true
   3) Only (i) is true 4) Both (i) and (ii) are true

7. The number of ways of choosing 5 cards out of a deck of 52 cards which include at least one king is
   1) ${}^{48}C_5$ 2) ${}^{52}C_5$ 3) ${}^{52}C_5 - {}^{48}C_5$ 4) ${}^{52}C_5 + {}^{48}C_5$

8. The HM of two positive numbers whose AM and GM are 16, 8 respectively is
   1) 4 2) 5 3) 6 4) 10

9. The value of $\frac{1}{2!} + \frac{1}{4!} + \frac{1}{6!} + ...$ is
   1) $\frac{e^2-1}{2e}$ 2) $\frac{(e-1)^2}{2e}$ 3) $\frac{(e+1)^2}{2e}$ 4) $\frac{e^2+1}{2e}$

10. The intercepts of the perpendicular bisector of the line segment joining (1,2) and(3,4) with coordinate axes are
    1) 5, 5 2) 5,-5 3) 5,-4 4) 5, 3

11. If the two straight lines $x + (2k-7)y + 3 = 0$ and $3kx + 9y - 5 = 0$ are perpendicular then the value of k is
    1) $k = \frac{3}{2}$ 2) $k = \frac{2}{3}$ 3) $k = \frac{1}{3}$ 4) $k = 3$

12. If A is skew symmetric of order n and C is a column matrix of order n x 1 , then $C^T AC$ is

1) a zero matrix of order 1 2) an identity matrix of order 2

3) an identity matrix of order n 4) an identity matrix of order 1

13. Vectors $\vec{a}$ and $\vec{b}$ are inclined at an angle $\theta = 120°$. If $|\vec{a}| = 1$, $|\vec{b}| = 2$, then $[(\vec{a}+3\vec{b}) \times (3\vec{a}-\vec{b})]^2$ is equal to

1) 275 2) 225 3) 300 4) 325

14. If ABCD is a parallelogram , then $\overrightarrow{AB}+\overrightarrow{AD}+\overrightarrow{CB}+\overrightarrow{CD}$ is equal to

1) $\vec{O}$ 2) $4\overrightarrow{BD}$ 3) $4\overrightarrow{AC}$ 4) $2(\overrightarrow{AB}+\overrightarrow{AD})$

15. The value of $\lim\limits_{x \to k^-} x - \lfloor x \rfloor$, where k is an integer is

1) 1 2) –1 3) 2 4) 0

16. $\frac{d}{dx}(e^{x+5\log x})$ is

1) $e^x\ x(x+5)$ 2) $e^x\ x^4(x+5)$ 3) $e^x - \frac{5}{x}$ 4) $e^x + \frac{5}{x}$

17. If $f(x) = \begin{cases} x+1 & when \quad x<2 \\ 2x-1 & when \quad x \geq 2 \end{cases}$, the $f'(2)$ is

1) 2 2) 0 3) does not exist 4)1

18. $\int \frac{e^x(1+x)}{\cos^2(xe^x)}dx$ is

1) $\tan(xe^x)+c$ 2) $\cos(xe^x)+c$ 3) $\cot(xe^x)+c$ 4) $\sec(xe^x)+c$

19. A matrix is chosen at random from a set of all matrices of order 2, with elements 0 or 1 only. The probability that the determinant of the matrix chosen is non zero will be

1) $\frac{1}{4}$ 2) $\frac{5}{8}$ 3) $\frac{3}{16}$ 4) $\frac{3}{8}$

20. It is given that the events A and B are such that P(A) = $\frac{1}{4}$, $P(A/B) = \frac{1}{2}$ and P(B/A) = $\frac{2}{3}$. Then P(B) is

1) $\frac{1}{2}$ 2) $\frac{2}{3}$ 3) $\frac{1}{3}$ 4) $\frac{1}{6}$