INFINITY THINK BEYOND............

AN EDUCATIONAL INSTITUTE

SUBJECT:MATHS | **MAX. MARKS : 30**

DATE : 18/11/24 | **DURATION : 60 MIN**

PBMT – PAPER – 02
UNIT – GEOMETRY
CH – 6 CIRCLES , CH – 10 TRIANGLES

General Instruction:

This Question Paper has 5 Sections A-E.

1. **Section A** has 6 MCQs carrying 1 mark each.
2. **Section B** has 2 questions carrying 02 marks each.
3. **Section C** has 2 questions carrying 03 marks each.
4. **Section D** has 1 questions carrying 04 marks each.
5. **Section E** has 2 questions carrying 05 marks each .

Draw neat figures wherever required. Take π =22/7 wherever required if not stated.

SECTION – A
Questions 1 to 6 carry 1 mark each.

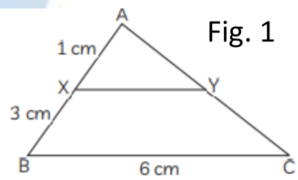


Fig. 1

1. In figure 1, XY || BC and AX : XB = 1 : 3. The length of XY is:

(a) 1 cm (b) 2 cm (c) 3 cm (d) 1.5 cm

2. The distance between two parallel tangents to a circle of radius 5cm is:

(a) 10cm (b) 11cm (c) 12cm (d) 14cm

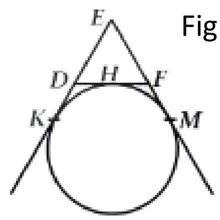


Fig. 2

3. In fig .2 a circle touches the side DF of ΔEDF at H and touches ED and EF produced at K and M respectively .If EK = 9 cm ,then the perimeter of ΔEDF (in cm) is

(a) 18 (b) 13.5 (c) 12 (d) 9

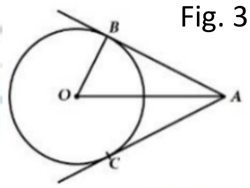


Fig. 3

4. In a fig. 3 AB and AC are tangents to a circle with centre 0 and radius 8cm .If OA = 17 cm ,then the length of AC (in cm) is

(a) $\sqrt{353}$ (b) 15 (c) 9 (d) 25

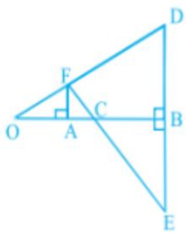
5. At one end A of a diameter AB of a circle of radius 5 cm, tangent XAY is drawn to the circle. The length of the chord CD parallel to XY and at a distance 8 cm from A is

(a) 4 cm (b) 5 cm (c) 6 cm (d) 8 cm

6. From a point P which is at a distance of 13 cm from the centre O of a circle of radius 5 cm, the pair of tangents PQ and PR to the circle are drawn. Then the area of the quadrilateral PQOR is

(a) 60cm ^{2} (b) 65cm ^{2} (c) 32cm ^{2} (d) 32.5cm^2

SECTION – B
Questions 7 to 8 carry 2 mark each.

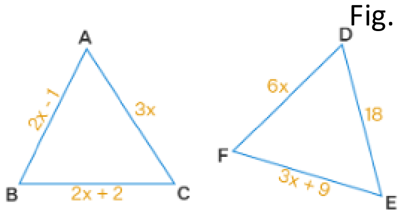
Fig. 4


7. In Fig.4 OB is the perpendicular bisector of the line segment DE, FA ⊥ OB and F E intersects OB at the point C. Prove that $\frac{1}{OA}+\frac{1}{OB}=\frac{2}{OC}$.

8. If a, b, c are the sides of a right triangle where c is the hypotenuse, prove that the radius r of the circle which touches the sides of the triangle is given by r = $\frac{a+b-c}{2}$

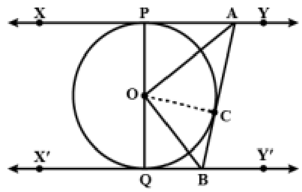
SECTION – C
Questions 9 to 10 carry 3 mark each.

Fig. 5



9. In the given Fig.5 , if Δ ABC~Δ DEF and their sides are of Length(in cm) AB=2x-1, BC=2x+2 AC=3x , DF=6x , DE=18, FE =3x+9, then find the lengths of the sides of each triangle.

Fig. 6



10. In Figure 6 given, XY and XY are two parallel tangents to a circle with centre O and another tangent AB with point of contact C intersecting XY at A and XY at B. Prove that ∠ AOB = 90°.

SECTION – D
Questions 11 carry 4 mark each.

11. IFΔABC and ΔDEF ,$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$, then

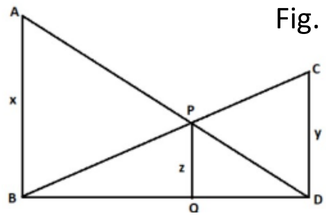
a) If ∠A = 50° , and ∠B = 30° , then find∠F .

b) If AB =7cm , BC = 10 cm, DE= 2.1 cm ,find EF.

c) If AB =5cm , perimeter ΔABC =20cm and DE= 4cm ,then what is the perimeter of ΔDEF.

SECTION – E
Questions 12 to 13 carry 5 mark each

Fig. 7



12. In the given fig. AB II PQ II CD , AB = x units , CD = y units and PQ = z units . prove that $\frac{1}{x} + \frac{1}{y} = \frac{1}{z}$.

13. Prove that tangents drawn from an external point to a circle are equal.
using the above theorem in the fig. 8 given below ,
Show that PR + RC = PQ + CQ .

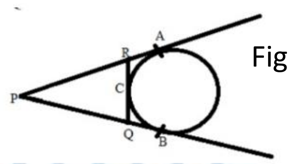


Fig. 8

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