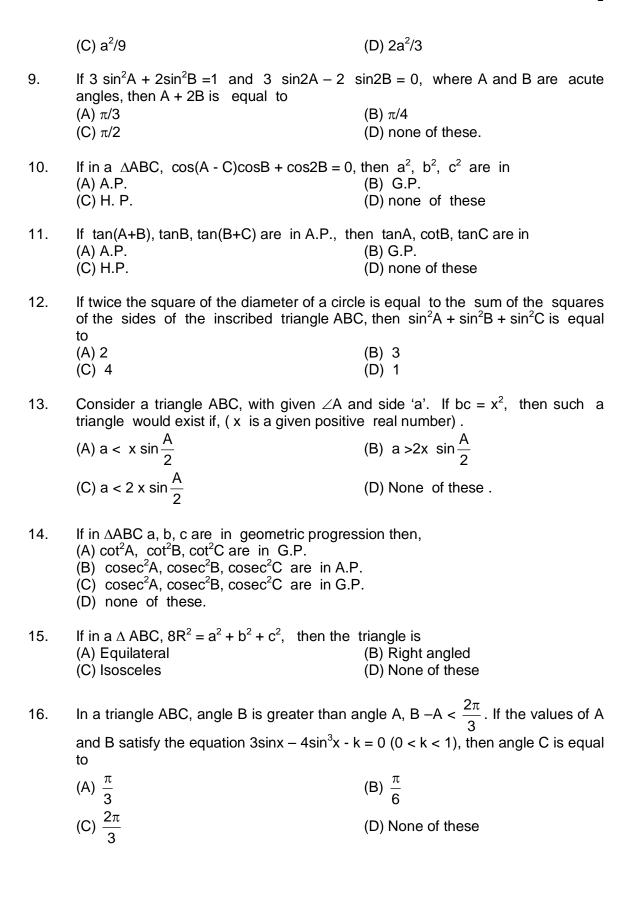
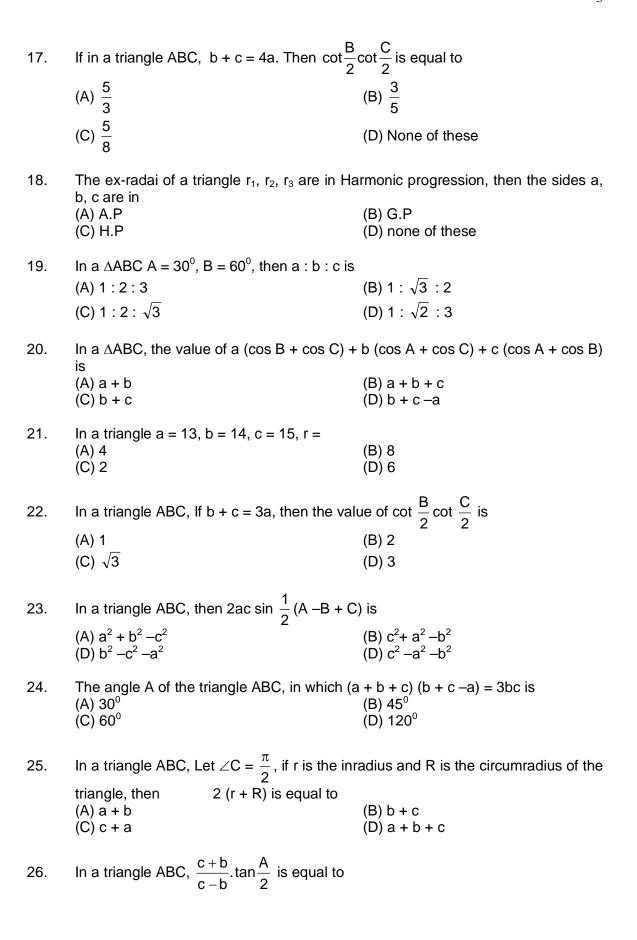
ST

