

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 $\begin{bmatrix} 2 & 0 \\ 0 & 2 \end{bmatrix}$ is _____ matrix
 - a) identity
 - b) scalar
 - c) row
 - d) null
2. The number π is _____ number
 - a) rational
 - b) irrational
 - c) imaginary
 - d) both rational and irrational
3. If $Z = 5-6i$ the conjugate of Z is
 - a) $5+6i$
 - b) $-5+6i$
 - c) $-5-6i$
 - d) $5-6i$
4. Base of common log is
 - a) 0
 - b) 5
 - c) 2
 - d) 10
5. A is skew symmetric if $A^t = \underline{\hspace{2cm}}$
 - a) A
 - b) A^t
 - c) $-A$
 - d) $-A^t$
6. The additive inverse of $\sqrt{3}$ is $\underline{\hspace{2cm}}$
 - 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. x^1 is $\underline{\hspace{2cm}}$
 - a) 0
 - b) 1
 - c) -1
 - d) x
9. $(a+b)^2 + (a-b)^2 = \underline{\hspace{2cm}}$
 - a) $4ab$
 - b) $2(a^2+b^2)$
 - c) $a^2-2ab+b^2$
 - d) a^4-b^4
10. L.C.M=
 - a) $\frac{A}{H.C.F}$
 - b) $\frac{A \times B}{H.C.F}$
 - c) $\frac{H.C.F}{A \times B}$
 - d) $\frac{B}{H.C.F}$
11. The solution set of $\sqrt{7x+2} - 3 = 2$ 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 _____ property
 - a) reflexive
 - b) transitive
 - c) symmetric
 - d) additive
14. Factors of $x^2+2x-24$ 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 $\begin{bmatrix} 5 & 2 \\ -1 & 6 \end{bmatrix}$
 - 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 $A = \begin{bmatrix} 2 & 1 \\ 0 & 7 \end{bmatrix}$ and $B = \begin{bmatrix} -5 & 7 \\ 9 & 2 \end{bmatrix}$ are matrices show that $A+B=B+A$
- ii. Find the product $(a-1)(a^2+a+1)$
- iii. Factorize $4x^4+81$
- iv. Divide $Z_1=2+3i$, 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 $6x-5=2x+9$
- ix. Show that A (-1, 2), B (7, 5) and C(2,6) are the vertices of scalene triangle
- x. Prove that $\log_b pq = \log_b p + \log_b q$
- 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 $m < M = 105^\circ$
- Q7: Parallelogram on the same base and lying between the same parallel lines (or of the same altitude) are equal in area.