II-PERIODIC TEST : 2022-23
CLASS - X (CBSE)
MATHEMATICS

Time: 2 hrs. M.M.: 50

General Instructions :
i)   All questions are compulsory.
ii)   The question paper comprises four section A, B, C and D.
iii) Section 'A' contains question number 1 to 5 of one mark each.
      Section 'B' contains question number 6 to 10 of two marks each.
      Section 'C' contains question number 11 to 15 of three marks each.
      Section 'D' contains question number 16 to 20 of four marks each.
iv)   Internal choice is given in some questions.

SECTION 'A'   [1×5=5]
Q.1. Find the distance between the points P(–1, 1) and Q(3, 2)
Q.2. In $\triangle ABC$, MN||BC, AN=2.3 cm, NC=6.9 cm, AM=1.9 cm. Find MB.
Q.3. If $SinA = \frac{3}{4}$, find the value of cot A.
Q.4. If the circumference of the circle is 44 cm. Find its area.
Q.5. If the sum of the zeroes of the quadratic polynomial $kx^2+2x+3k$ is equal to the product of its zeroes, then find the value of k.

SECTION 'B'   [2×5=10]
Q.6. A die is thrown once . Find the probability of getting (i) an even prime number (ii) a multiple of 3
Q.7. Evaluate :   sin30° cos60°+ cos30° sin30° +tan²45°
Q.8. In what ratio is the line segment joining A(2, –3) and B(5, 6) divided by x-axis. Also find the coordinates of the point of division.
Q.9. Find the mode of the following data :

Class Interval	80-85	85-90	90-95	95-100	100-105	105-110	110-115
Frequency	33	27	85	155	110	45	15

Q.10. A square is inscribed in a circle. Find the ratio of the areas of circle and the square.
OR
A sector of 56°, cutout from a circle, contains 17.6 cm². Find the radius of the circle.

SECTION 'C'   [3×5=15]
Q.11. Prove that   :
$(sinA+cosecA)^2 + (cosA+secA)^2 =7+tan^2A+cot^2A$
OR
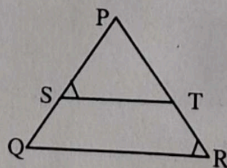$\dfrac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$

Q.12. The shadow of a tower standing on a level ground is found to be 40 m longer when the sun's altitude is 30° than when it is 60°. Find the height of the tower.
Q.13. Solve :
$\dfrac{x}{2}+\dfrac{2y}{3}=-1$ and $x-\dfrac{y}{3}=3$

Q.14. In figure, $\dfrac{PS}{SQ} = \dfrac{PT}{TR}$ and $\angle PST=\angle PRQ$

Prove that PQR is an isosceles triangle

Q.15. A chord of a circle of radius 15 cm. subtends 60° angle at the centre. Find the area of the corresponding segment. (use π = 3.14, $\sqrt{3}$ = 1.73)

SECTION 'D' [4×5=20]
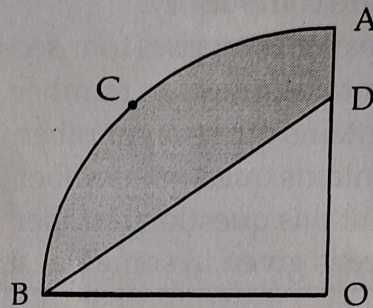
Q.16. State and prove Thale's Theorem.

Q.17. Prove that $\sqrt{3}$ is an irrational number.

Q.18. In the figure, OACB is a quadrant of a circle with centre O and radius 3.5 cm.
If OD=2cm, find the
  i)   area of quadrant OACB
  (ii)   area of shaded region

Q.19. From the top of a 7 m high building the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45°. Find the height of the tower.

Q.20. In a right $\triangle ABC$, right angled at B, if tanA=1, then verify that , 2sinA cosA=1

OR

In $\triangle ABC$, if $\angle B = 90°$, BC = 7 cm and (AC−AB) = 1 cm, then find the value of (cos A− sinA).

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