LEVEL-I								
1.	If the bisector of angle A of ΔABC makes an angle θ with BC, then $sin\theta$ is equal to							
	(A) $\cos\left(\frac{B-C}{2}\right)$	(B) $\sin\left(\frac{B-C}{2}\right)$						
	(C) $\sin\left(B - \frac{A}{2}\right)$	(D) $\sin\left(C - \frac{A}{2}\right)$						
2.	If the radius of the circumcircle of an isosceles triangle ABC is equal to AB = AC then the angle A is							
	(A) $\pi/6$ (C) $\pi/2$	(B) π/3 (D) 2π/3						
3.	In a triangle ABC, if $\frac{2\cos A}{a} + \frac{\cos B}{b} + \frac{2\cos C}{c}$	$\frac{C}{c} = \frac{a}{bc} + \frac{b}{ca}$, then the value of the						
	angle A is (A) 30 ⁰ (C)60 ⁰	(B)45 ⁰ (D) 90 ⁰						
4.	If A = 45°, B = 75° then a + $c\sqrt{2}$ is equal to (A) 2b	(B) 3b						
	(C) $\sqrt{2}$ b	(D) b						
5.	The sides of a triangle inscribed in a given of centre. The minimum value of the arithmetic and $\cos(\gamma + \pi/2)$ is equal to							
	(A) 0	(B) $1/\sqrt{2}$						
	(C) -1	(D) $-\sqrt{3}/2$						
6.	A regular polygon of nine sides, each of leng radius of the circle is	ar polygon of nine sides, each of length 2, is inscribed in a circle. The of the circle is						
	(A) $\sec \frac{\pi}{9}$	(B) $\sin \frac{\pi}{9}$						
	(C) $\csc \frac{\pi}{9}$	(D) $\tan \frac{\pi}{9}$						
7.	In an acute angled triangle ABC, the least v (A) 6 (B) 9	alue of secA + secB + secC is (B)3 (D) 4						
8.	A circle is inscribed in an equilateral triangle of side a. The area of any sinscribed in the circle is (A) $a^2/4$ (B) $a^2/6$							
	(' ') \ ' ' T	(D) a 10						





(A)
$$\tan\left(\frac{A}{2} + B\right)$$

(B)
$$\cot\left(\frac{A}{2} + B\right)$$

(C)
$$\tan\left(A + \frac{B}{2}\right)$$

(D) none of these

- In a $\triangle ABC$, a = 2b and $|A B| = \frac{\pi}{3}$, the measure of angle C 27.
- In a \triangle ABC, the sides a, b and c are such that they are the roots of $x^3 11x^2 + 38x$ 28. of $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c}$ the value -400 then
- If AD, BE and CF are the medians of a \triangle ABC, then (AD² + BE² + CF²) : (BC² + 29. $CA^2 + AB^2$) =
- 30. sin A, sin B, sin C are in A.P for the ΔABC then
 - (A) altitudes are in A.P.

(B) sides are in A.P

(C) altitudes are in H.P.

- (D) medians are in A.P
- 31. In a triangle ABC, tan C< 0, then
 - (A) $\tan A \cdot \tan B < 1$

- (B) $tan A \cdot tan B > 1$
- (C) $\tan A + \tan B + \tan C < 0$
- (D) $\tan A + \tan B + \tan C > 0$
- If in a triangle ABC, b + c = 4a. Then $\cot \frac{B}{2} \cot \frac{C}{2}$ is equal to 32.
 - (A) $\frac{5}{3}$
- (B) $\frac{3}{5}$
- (C) $\frac{5}{8}$
- (D) None of

these

- If in a triangle ABC, $\cos A = \frac{\sin B}{\sin C} + \frac{\sin C}{\sin B} \frac{\sin^2 A}{\sin B \sin C}$, then the triangle is 33. (A) right angled (B) isosceles (C) scalene
 - these

- (D) None of
- In a triangle, the lengths of the two larger sides are 10 and 9 respectively. If the 34. angles are in A.P., then the length of third side can be
 - (A) $5 \sqrt{6}$

(B) 3

(C)5

- (D) $3\sqrt{3}$
- In a $\triangle ABC$, maximum value of c cos (A θ) + a cos(C + θ), equals 35.
 - (A) a

(C) c

(D) $\sqrt{a^2 + c^2}$

36. In a triangle ABC, $a^2 (\cos^2 B - \cos^2 C) + b^2 (\cos^2 C - \cos^2 A) + c^2 (\cos^2 A - \cos^2 B)$ equals (A) 0 (B) 1 (C) -1 (D) none of these

37. In a \triangle ABC, the angles A and B are two values of θ satisfying $\sqrt{3}$ $\sin\theta+\cos\theta=\lambda$, $|\lambda|<2$. Then \angle C equals

