MATHEMATICS

DPP

DAILY PRACTICE PROBLEMS

DPP No. 79

Total Marks : 28

Max. Time : 30 min.

Topics : Solution of Triangle, Circle

Type of Questions		**M.M., Min.**
Single choice Objective (no negative marking) Q.1,2,3,4	**(3 marks, 3 min.)**	**[12, 12]**
Subjective Questions (no negative marking) Q.5,6	**(4 marks, 5 min.)**	**[8, 10]**
Match the Following (no negative marking) Q.7	**(8 marks, 8 min.)**	**[8, 8]**

1. If in a ΔABC, $\frac{r}{r_1} = \frac{1}{2}$, then the value of $\tan\frac{A}{2}\left(\tan\frac{B}{2}+\tan\frac{C}{2}\right)$ is equal to :

(A) 2 (B) $\frac{1}{2}$ (C) 1 (D) None of these

2. A triangle is inscribed in a circle. The vertices of the triangle divide the circle into three arcs of length 3, 4 and 5 units. Then area of the triangle is equal to:

(A) $\frac{9\sqrt{3}(1+\sqrt{3})}{\pi^2}$ (B) $\frac{9\sqrt{3}(\sqrt{3}-1)}{\pi^2}$ (C) $\frac{9\sqrt{3}(1+\sqrt{3})}{2\pi^2}$ (D) $\frac{9\sqrt{3}(\sqrt{3}-1)}{2\pi^2}$

3. Let PQR be a triangle of area Δ with a = 2, b = $\frac{7}{2}$ and c = $\frac{5}{2}$, where a, b and c are the lengths of the sides of the triangle opposite to the angles at P, Q and R respectively. Then $\frac{2\sin P - \sin 2P}{2\sin P + \sin 2P}$ equals

(A) $\frac{3}{4\Delta}$ (B) $\frac{45}{4\Delta}$ (C) $\left(\frac{3}{4\Delta}\right)^2$ (D) $\left(\frac{45}{4\Delta}\right)^2$

4. Orthocentre of an acute triangle ABC is at the origin and its circumcentre has the co-ordinates $\left(\frac{1}{2}, -\frac{1}{2}\right)$.

If the base BC has the equation 4x – 2y = 5, then the radius of the circle circumscribing the triangle ABC, is

(A) $\sqrt{5/2}$ (B) $\sqrt{3}$ (C) $\frac{3}{\sqrt{2}}$ (D) $\sqrt{6}$

5. In a triangle ABC, prove that the area of the incircle is to the area of triangle itself is,

$\pi : \cot\left(\frac{A}{2}\right) . \cot\left(\frac{B}{2}\right) . \cot\left(\frac{C}{2}\right)$.

6. In a triangle PQR, PL & QM are the medians. If P L = 6 cm, $\angle QPL = \pi/6$ and $\angle PQM = \pi/3$, then the area of triangle PQR is _____.

7.

	Column – I		**Column – II**	
(A)	In a ΔABC, a = 4, b = 3 and the medians AA_1 and BB_1 are mutually perpendicular, then square of area of the ΔABC is equal to		(p)	3
(B)	If in an acute angled ΔABC, line joining the circumcentre and orthocentre is parallel to side AC, then value of tan A.tan C is equal to		(q)	7
(C)	In a ΔABC, a = 5, b = 4 and $\tan\frac{C}{2} = \sqrt{\frac{7}{9}}$, then side 'c' is equal to		(r)	6
(D)	In a ΔABC, $2a^2 + 4b^2 + c^2 = 4ab + 2ac$, then value of (8 cos B) is equal to		(s)	11

Answers Key

1. (B) **2.** (A) **3.** (C) **4.** (A)

6. $8\sqrt{3}$ sq. unit

7. (A) $\rightarrow$ (s), (B) $\rightarrow$ (p), (C) $\rightarrow$ (r), (D) $\rightarrow$ (q)