## MODEL PAPER MATHEMATICS ELECTIVE CLASS 9

NOTE: Attempt all questions of Section-A by filling the corresponding bubble on the MCQs REPONSE SHEET. It is mandatory to return the attempted MCQs sheet to the superintendent within given time.

Q1: Choose the correct option.
Allowed time 20 minutes
Marks 15

1. The matrix $\left[\begin{array}{ll}2 & 0 \\ 0 & 2\end{array}\right]$ is $\qquad$ matrix
a) identity
b) scalar
c) row
d) null
2. The number $\pi$ is $\qquad$ number
a) rational
b) irrational
c) imaginary
d)both rational and irrational
3. If $Z=5-6 i$ the conjugate of $Z$ is
a) $5+6 i$
b) $-5+6 i$
c) $-5-6 i$
d) $5-6 i$
4. Base of common log is
a) 0
b) 5
c) 2
d) 10
5. $A$ is skew symmetric if $A^{t}=$ $\qquad$
a) $A$
b) $A^{t}$
c) $-A$
d) $-\mathrm{A}^{\mathrm{t}}$
6. The additive inverse of $\sqrt{3}$ is $\qquad$
a) $-\sqrt{3}$
b) $\frac{1}{\sqrt{3}}$
c) $\sqrt{-3}$
d) -3
7. Additive identity of real numbers $R$ is
a) 0
b) 1
c) -1
d) $R$
8. For any value of $x \cdot x^{1}$ is $=$ $\qquad$ .
a) 0
b) 1
c) -1
d) $x$
9. $(a+b)^{2}+(a-b)^{2}=$ $\qquad$ b) $2\left(a^{2}+b^{2}\right)$ c) $a^{2}-2 a b+b^{2}$
d) $a^{4}-b^{4}$
a) $4 a b$
10. $\mathrm{L} . \mathrm{C} . \mathrm{M}=$
a) $\frac{A}{H . C . F}$
b) $\frac{A \times B}{\text { H.C.F }}$
c) $\frac{H \cdot C . F}{A \times B}$
d) $\frac{B}{\text { H.C.F }}$
11. The solution set of $\sqrt{7 x+2}-3=2$ is
a) $\frac{23}{7}$
b) $-\frac{23}{7}$
c) 2
d) 7
12. The point $(2,-3)$ is located in
a) Quadrant I
b) Quadrant II
c) Quadrant III
d) Quadrant IV
13. For all $a, b \in R$, if $a=b$ then $b=a$ is $\qquad$ property
a) reflexive
b) transitive
c) symmetric
d) additive
14. Factors of $x^{2}+2 x-24$ are
a) $x+4, x-6$
b) $x-4, x+6$
c) $x+3, x-8$
d) $x+8, x-3$
15. Evaluate the determinant of matrix $\left[\begin{array}{cc}5 & 2 \\ -1 & 6\end{array}\right]$
a) 32
b) -32
c) 28
d) -28

## Section - B

## Q1: Attempt any 9 of the following. Allowed time 2 hours 40 minutes Maximum Marks 36

i. If $A=\left[\begin{array}{ll}2 & 1 \\ 0 & 7\end{array}\right]$ and $B=\left[\begin{array}{cc}-5 & 7 \\ 9 & 2\end{array}\right]$ are matrices show that $A+B=B+A$
ii. Find the product $(a-1)\left(a^{2}+a+1\right)$
iii. Factorize $4 x^{4}+81$
iv. Divide $Z_{1}=2+3 i$, by $Z_{2}=5-i$
v. If $x=\sqrt{3}-\sqrt{2}$, find the values of $x-\frac{1}{x}$
vi. Find L.C.M by factorization of $x+y, x^{2}-y^{2}$
vii. Sum of three consecutive integers is 39 , find the integers
viii. Find the solution set of the equation $6 x-5=2 x+9$
ix. Show that $A(-1,2), B(7,5)$ and $C(2,6)$ are the vertices of scalene triangle
$x$. Prove that $\log _{b} p q=\log _{b} p+\log _{b} q$
xi. If two angles of a triangle are congruent then the sides opposite to them are also congruent.
xii. Prove that each diagonal of a parallelogram divides it into two congruent triangles.

## Section - C

Attempt any 4 of the following.
Maximum Marks: 24

Q2. The bisectors of angles of triangle are concurrent.
Q3. The lengths of two sides of triangle are 11 and 23 and the length of third side is $X$. Find the range of possible values of $X$.
Q4. If a line segment intersects the two sides of a triangle in the same ratio then it is parallel to third side.
Q5. In a right-angled triangle, the square of the length of hypotenuse is equal to the sum of the squares of the lengths of the other two sides.
Q6: Construct triangle KML when length of its two sides ML and KM are 5.4 cm and 3.1 cm respectively and $\mathbf{m}<\mathbf{M}=105^{\circ}$
Q7: Parallelogram on the same base and lying between the same parallel lines (or of the same altitude) are equal in area.

