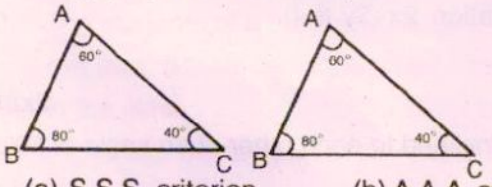
10th Standard Mid Term Examination - Sep/Oct - 2019

Time : 3.00 hrs. **Subject - MATHEMATICS** **Marks : 80**

I. In the following questions, four choices are given for each question, choose and write the correct answer along with its alphabet. **1x8=8**

1. In 'n'th term of an AP is an = _____
   (a) a+(n+1)d (b) a-(n+1)d (c) a+(n-1)d (d) a-(n-1)d

2. For any two polygons to be similar, their corresponding angles and corresponding sides are respectively_____
   (a) Equal and proportional (b) proportional and equal
   (c) proportional and equal (d) none of the above

3. 

The similar criterion used for above two triangles are to be similar triangle is _____
   (a) S.S.S. criterion (b) A.A.A. criterion (c) S.A.S. criterion (d) A.S.A. criterion

4. If $a_1x + b_1y + c_1 = 0$ & $a_2x + b_2y + c_2 = o$ are coincides each other, then the correct ratio's are.
   (a) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$ (b) $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$ (c) $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ (d) $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

5. The maximum number of tangents that can be drawn to a circle from an external point is.
   (a) 1 (b) 2 (c) 3 (d) 4

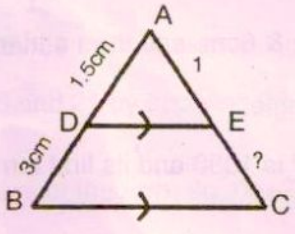
6. Area of a sector of angle p (in degrees) of a circle of radius R is
   (a) $\frac{P}{180} \times 2\pi R$ (b) $\frac{P}{180} \times 2\pi R^2$ (c) $\frac{P}{360} \times 2\pi R$ (d) $\frac{P}{360} \times \pi R^2$

7. The disfance between the points (2,3) & (4,1) is
   (a) $2\sqrt{2}$ (b) $3\sqrt{2}$ (c) $2\sqrt{3}$ (d) $2\sqrt{5}$

8. In the following numbers, the irrational numbers is
   (a) $\sqrt{16} - \sqrt{9}$ (b) $3/4$ (c) 0.3333.... (d) $2 + \sqrt{3}$

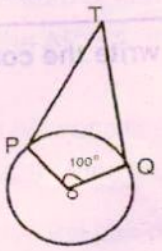
II. Answer the following questions. **1x8=8**

9. If a_n=3+4n, then find the 4th term of an A.P.
10. Find the common difference of an A.P. -5, -1, 3, 7,.....
11. In the following figure, DE || BC, then find the value of EC.



(P.T.O)

12. State thales theorm.

13. 

In fig. If TP & TQ are the two tangents to a circle of centre O so that $\angle POQ = 100^0$ then find the value of $\angle PTQ$?

14. What is the midpoint of the line segment joining the point $P(x_1, y_1)$ and $Q(x_2, y_2)$?
15. State the fundamental theorem of Arithmetic?
16. Write any linear pair equation which is parallel to the linear equation $2x+3y-8=0$.

2x8=16

III. Answer the following questions.

17. Draw a pair of tangents to a circle of radius 3.5 cm which are inclined to each other at an angle of 50^0.
18. Which term of the A.P. 3, 8, 12, 18, ... is 78?

    OR

    How many two digits positive whole numbers which are divisible by 3.
19. Prove that $2+\sqrt{3}$ is an irrational number.

    OR

    Prove that $\sqrt{2}$ is an irrational number.
20. Areas of two similar triangles are in the raion 81:16, then find the ratio of their sides.
21. Verify the following pair of linear equations are consistent or inconsistent?

    x+y=5

    x-y=8
22. Solve the following pair of linear equations.

    x+y=14

    x-y=4
23. Two concentric circles are of radii 5cm & 3cm. Find the length of the chord of the larger circle which touches the smaller circle.
24. Find the distance between the point P(5, -3) and the origin.

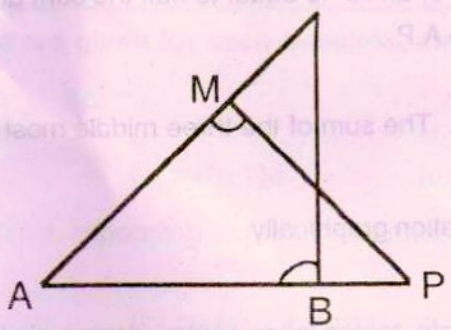
3x9=27

IV. Answer the following questions.

25. Construct a triangle of sides 4cm, 5cm & 6cm and then a triangle similar to it whose sides are $\frac{2}{3}$ of the corresponding sides of the first triangle.
26. If the sum of the first 14 terms of an AP is 1050 and its first term is 10, find the 20^{th} term.

27. In a figure, ABC & AMP are two right angle triangles right angled at B and M respectively, prove that (i) $\triangle ABC \sim \triangle AMP$

(ii) $\frac{CA}{PA} = \frac{BC}{MP}$

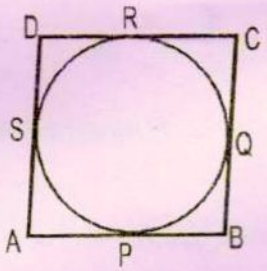


28. The students of a class are made to stand in rows. If 3 students are extra in a row, there would be one row less. If 3 students are less in a row, there would be two rows more. Find the number of students in the class.

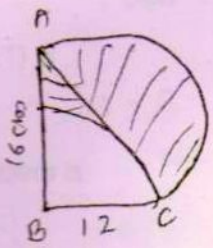
29. Prove that the tangent at any point on a circle is perpendicular to the radius through the point of contact.

OR

A quadrilateral ABCD is drawn to circumscribe a circle (see fig) prove that AB+CD=AD+BC.



30. Find the area of the shaded region in the following fig. Where AB=16cm and BC=12cm.



31. In a circle of radius 21cm, and are subtends an angle of 60^0 at the entre.
Find (i) The length of an arc
(ii) area of the sector formed by the arc

32. Find the area of the triangle formed by the points P(2, 3) Q (1-,0) and R(2, -4)

OR

In what ratio does the point (-4, 6) divide the line sigment joining the point A(-6, 10) and B(3, -8)?

33. Find the L.C.M. and H.C.F. of 12, 15 and 21 by applying the prime factrisation method.

OR

Show that any positive even integer is of the form 6q, 6q+2, 6q+4 where q is some integer.

V. Answer the following questions. **4x4=16**

34. The sum of first four terms of an AP is equal to half the sum of its next four terms. If the first term of the AP is 5, then find the A.P.

OR

An AP consits of 37 terms. The sum of the three middle most term is 225 and sum of the last terms is 429. Find the AP

35. Solve the pair of linear equation graphically.
x+3y=6 & 2x-3y=12

36. Draw a line sigment PQ=9cm taking 'p' as centre, draw a circle of radius 4cm and taking 'Q' as centre, draw another circle of radius 3cm. Constructs tangents to each circle from the centre of the other circle.

37. Show that the points (1, 7) (4,2) (-1, -1) and (-4, 4) are the vertices of a square.

VI. Answer the following questions. **1x5=5**

38. State and prove Pythagoras theorem.