

PRACTICE PAPER (2019-20)

Subject : MATHEMATICS

GMT-I/250

Time : 3.00 Hrs

Class : X

M.M. : 80

General Instructions:

- a) All questions are compulsory
- b) The question paper consists of 40 questions divided into four sections A, B, C & D.
- c) Section A comprises of 20 questions of 1 mark each. Section B comprises of 6 questions of 2 marks each. Section C comprises of 8 questions of 3 marks each. Section D comprises 6 questions of 4 marks each.
- d) There is no overall choice. However internal choices have been provided in two questions of 1 mark each, two questions of 2 marks each, three questions of 3 marks each and three questions of 4 marks each. You have to attempt only one of the alternatives in all such questions.
- e) Use of calculators is not permitted.

SECTION A (QUESTION NO 1 TO 10 ARE MULTIPLE CHOICE)

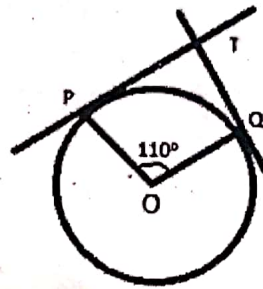
1. The decimal representation of $\frac{11}{2^3 \times 5}$ will

- (a) after one decimal place
- (b) after two decimal place
- (c) after three decimal place
- (d) not terminate

2. HCF of 168 and 126 is

- (a) 21 (b) 42 (c) 14 (d) 18

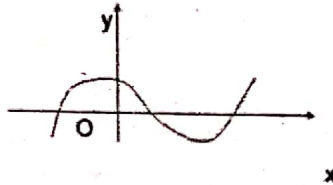
3. In the given figure, if TP and TQ are tangents to a circle with centre O, so that $\angle POQ = 110^\circ$, then $\angle PTQ$ is



- (a) 110° (b) 90°
 (c) 80° (d) 70°

4. The following figure shows the graph of $y = p(x)$, where $p(x)$ is a polynomial in variable x . The number of zeroes of the polynomial $p(x)$ is

- (a) 1 (b) 2 (c) 3 (d) 4



5. The distance of the point P (3, -4) from the origin is

- (a) 7 units (b) 5 units (c) 4 units
 (d) 3 units

6. The mid point of the line segment joining the points (-5, 7) and (-1, 3) is

- (a) (-3, 7) (b) (-3, 5) (c) (-1, 5)
 (d) (5, -3)

7. The sum of the zeroes of the polynomial $2x^2 - 8x + 6$ is

- (a) -3 (b) 3 (c) 4 (d) -4

8. Given that $\sin \alpha = \frac{\sqrt{3}}{2}$ and $\cos \beta = 0$, then value of $\beta - \alpha$ is equals to

- (a) 0° (b) 90° (c) 60° (d) 30°

9. Which of the following is the decimal expansion of an irrational number –

- (a) 4.561 (b) 0.121212... (c) 5.0100100010... (d) 6.03

10. For what value of p , will the line represented by the following pairs of linear equations be parallel

$$3x - y - 5 = 0 \quad \text{and} \quad 6x - 2y - p = 0$$

- (a) All values except 10 (b) 10 (c) $5/2$ (d) $1/2$

11. If the quadratic equation $x^2 - 2x + k = 0$ has equal roots, then value of k is _____

12. The value of $\tan 1^\circ \cdot \tan 2^\circ \cdot \tan 45^\circ \cdot \tan 88^\circ \cdot \tan 89^\circ$ is _____

13. The sides of two similar triangles are in the ratio of 1:3, then the areas of these two triangles are in the ratio is _____

OR

The perimeters of two similar triangles $\triangle ABC$ and $\triangle PQR$ are 35 cm and 45 cm respectively, then the ratios of the areas of these two triangles is _____

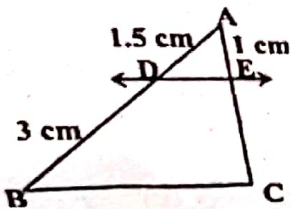
14. If one root of the quadratic equation $(k - 1)x^2 - 10x + 3 = 0$ is the reciprocal of the other, then the value of k is _____

15. Fill the two blanks in the sequence $3 \blacksquare 14 \blacksquare$ so that the sequence forms an AP

16. If $6 \cot A = 8$. Find $\operatorname{Cosec} A$

17. Write one rational number and one irrational number between 0.16 and 0.25

18. In the given fig. If $DE \parallel BC$ Find EC .



19. Find the sum of all two digit odd positive numbers.

20. How many number of tangents can a circle have?

SECTION B (TWO MARKS EACH)

21. Find the area of a circle whose circumference is 22 cm.

22. Prove that the parallelogram circumscribing a circle is rhombus.

23. Explain why $(3 \times 5 \times 7) + 7$ is a composite number?

24. Read the following passage and answer the question that follows:

A teacher told 10 students to write a polynomial on the black board students wrote

(i) $x^2 - 2$ (ii) $2x + 3$ (iii) $x^3 + x^2 + 1$ (iv) $x^3 + 2x^2 + 1$ (v) $x^4 + x^2 + 1$

(vi) $x - 5$ (vii) $x^2 + 2x + 1$ (viii) $2x^3 - x^2$ (ix) $x^4 - 1$ (x) $x^2 - 2x + 1$

(1) How many students wrote cubic polynomials?