(A) 60°

(B) 90°

(C) 120°

(D) none of these

38. If the ex-radii of a triangle ABC are in H.P., then the sides a, b, c are in

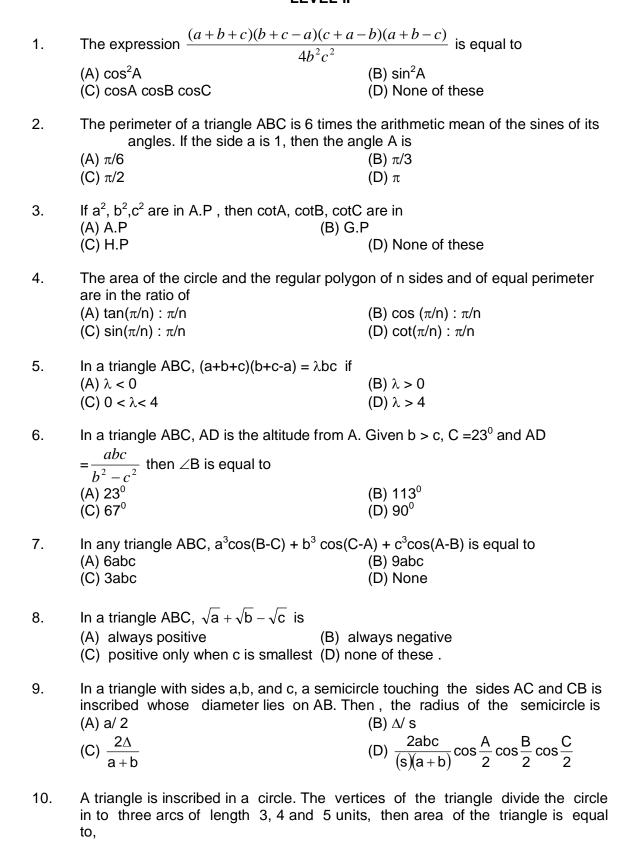
(A) A.P.

(B) G.P.

(C) H.P.

(D) None of these

LEVEL-II



11.

12.

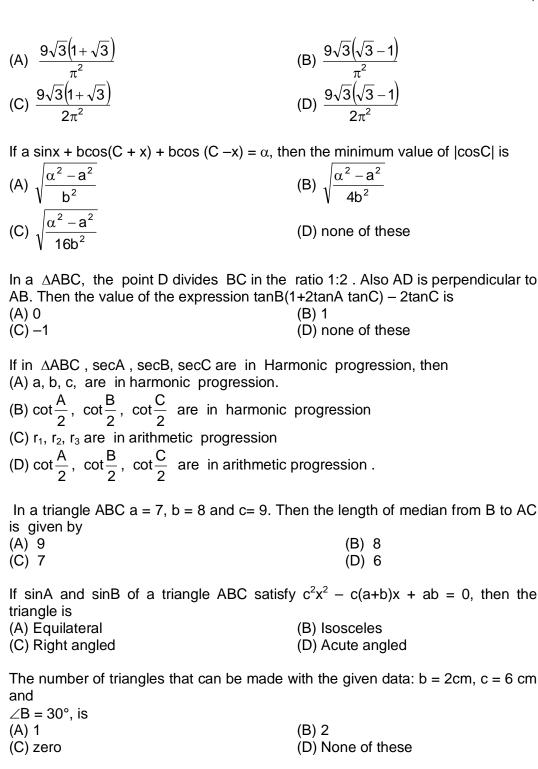
13.

14.

15.

16.

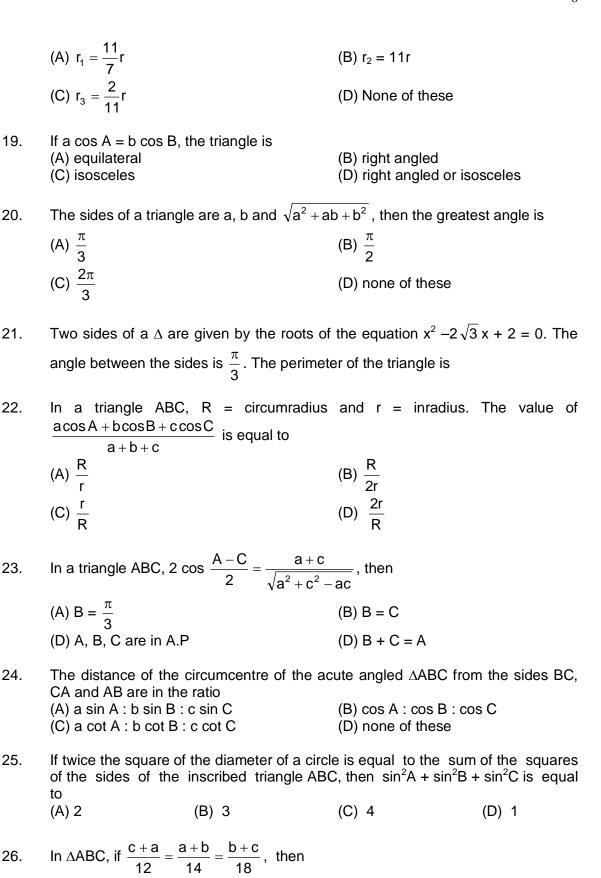
17.



(A) $b^2 = a(c + a)$ (B) $b^2 = a(c - a)$ (C) $b^2 = a(a - c)$ (D) None of these.

