SOLUTION OF TRIANGLE- EXERCISE

1. If the angle A, B, C of a ΔABC are in A.P., then :-
(1) $c^2 = a^2 + b^2 - ab$ (2) $b^2 = a^2 + c^2 - ac$
(3) $c^2 = a^2 + b^2$ (4) None of these

2. In a ΔABC, $b = \sqrt{3} + 1$, $c = \sqrt{3} - 1$, $\angle A = 60°$, then the value of $\tan\frac{(B-C)}{2}$ is :-
(1) 2 (2) 1/2 (3) 1 (4) 3

3. In any ΔABC, the value of $1 - \tan\frac{B}{2}\tan\frac{C}{2}$ is equal to :-
(1) $\frac{2a}{a+b+c}$ (2) $\frac{2b}{a+b+c}$
(3) $\frac{2c}{a+b+c}$ (4) None of these

4. If $c^2 = a^2 + b^2$, $2s = a + b + c$, then $4\Delta^2 =$
(1) s^4 (2) b^2c^2 (3) c^2a^2 (4) a^2b^2

5. If in a Δ the ex-radii r_1, r_2, r_3 are in the ratio 1 : 2 : 3, then their sides are in the ratio :-
(1) 5 : 8 : 9 (2) 1 : 2 : 3
(3) 3 : 5 : 7 (4) 1 : 5 : 9

6. If in a triangle $(r_2 - r_1)(r_3 - r_1) = 2r_2r_3$, then the triangle is :-
(1) right angled (2) isosceles
(3) equilateral (4) none of these

7. In a triangle ABC, (a+b+c) (b+c–a) = kbc if
(1) $k < 0$ (2) $k > 6$
(3) $0 < k < 4$ (4) $k > 4$

8. The perimeter of atriangle ABC is 6 times the arithmetic mean of the sines of its angles. If the side a is 1, the $\angle A$ is
(1) 30° (2) 60°
(3) 90° (4) 120°

9. In ΔABC, if side AC is double of side AB then value of $\cot\frac{A}{2}\cot\frac{B-C}{2}$ is :-
(1) $\frac{1}{3}$ (2) $-\frac{1}{3}$ (3) 3 (4) $\frac{1}{2}$

10. In triangle ABC of $r_1 = 2r_2 = 3r_3$. Then a : b is equal :-
(1) $\frac{4}{5}$ (2) $\frac{5}{4}$ (3) $\frac{7}{4}$ (4) $\frac{4}{7}$

11. In ΔABC, if $\cot\frac{A}{2}, \cot\frac{B}{2}, \cot\frac{C}{2}$ are in A.P. Then a, b, c are in :-
(1) A.P. (2) G.P. (3) H.P. (4) None

12. The ratio of area of a regular polygon of n sides inscribed in a circle to that of the polygon of same number of side circum scribe the same circle is 3 : 4 , then value of 'n' is :-
(1) 1 (2) 8 (3) 12 (4) 6

13. In a triangle ABC a= 4, b = 3, $\angle A = 60°$, Then c is root of equation :-
(1) $c^2 + 3c - 7 = 0$ (2) $c^2 - 3c - 7 = 0$
(3) $c^2 - 3c + 7 = 0$ (4) $c^2 + 3c + 7 = 0$

14. In a right-angled isosceles triangle,the ratio of the circumradius and inradius is :-
(1) $2(\sqrt{2} + 1) : 1$ (2) $(\sqrt{2} + 1) : 1$
(3) 2 : 1 (4) $\sqrt{2} : 1$

15. The exradii of a triangle r_1, r_2, r_3 are in HP, then the sides a,b,c are
(1) in HP (2) in AP
(3) in GP (4) none of these

16. Given b = 2, c = $\sqrt{3}$, $\angle A = 30°$, then inradius of ΔABC is :-
(1) $\frac{\sqrt{3}-1}{2}$ (2) $\frac{\sqrt{3}+1}{2}$
(3) $\frac{\sqrt{3}-1}{4}$ (4) none of these

17. In a triangle ABC, $\angle B = \frac{\pi}{3}$ and $\angle C = \frac{\pi}{4}$, let D divide BC internally in the ratio 1 : 3 . Then $\frac{\sin(\angle BAD)}{\sin(\angle CAD)}$ is equal to
(1) $\frac{1}{\sqrt{6}}$ (2) $\frac{1}{3}$ (3) $\frac{1}{\sqrt{3}}$ (4) $\sqrt{\frac{2}{3}}$

