EXERCISE – II MULTIPLE CORRECT (OBJECTIVE QUESTIONS)

1. Which of the following holds good for any triangle ABC ?

(A) $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c} = \frac{a^2+b^2+c^2}{2abc}$

(B) $\frac{\sin A}{a} + \frac{\sin B}{b} + \frac{\sin C}{c} = \frac{3}{2R}$

(C) $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c} = \frac{a^2+b^2+c^2}{abc}$

(D) $\frac{\sin 2A}{a^2} = \frac{\sin 2B}{b^2} = \frac{\sin 2C}{c^2}$

2. If $r_1 = 2r_2 = 3r_3$, then

(A) $\frac{a}{b} = \frac{4}{5}$ (B) $\frac{a}{b} = \frac{5}{4}$ (C) $\frac{a}{c} = \frac{3}{5}$ (D) $\frac{a}{c} = \frac{5}{3}$

3. In a ΔABC, following relations hold good. In which cases(s) the triangle is a right angled triangle ?

(A) $r_2 + r_3 = r_1 - r$ (B) $a^2 + b^2 + c^2 = 8R^2$
(C) $r_1 = s$ (D) $2R = r_1 - r$

4. In a ΔABC, with usual notations the length of the bisector of angle A is equal to

(A) $\frac{2bc \cos\frac{A}{2}}{b+c}$ (B) $\frac{2bc \sin\frac{A}{2}}{b+c}$

(C) $\frac{abc\ \mathrm{cosec}\frac{A}{2}}{2R(b+c)}$ (D) $\frac{2\Delta}{b+c}\ \mathrm{cosec}\ \frac{A}{2}$

5. If in triangle ABC, cos A cos B + sin A sin B sin C = 1, then the triangle is

(A) isosceles (B) right angled
(C) equilateral (D) None of these

6. AD, BE and CF are the perpendiculars from the angular points of Δ ABC upon the opposite sides, then

(A) $\frac{\text{Perimeter of } \Delta DEF}{\text{Perimeter of } \Delta ABC} = \frac{r}{R}$

(B) Area of ΔDEF = $2\Delta \cos A \cos B \cos C$

(C) Area of ΔAEF = $\Delta \cos^2 A$

(D) Circum radius of ΔDEF = $\frac{R}{2}$

7. The product of the distances of the incentre from the angular points of a ΔABC is

(A) $4R^2 r$ (B) $4Rr^2$ (C) $\frac{(abc)R}{s}$ (D) $\frac{(abc)r}{s}$

8. In a triangle ABC, point D and E are taken on side BC such that BD = DE = EC.
If angle ADE = angle AED = θ, then

(A) $\tan\theta = 3\tan B$ (B) $3\tan\theta = \tan C$

(C) $\frac{6\tan\theta}{\tan^2\theta - 9} = \tan A$ (D) angle B = angle C

9. Three equal circles of radius unity touches one another. Radius of the circle touching all the three circles is

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

10. With usual notation, in a Δ ABC the value of $\Pi(r_1 - r)$ can be simplified as

(A) $abc\ \Pi \tan\frac{A}{2}$ (B) $4rR^2$

(C) $\frac{(abc)^2}{R(a+b+c)^2}$ (D) $4Rr^2$