Adabistan-e-Soophia

Code: 2051

Test No: 2 **Paper:** Mathematics

Name:_____ **Class:** X **Sec:** _____

Syllabus: **Ch. 2, 9 (Theorem 4)**

Question Numbers	1	2	3	4		Total	Grade	%age
Maximum Marks	08	16	08	08		40		
Marks Obtained								

Remarks:_____

_____

Time Allowed: 15 mins **(Objective Type)** **Max. Marks: 08**

	A	B	C	D	Write Correct option
1	A	B	C	D	
2	A	B	C	D	
3	A	B	C	D	
4	A	B	C	D	
5	A	B	C	D	
6	A	B	C	D	
7	A	B	C	D	
8	A	B	C	D	
9	A	B	C	D	
10	A	B	C	D	
11	A	B	C	D	
12	A	B	C	D	
13	A	B	C	D	
14	A	B	C	D	
15	A	B	C	D	
16	A	B	C	D	

Note: Four possible answers A, B, C and D to each question are given. The choice which you think is correct, fill that circle in front of that question with Marker or Pen ink. Cutting or filling two or more times result in zero mark in that question.

Q.1	Questions	(A)	(B)	(C)	(D)
1	If α, β are the roots of $3x^2 + 5x - 2 = 0$, then $\alpha + \beta$ is:	$\frac{5}{3}$	$\frac{3}{5}$	$-\frac{5}{3}$	$-\frac{2}{3}$
2	Cube roots of -1 are:	$-1, -w, -w^2$	$-1, w, -w^2$	$-1, -w, w^2$	$1, -w, -w^2$
3	$\frac{1}{\alpha} + \frac{1}{\beta}$ is equal to:	$\frac{1}{\alpha}$	$\frac{1}{\alpha} - \frac{1}{\beta}$	$\frac{\alpha - \beta}{\alpha\beta}$	$\frac{\alpha + \beta}{\alpha\beta}$

Q.1	Questions	(A)	(B)	(C)	(D)
4	Two square roots of unity are:	$1, -1$	$1, w$	$1, -w$	w, w^2
5	Roots of the equation $4x^2 - 4x + 1 = 0$ are:	real, equal	real, unequal	imaginary	irrational
6	If α, β are the roots of $x^2 - x - 1 = 0$, then product of the roots 2α and 2β is:	-2	2	4	-4
7	The nature of the roots of equation $ax^2 + bx + c = 0$ is determined by:	sum of the roots	product of the roots	synthetic division	discriminant
8	$(1 - w - w^2)^4 =$ ____	0	16	8	-16
9	For a quadratic equation $ax^2 + bx + c = 0$, $\frac{1}{\alpha\beta}$ is equal to:	$\frac{a}{c}$	$\frac{c}{a}$	$\frac{b}{a}$	$\frac{a}{b}$
10	Under usual notation sum of the cube roots of unity is:	1	-1	Zero	2
11	If $2w$ and $2w^2$ are the roots of an equation, then equation is:	$x^2 + 2x + 4 = 0$	$x^2 - 2x + 4 = 0$	$x^2 - 2x - 4 = 0$	$x^2 + 2x - 4 = 0$
12	If $1, w, w^2$ are the cube roots of unity, then w^{-7} is equal to:	w^{-2}	w	1	w^2
13	If $b^2 - 4ac > 0$, then roots of $ax^2 + bx + c = 0$ are:	real	equal	rational	unequal
14	$\alpha^2 + \beta^2$ is equal to:	$\alpha^2 - \beta^2$	$\frac{1}{\alpha^2} + \frac{1}{\beta^2}$	$(\alpha + \beta)^2 - 2\alpha\beta$	$\alpha + \beta$
15	Product of cube roots of unity is:	-1	0	1	3
16	If α and β are the roots of quadratic equation, then quadratic equation is:	$x^2 - (\alpha + \beta)x + \alpha\beta = 0$	$x^2 + (\alpha + \beta)x + \alpha\beta = 0$	$x^2 + (\alpha - \beta)x + \alpha\beta = 0$	$x^2 - (\alpha + \beta)x - \alpha\beta = 0$

Time Allowed: 75 minutes **(Subjective Type)** **Max. Marks: 32**

(Section - I)

2. Attempt the following questions. **(8×2=16)**

i. Find the nature of the roots of the given quadratic equation.

$3x^2 + 7x - 13 = 0$

ii. Find the sum and the product of the roots of the equation $7x^2 - 5mx + 9n = 0$

iii. Write the quadratic equation having roots are $3 + \sqrt{2}, 3 - \sqrt{2}$

iv. Use synthetic division to find the quotient and remainder, when

$(4x^3 - 5x + 15) \div (x + 3)$

v. Find the value of h using synthetic division, if 3 is the zero of the polynomial

$2x^3 - 3hx^2 + 9$

vi. Evaluate: $(1 - w + w^2)^6$

vii. Prove that the sum of the all cube roots of unity is zero.

viii. The product of two positive consecutive number is 182. Find the numbers.

(Section - II)

Note: Solve the following questions. **(8x2=16)**

3. (a) Find m, if the roots of the equation $x^2 + 7x + 3m - 5 = 0$ satisfy the relation $3\alpha - 2\beta = 4$ **(4)**

(b) Show that $x^3 + y^3 = (x + y)(x + wy)(x + w^2y)$ **(4)**

4. Prove that, if two chords of a circle are congruent then they will be equidistant from the centre. **(8)**