



INDIAN SCHOOL SOHAR
PERIODIC TEST II (2019-20)
SUBJECT: MATHEMATICS

CLASS: X
DATE: 19.09.2019

MAX. MARKS: 80
TIME: 3HOURS

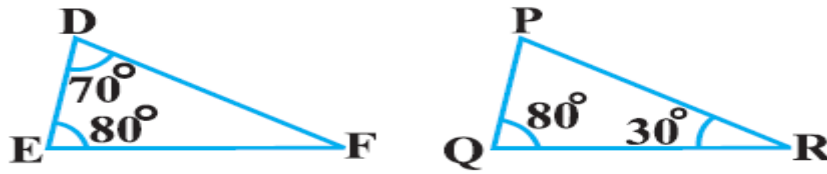
General Instructions:

- The question paper consists of 40 questions divided into four sections A, B, C and D.
- Section A contains 20 questions of 1 mark each, Section B contains 6 questions of 2 marks each
- Section C contains 8 questions of 3 marks each and Section D contains 6 questions of 4 marks each.
- Use of calculator is not permitted.

SECTION A

1. Which of the following is not an irrational number?
 (a) $5 - \sqrt{3}$ (b) $\sqrt{5} + \sqrt{3}$ (c) $7 + \sqrt{2}$ (d) $5 + \sqrt{25}$
2. The height and length of the shadow of a man are the same, then find the angle of elevation of the sun.
 (a) 30° (b) 45° (c) 60° (d) 90°
3. The graph of the polynomial $p(x)$ intersects the X-axis four times in distinct points, then Which of the following could be an expression for $p(x)$?
 (a) $3x + 3$ (b) $x^3 + 3x^2 - 0x^4 + 3$ (c) $x^4 - 3$ (d) $x^2 - 9$.
4. In the equations $Ax + By + C = 0$ and $Px + Qy + R = 0$, if $\frac{A}{P} \neq \frac{B}{Q}$, then which type of lines will these equations represent.
 (a) Parallel lines (b) Intersecting lines (c) coinciding lines (d) Terminated lines.
5. Find the solution of $3x - y = 8$ and $x + y = 4$.
 (a) $x = 3, y = -1$ (b) $x = 3, y = 1$ (c) $x = -3, y = 1$ (d) $x = -3, y = -1$
6. Find the value of $\cos 38^\circ \cos 52^\circ - \sin 38^\circ \sin 52^\circ$
 (a) -1 (b) 1 (c) 0 (d) Not Defined.
7. In $\triangle ABC$, $\angle C = 90^\circ$, then find the value of $\sin^2 A + \sin^2 B$
 (a) 0 (b) -1 (c) 1 (d) Not Defined
8. Which of the following cannot be the sides of a right triangle?
 (a) 9cm, 15cm, 12cm (b) 2cm, 1cm, $\sqrt{5}$ cm (c) 6cm, 8cm, 10cm (d) 9cm, 5cm, 7cm
9. 10. If $D > 0$ in a quadratic equation, then the nature of its roots will be
 (a) equal roots (b) unequal real roots (c) no real roots (d) imaginary roots.

10. Which of the following similarity criterion used to prove $\triangle DEF \sim \triangle PQR$.



- (a) SAS (b) AA (c) SSS (d) ASA

11. After how many places of decimal the decimal expansion of the rational number $\frac{47}{2^{2.5}}$ will terminate.

12. If $x = 2^3 \times 3 \times 5^2$, $y = 2^2 \times 5^2$, then find HCF (x,y).

13. If α, β are the zeroes of the polynomial $x^2 - 5x + 8$, then find the value of $\alpha + \beta$.

OR

If A, B are the zeroes of the polynomial $ax^2 + bx + c$, then find the value of AB.

14. If both the zeros of a quadratic polynomial $ax^2 + bx + c$ are equal and opposite in sign, then find " b "

15. Find the number of solutions of the pair of linear equations $x + 2y = 8$ and $2x + 4y = 16$.

16. If the lines given by $3x + 2ky = 2$ and $2x + 5y = -1$ are parallel, then find the value of "k".

17. Find the value of $(\tan 1^\circ \tan 3^\circ \dots \dots \dots \tan 87^\circ \tan 89^\circ)$

OR

If $\cos 3\theta = \frac{\sqrt{3}}{2}$, then find the value of θ .