In $\triangle ABC$, if AB = c, AC = b, BC = a and A:B:C = 1:2:5, then

18. In $\triangle ABC$, if $\frac{c+a}{12} = \frac{a+b}{14} = \frac{b+c}{18}$, then



(A)
$$r_1 = \frac{11}{7}r$$
 (B) $r_2 = 11r$ (C) $r_3 = \frac{2}{11}r$ (D) None of these

27. In a triangle ABC, $2 \sin A \cos C = 1$ and $\frac{\tan A}{\tan C} = \frac{1}{2}$ then triangle is (A) right angled at A (B) right angled at B (C) right angled at C (D) none of these

28. In a triangle ABC, $\frac{(r_1 + r_2)(r_2 + r_3)(r_3 + r_1)}{Rs^2}$ is equal to (A) 4 (B) 4 abc (C) $\frac{4abc}{\Delta^2}$ (D) Δ

29. In a ΔABC , $\frac{a\cos A + b\cos B + c\cos C}{\Delta^2}$ is equal to (A) $\frac{8}{abc}$ (B) $\frac{2}{\Delta R}$ (C) $\frac{8\Delta^3}{abc}$ (D) None of

- 30. If p₁, p₂ and p₃ are respectively the lengths of perpendiculars from the vertices of a triangle ABC to the opposite sides, then the value of $p_1p_2p_3$ is

these

- (B) $\frac{a^2b^2c^2}{8R^3}$ (C) $\frac{a^2b^2c^2}{8R^4}$
- (D) $\frac{a^2b^2c^2}{4D^2}$
- If in a triangle $\cos^2 A + \cos^2 B \cos^2 C = 1$, then the triangle is 31. (A) Right angled at A (B) Right angled at B (C) Right angled at C (D) not a right triangle
- If in a triangle ABC, $\frac{SinB SinA}{SinC} + \frac{CosB CosA}{CosC} = 0$ then the triangle is 32. (C) isosceles (A) right angled (D) None of (B) equilateral these
- If $\sin\theta$ and $-\cos\theta$ are the roots of the equation $ax^2 bx c = 0$, where a, b, c are 33. the sides of a triangle ABC then

(A)
$$\cos B = 1 - \frac{c}{2a}$$
 (B) $\cos B = 1 - \frac{b}{2a}$ (C) $\cos B = 1 + \frac{c}{2a}$ (D) $\cos B = 1 + \frac{b}{2a}$

- In a right angled triangle ABC, with right angle at B, $\frac{1}{r^2} + \frac{1}{r^2} + \frac{1}{r^2} + \frac{1}{r^2} = \frac{1}{r^2}$ 34.
- (B) $\frac{2R^2}{\Lambda^2}$ (C) $\frac{4R^2}{\Lambda}$
- (D) None of

these

35. If in a triangle ABC, \angle C = 135 $^{\circ}$, then value of tan A + tan B + tan A tan B equals (A) 0 (B) 1 (C) -1 (D) none of these

36. Suppose the angles of a triangle ABC are in A.P. and sides b and c satisfy b : c = $\sqrt{3}$: $\sqrt{2}$ then the angle A equals

(A) 45° (B) 60°

(A) 45° (B) 60° (C) 75° (D) 90°

37. If a^2 , b^2 , c^2 are the roots of the equation $x^3 - Px^2 + Qx - R = 0$ where a, b, c be the sides of a triangle ABC then the value of $\frac{\cos A}{a} + \frac{\cos B}{b} + \frac{\cos C}{c}$ equals

(A) $\frac{P}{\sqrt{R}}$ (B) $\frac{P}{2\sqrt{R}}$ (C) $\frac{P}{4\sqrt{R}}$ (D) none of these

38. In a triangle ABC, $\frac{b^2-c^2}{a\sin(B-C)} + \frac{c^2-a^2}{b\sin(C-A)}$ equals

(A) R (B) $\frac{1}{2R}$

(B) 2R (D) none of these

ANSWERS

LEVEL -I

	1. 5.	A D	2. 6.	D C	3. 7.	D A	4. 8.	A B
	9. 13. 17. 21.	C D A A	10. 14. 18. 22.	A C A B	11. 15. 19. 23.	C B B B	12. 16. 20. 24.	A C B C 9
	25.		26.	D	27.		28.	$\frac{9}{16}$
	29. 33. 37.	A C	30. 34. 38.	B A A	31. 35.	C B	32. 36.	A A
LEVE	L -II							
	1. 5.	B C	2. 6.	A B	3. 7.	A C	4. 8.	A A
	9. 13. 17. 21.	C B,C A $\sqrt{6} \left(1+\sqrt{2}\right)$	10. 14. 18. 22.	A C A C	11. 15. 19. 23.	B C D	12. 16. 20. 24.	A C C C
	25. 28.	Α	26.		27.			
	29. 33. 37.	C B	30. 34. 38.	A D	31. 35.	В	32. 36.	С