18. If $\sin\theta$ and $-\cos\theta$ are the roots of the equation $ax^2 - bx - c = 0$, where a, b and c are the sides of a triangle ABC, then cos B is equal to :-
(1) $1 - \frac{c}{2a}$ (2) $1 - \frac{c}{a}$ (3) $1 + \frac{c}{2a}$ (4) $1 + \frac{c}{3a}$

19. If A = 75°, B = 45°, then $b+c\sqrt{2}$ is equals :-

(1) a (2) a + b + c

(3) 2a (4) $\frac{1}{2}(a+b+c)$

20. In equilateral triangle, ratio of inradius, cirum radii and exradii is :-

(1) 2 : 3 : 5 (2) 1 : 2 : 3

(3) 3 : 7 : 9 (4) 3 : 7 : 8

21. Value of $\frac{1}{r_1^2}+\frac{1}{r_2^2}+\frac{1}{r_3^2}+\frac{1}{r^2}$ is :

(1) 0 (2) $\frac{a^2+b^2+c^2}{\Delta^2}$

(3) $\frac{\Delta^2}{a^2+b^2+c^2}$ (4) $\frac{a^2+b^2+c^2}{\Delta}$

22. In ΔABC, a = 6, b = 3 and $\cos(A-B) = 4/5$. Then area of triangle is

(1) 4 square-unit (2) 6 square-unit

(3) 9 square-unit (4) 12 square-unit

23. If in a triangle ABC,

$2\frac{\cos A}{a}+\frac{\cos B}{b}+2\frac{\cos C}{c}=\frac{a}{bc}+\frac{b}{ca}$, then the value of the angle A is

(1) $\frac{\pi}{3}$ (2) $\frac{\pi}{4}$ (3) $\frac{\pi}{2}$ (4) $\frac{\pi}{6}$

24. Value of the expression $\frac{b-c}{r_1}+\frac{c-a}{r_2}+\frac{a-b}{r_3}$ is equal to -

(1) 1 (2) 2 (3) 3 (4) 0

25. In a triangle ABC, a : b : c = 4 : 5 : 6. The ratio of the radius of the circumcircle to that of the incircle is :-

(1) $\frac{16}{7}$ (2) $\frac{7}{16}$

(3) $\frac{16}{3}$ (4) none of these

26. In a triangle ABC, if $b+c=2a$ and $\angle A=60°$, then ΔABC is

(1) Scalene (2) Equilateral

(3) Isosecles (4) Right angled

27. If the lengths of the sides of a triangle be $7, 4\sqrt{3}$ and $\sqrt{13}$ cm, then the smallest angle is

(1) 15° (2) 30°

(3) 60° (4) 45°

28. If the median AD of triangle ABC divide the angle BAC in 1 : 2, then $\frac{\sin B}{\sin C}$ is-

(1) $2\sec\left(\frac{2A}{3}\right)$ (2) $2\text{cosec}\frac{A}{3}$

(3) $\text{cosec}\left(\frac{2A}{3}\right)$ (4) $\frac{\sec\frac{A}{3}}{2}$

29. In ΔABC, sides a, b are roots of $\sqrt{2}x^2-3\sqrt{2}x+1=0$ and $\angle C=\frac{\pi}{4}$, then $a^2 + b^2 + c^2$ is -

(1) $18-\sqrt{2}+1$ (2) $18+2\sqrt{2}+1$

(3) $18+2\sqrt{2}$ (4) $17-2\sqrt{2}$

30. If regular pentagon and a regular decagon have the same perimeter, then the ratio of their area is :-

(1) $1:\sqrt{5}$ (2) $2:\sqrt{5}$

(3) $\sqrt{5}:2$ (4) $\sqrt{5}:1$

ANSWER KEY — Exercise-I

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	**2**	**3**	**1**	**4**	**1**	**1**	**3**	**1**	**3**	**2**
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	**1**	**4**	**2**	**2**	**2**	**1**	**1**	**3**	**3**	**2**
Que.	21	22	23	24	25	26	27	28	29	30
Ans.	**2**	**3**	**3**	**4**	**1**	**2**	**2**	**4**	**4**	**2**