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 $\triangle ABC$, $\dfrac{r}{r_1} = \dfrac{1}{2}$, then the value of $\tan\dfrac{A}{2}\left(\tan\dfrac{B}{2} + \tan\dfrac{C}{2}\right)$ is equal to :

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

3. Let PQR be a triangle of area Δ with a = 2, b = $\dfrac{7}{2}$ and c = $\dfrac{5}{2}$, 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 $\dfrac{2\sin P - \sin 2P}{2\sin P + \sin 2P}$ equals

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

4. Orthocentre of an acute triangle ABC is at the origin and its circumcentre has the co-ordinates $\left(\dfrac{1}{2}, -\dfrac{1}{2}\right)$. 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) $\dfrac{3}{\sqrt{2}}$ (D) $\sqrt{6}$

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

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

6. In a triangle PQR, PL & QM are the medians. If $PL = 6$ 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 $\triangle ABC$, $a = 4$, $b = 3$ and the medians AA_1 and BB_1 are mutually perpendicular, then square of area of the $\triangle ABC$ is equal to	(p)	3
(B)	If in an acute angled $\triangle ABC$, 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 $\triangle ABC$, $a = 5$, $b = 4$ and $\tan\dfrac{C}{2} = \sqrt{\dfrac{7}{9}}$, then side 'c' is equal to	(r)	6
(D)	In a $\triangle ABC$, $2a^2 + 4b^2 + c^2 = 4ab + 2ac$, 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) → (s), (B) → (p), (C) → (r), (D) → (q)