(2) Divide $x^2 + 2x + 1$ by $x + 1$

25. The angle of elevation of the top of a tower from a point on the ground which is 30 cm away from the foot of the tower is 30° . Find the height of the tower.

26. If $\sec A = \operatorname{Cosec}(A - 20^\circ)$, find the value of A.

SECTION C (THREE MARKS EACH)

27. Find the zeroes of the quadratic polynomials $x^2 - 5x - 14$ and verify its relationship between the zeroes and its coefficients.

28. Draw a pair of tangents of a circle of radius 3 cm which are inclined to each other at an angle of 60° .

OR

Draw a circle of radius 3 cm. From the point 7 cm away from its Centre construct the pair of tangents.

29. Solve for X $\frac{1}{x-3} - \frac{1}{x+5} = \frac{1}{6}$

30. Prove that $\sqrt{\frac{1+\sin x}{1-\sin x}} = \operatorname{Sec} x + \operatorname{Tan} x$

OR

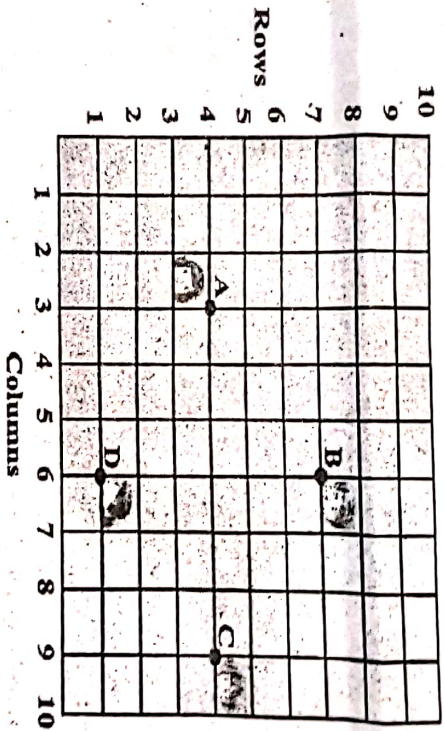
Prove that $\frac{\sin \theta - 2\sin^3 \theta}{2\cos^3 \theta - \cos \theta} = \operatorname{Tan} \theta$

31. Prove that $3 - \sqrt{5}$ is an irrational number, given that $\sqrt{5}$ is an irrational number.

32. Solve the algebraic equation $2x + 3y = 11$ and $x - 2y = -12$, and hence find the value of $y = mx + 3$

33. Sides of a right triangular are 25 m, 24 m and 7 m. At the three corners of the field a cow, buffalo and a horse tied separately with rope of 3.5 m each to graze in the field. Find the area of the field that can not be grazed by these animals.

34. In a class room, four students Sita, Gita, Rita and Anita are sitting at A(3,4), B(6,7), C(9,4), D(6,1) respectively. Then a new student Anjali joins the class



- (i) Teacher tells Anjali to sit in the middle of the four students. Find the coordinates of the position where she can sit.
- (ii) Calculate the distance between Sita and Anita.
- (iii) Which two students are equidistant from Gita.

SECTION D (FOUR MARKS EACH)

35. State and prove Pythagoras theorem.

OR

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

36. From the top of a 300 m high light house, the angle of depression of two ships, which are due south of the observer and in a straight line with its base are 60° and 30° . Find their distance apart.

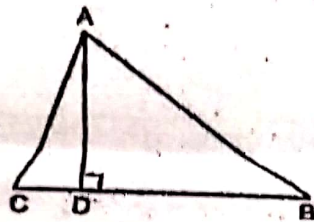
37. If the sum of first 14 terms of an AP is 1050 and its first term is 10. Find its 20^{th} term.

38. A train covers a distance of 360 km at a uniform speed. Had the speed been 5 km/hr more it would have taken 1 hour less for the same journey. Find the speed of the train.

39. In an equilateral triangle ABC , D is a point on the side BC such that $BD = \frac{1}{3} BC$. Prove that $9 AD^2 = 7 AB^2$

OR

In a given figure the perpendicular from A on Side BC of a $\triangle ABC$ intersects BC at D such that $DB = 3 CD$ Prove that $2AB^2 = 2AC^2 + BC^2$



40. Two numbers are in the ratio 5:6. If 8 is subtracted from each of the numbers, the ratio becomes 4:5. Find the numbers.