SECTION – I

I. Answer all the following questions   **7×1=7**

   Each question carries 1 mark

1. Find the volume of a sphere of radius 2.1cm?

2. Find the mode of the first 'n' natural numbers?

3. Evaluate $\dfrac{2\tan 30°}{1+\tan^2 30°}$?

4. The wickets taken by a bowler in 10 cricket matches are as follows: 2, 6, 4, 5, 0, 1, 3, 2, 3
    Find the mode of the data?

5. If sinθ = cosθ then θ = ?

6. If P(E) = 0.05; What is the Probability of 'not E'?

7. The top of a clock tower is observed at angle of elevation of α and the foot of the tower is
    at the distance of 'd' meters from the observer. Draw the diagram for this data?

SECTION – II

I. Answer all the following questions   **6 × 2 = 12**

   Each question carries 2 mark

8. A sphere, a cylinder, and cone are the same radius and same height find the ratios of
    their curved surface areas?

9. 0 ACB is a quadrant of a circle with center '0' and radius 3.5cm if OD = 2cm find the area

    of the shaded region? $\pi = \left(\dfrac{22}{7}\right)$
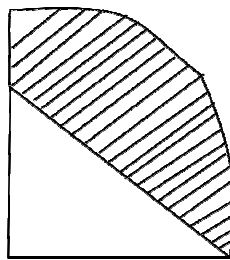
10. ABC is an isosceles triangle right angled at 'C' prove that $AB^2 = 2AC^2$?

11. Prove that $\sqrt{\dfrac{1+\cos\theta}{1-\cos\theta}} = \cos ec\,\theta + \cot\theta;\ 0 \le \theta \le 90°$?

12. Find the prime number between 30 to 50 and calculate the mean?

13. Can $\dfrac{7}{2}$ be the probability of Event? Explain give reason?

SECTION – 3

1. In this section, every question has internal choice
2. Answer any one alternative
3. Each question carries 4 marks.

14. A storage tank consists of a circular cylinder with a hemisphere stick on either end. If the external diameter of the cylinder 1.4 cm and its length be 8m, find the cost of painting it on the outside at rate of 20 per m^2 ?

(OR)

The angle of elevation of a jet plane from a point A on the ground is 60°. After a flight of 15 seconds the angle of elevation changes to 30°. If the jet plane is flying at a constant height of 1500√3 meters, find the speed of the jet plane (√3 = 1.732)?

15. A box contains 90 discs which are numbered from 1 to 90 if one disc is selected at random from the box find the probability that it bears (i) a two – digit number (ii) a perfect square number (iii) a number divisible by 5

(OR)

The marks obtained in mathematics by 3 students of class X of a certain school are given in a table below find the mean of marks obtained by the students

Class interval	10-25	25-40	40-55	55-70	70-85	85-100
No of students	2	3	7	6	6	6

16. Draw a circle of radius 6cm from appoint 10cm away from. Its centre construct the pair of tangents to the circle and measure their lengths. Verify by using Pythagoras theorem?

(OR)

If the median of 60 observation, given below is 28.5 find the value of x, and y?

Class interval	0-10	10-20	20-30	30-40	40-50	50-60
Frequency	5	X	20	15	Y	5

17. Construct a triangle shadow similar to the given Δ ABC, with its sides equal to $\frac{5}{3} rd$ of the corresponding sides of the triangle ABC?

OR

If cosecθ + cotθ = K, then prove that $\cos\theta \frac{k^2-1}{k^2+1}$?

SECTION – IV

$$10 \times 1/5 = 5$$

18. In an isosceles triangle$\triangle$PQR, PR = QR and $PQ^2 = 2PR^2$ then $\angle R$ = _____   (   )

    a) 60   b) 80°   c) 90°   d) 45°

19. Number of diameters of a circle is _____   (   )

    a) 2   b) 1   c) 4   d) Infinite

20. T.S.A of cylinder is _____ sq. units   (   )

    a) $2\pi(h + r)$ b) $2\pi rh$ c) $2\pi r(h - r^2)$ d) All

21. For an acute angle A, sinA=cosA then $\angle A$ = _____   (   )

    a) 30°   b) 45°   c) 60°   d) 75°

22. $\dfrac{2\tan 30°}{1+\tan 45°}$ = _____   (   )

    a) sin 60°   b) cos 60°   c) tan 36°   d) sin 30°

23. The probability of a sure event is _____   (   )

    a) -1   b) 1   c) 2   d) 3

24. Median $(M) = L + \dfrac{\dfrac{N}{2} - F}{f} \times C$; 'L' represents _____   (   )

    a) Mid value of class   b) upper limit of median class

    c) Lower limit of median class   d) Length of the class

25.   Range of the data 15, 26, 39, 41, 11, 18, 7, 9 is _____   (   )

   a) 41   b) 39   c) 32   d) 34

26. ABCD is a cyclic quadrilateral then ∠A + ∠C = _____   (   )

   a) 0°   b) 360°   c) 180°   d) 100°

27.   If ∆ABC ~ ∆DEF and ∠A = 30°; ∠B = 50° then ∠F = _____   (   )

   a) 100°   b) 80°   c) 180°   d) 20°