18. If $\sin \alpha = \frac{1}{2}$ and $\cos \beta = \frac{1}{2}$, then find the value of $\alpha + \beta$

19. If 2 is a root of the equation $x^2 + kx - 5 = 0$, then find the value of "k".

20. A girl said, "the product of my age 5 years before and after 5 years is 75".What is her present age?

SECTION B

21. Show that 8^n cannot end with the digit zero for any natural number n.

22. The areas of two similar triangles ABC and PQR are 25 cm^2 and 49 cm^2 respectively.

If $QR = 9.8 \text{ cm}$, then find BC.

23. Find the nature of roots of the quadratic equation $4x^2 + 4\sqrt{3}x + 3 = 0$.

24. If the diagonals of a quadrilateral divide each other proportionally, prove that it is a trapezium.

OR

S and T are points on sides PR and QR of ΔPQR such that $\angle P = \angle RTS$. Show that $\Delta RPQ \sim \Delta RTS$.

25. If $\sqrt{3} \tan \theta = 1$, find the value of $\sin^2 \theta - \cos^2 \theta$

OR

Evaluate: $\sin 60^\circ \cos 30^\circ + \sin 30^\circ \cos 60^\circ$

26. Solve for "a" and "b": $\sqrt{2}a + \sqrt{3}b = 0$, $\sqrt{3}a - \sqrt{8}b = 0$.

SECTION C

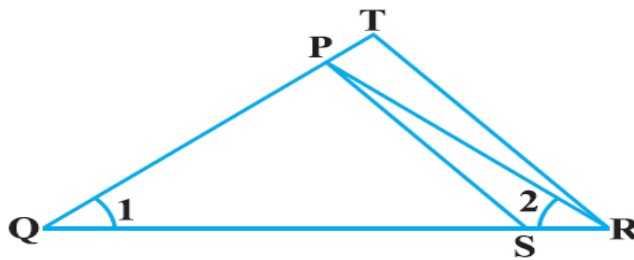
27. Solve for x: $\frac{4}{x} - 3 = \frac{5}{2x+3}$.

OR

Solve by the method of completing the squares: $x^2 - 3x - 10 = 0$.

28. 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.

29. In Fig. $\frac{QR}{QS} = \frac{QT}{PR}$ and $\angle 1 = \angle 2$. Show that $\Delta PQS \sim \Delta TQR$.



OR

Prove that the sum of the squares of the sides of a rhombus is equal to the sum of the squares of its diagonals.

30. The age of a father is equal to sum of the ages of his 6 children. After 15 years, twice the age of the father will be the sum of ages of his children. Find the age of the father.

OR

Solve for "x" and "y": $px + qy = p - q$ and $qx - py = p + q$

31. Prove that $\sqrt{7}$ is irrational.

32. Find the zeros of a quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeros and the coefficients .

33. If a and b are two odd positive integers such that $a > b$, then prove that one of the two numbers $\frac{a+b}{2}$ and $\frac{a-b}{2}$ is odd and the other is even.

34. Find all the zeros of the cubic polynomial $x^3 - x^2 - 3x + 3$, one of its zero is "1".

SECTION D

35. A railway half ticket costs half the full fare, but the reservation charges are same on a half or full ticket. One reserved a full ticket at Rs 2530. Also one reserved a full ticket and a half ticket at Rs 3810. Find the full ticket charge and reservation charge for a ticket.

36. Prove the following trigonometric identities: (1) $\sin^2 A + \cos^2 A = 1$
(2) $\sec^2 A - \tan^2 A = 1$

37. Prove that, $\frac{\tan \theta + \sec \theta - 1}{\tan \theta - \sec \theta + 1} = \frac{1 + \sin \theta}{\cos \theta}$

OR

Prove that, $\frac{\cot \theta + \operatorname{cosec} \theta - 1}{\cot \theta - \operatorname{cosec} \theta + 1} = \frac{1 + \cos \theta}{\sin \theta}$

38. From a point 100m above a lake, the angle of elevation of a helicopter is 30° and the angle of depression of reflection of the helicopter in the lake is 60° . Find the height of the helicopter.

39. If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, prove that the other two sides are divided in the same ratio.

OR

Prove that, in a right triangle the square of the hypotenuse is equal to the sum of the squares of the other two sides.

40. The speed of a boat in still water is 15km/hr. it can go 30km upstream and return downstream to the original point in $9/2$ hours .Find the speed of the stream
