

**TEST-2****(Ch.2, 9 (Th#3, 4), Def. of Ch-2, 8 & 9)****MATHEMATICS (SCIENCE)****Paper: (Objective Type)****Time Allowed: 20 Minutes****-019 (10<sup>th</sup> Class)****Marks: 15**

**Note:** For possible answer 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 of filing two or more circle will Result in zero mark in that questions.

1.  $b^2 - 4ac$  is called:
  - (a) Solution set
  - (b) Discriminant
  - (c) Value of x
  - (d) None of these
2. The length of the diameter of a circle is how many times the radius of circle.
  - (a) 1
  - (b) 2
  - (c) 3
  - (d) 4
3. Cube roots of  $-1$  are:
  - (a)  $-1, -\omega, -\omega^2$
  - (b)  $-1, \omega, -\omega^2$
  - (c)  $-1, -\omega, \omega^2$
  - (d)  $1, -\omega, \omega^2$
4. Complete circle is divided into.
  - (a)  $360^\circ$
  - (b)  $270^\circ$
  - (c)  $180^\circ$
  - (d)  $90^\circ$
5.  $\omega^{-13} + \omega^{-17} =$  \_\_\_\_\_.
  - (a)  $\omega$
  - (b)  $\omega^2$
  - (c)  $-1$
  - (d)  $1$
6. The chord passing through the centre of circle is.
  - (a) Radius
  - (b) Diameter
  - (c) Secant
  - (d) Circumference
7. If  $\alpha, \beta$  are the roots of an equation then the standard form of quadratic equation is:
  - (a)  $x^2 - (\alpha + \beta)x + \alpha\beta = 0$
  - (b)  $x^2 + (\alpha + \beta)x + \alpha\beta = 0$
  - (c)  $x^2 - x + \alpha\beta = 0$
  - (d)  $x^2 + (\alpha + \beta)x + \alpha\beta = 0$
8. The roots of the quadratic equation  $ax^2 + bx + c = 0$  are:
  - (a)  $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
  - (b)  $\frac{-b \pm \sqrt{b^2 + 4ac}}{2a}$
  - (c)  $\frac{b \pm \sqrt{b^2 - 4ac}}{2a}$
  - (d)  $\frac{-b \pm \sqrt{b^3 - 4ac}}{2a}$
9. Two square roots of unity are.
  - (a)  $1, -1$
  - (b)  $1, \omega$
  - (c)  $1, -\omega$
  - (d)  $\omega, \omega^2$
10.  $b^2 - 4ac < 0$  then the roots of  $ax^2 + bx + c = 0$  are:
  - (a) Imaginary
  - (b) Irrational and unequal
  - (c) Real
  - (d) Rational and equal
11.  $1 + \omega =$  \_\_\_\_\_. ok
  - (a)  $\omega$
  - (b)  $\omega^2$
  - (c)  $-\omega^2$
  - (d)  $1$
12. Product of cube roots of unity is.
  - (a) 0
  - (b) 1
  - (c) -1
  - (d) 3
13.  $b^2 - 4ac > 0$  and is a perfect square then the roots of  $ax^2 + bx + c = 0$  are: ok
  - (a) Real and unequal
  - (b) Irrational and unequal
  - (c) Real and equal
  - (d) Rational and equal

- (a) Rational (real) and unequal (b) Irrational (real) and unequal  
(c) Imaginary (d) Irrational and equal

$$\alpha = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \beta = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

14. If \_\_\_\_\_ and \_\_\_\_\_. The sum of the roots of  $ax^2 + bx + c = 0$  is:

(a)  $\frac{b}{a}$  (b)  $-\frac{b}{a}$  (c)  $\frac{c}{a}$  (d)  $\frac{a}{c}$

15. Through how many non-collinear points a circle can pass.  
(a) One (b) Two (c) Three (d) Four

## TEST NO.2

(Ch.2, 9 (Th#3, 4), Def. of Ch-2, 8 & 9)

## MATHEMATICS (SCIENCE)

Paper : (Essay Type)

-019 (10<sup>TH</sup> CLASS) Time Allowed:

2:10 hours

Maximum Marks: 60

### (PART – 1)

#### 2. Write short answer to any SIX (6) questions:

12

- Find the discriminant  $x^2 + 3x - 1 = 0$
- Define a circle.
- Solve  $(1 - \omega - \omega^2)^7$
- Define Circumference of a circle.
- Define discriminant of equation.
- Define Chord.
- Find the cube roots of -27
- Define segment of a circle.
- Evaluate  $(9 + 4\omega + 4\omega^2)^3$

#### 3. Write short answer to any SIX (6) questions:

12

- Differentiate between a chord and diameter of a circle.
- Write the quadratic equation with roots 2 and -6
- Evaluate  $(1 - 3\omega - 3\omega^2)^5$ .
- Differentiate between interior and exterior of a circle and illustrate by diagram.
- If  $\alpha, \beta$  are the roots of the equation  $x^2 + px + q = 0$  evaluate  $\alpha^2 + \beta^2$
- If  $\alpha, \beta$  are root of the equation  $lx^2 + mx + n = 0$  Find value of  $\alpha^3\beta^2 + \alpha^2\beta^3$
- Differentiate between sector of circle and its segment.
- Find 'K' if sum of squares of the roots of the equation  $4kx^2 + 3kx - 8 = 0$  is 2'.
- Define Radial segment

#### 4. Write short answer to any SIX (6) questions:

12

$$\frac{(-1 + \sqrt{-3})^9}{2} + \frac{(-1 - \sqrt{-3})^9}{2}$$

- Evaluate \_\_\_\_\_.
- Write area of the circle.
- Using discriminant, find the nature of the root and verify the results by solving

the equation  $x^2 - 5x + 5 = 0$ .

(iv) Define projection.

(v) Find sum and product of roots of equation.  $x^2 - 5x + 3 = 0$

(vi) What is radius of a circle?

(vii) Differentiate between a circle and circumference.

(viii) Define Synthetic division.

(ix) Define quadratic equation.

**(PART – 2)**

Note: Attempt **THREE** questions in all.

5. (a) Find 'P' if the sum of squares of roots of the equation  $4x^2 + 3px + p^2 = 0$  is unity. 4
- $(1 + \omega)(1 + \omega^2)(1 + \omega^4)(1 + \omega^8) \dots 2n \text{ factors} = 1$
- (b) Prove that 4
6. (a) Find 'h', if sum of the squares of the roots of the equation  $x^2 - hx + 10 = 0$  is 4
- differ by 3.
- (b) If  $\alpha \wedge \beta$  are the roots of the equation  $lx^2 + mx + n = 0, (l \neq 0)$  find the value of
- $\frac{1}{\alpha^2} + \frac{1}{\beta^2}$  4
7. (a) Use synthetic division to find the values of l and m, if  $l \wedge m$ , if  $(x+3) \wedge (x^2)$  are the factors of the polynomial  $x^3 + 4x^2 + 2lx + m$  4
- (b) Find the nature of the root of equation  $x^2 - 23x + 120 = 0$  and verify the result by solving the equations. 4
8. (a) Find the dimension of a rectangle, whose perimeter is 80 cm and its area is 375 cm<sup>2</sup>. 4
- $7\alpha - 3\beta = 18$
- (b) Find m, if the roots of the equation  $3x^2 - 2x + 7m + 2 = 0$  satisfy the relation 4
9. Prove that perpendicular from the center of a circle on a chord bisects it. 8

**OR**

Prove that If two chords of circle are congruent then they will be equidistant from the center.