

**Topic : Trigonometric Ratio & Identities**

**Type of Questions**

**M.M., Min.**

Comprehension (no negative marking) Q.1 to Q.3

(3 marks, 3 min.)

[9, 9]

Single choice Objective (no negative marking) Q.4,5,6

(3 marks, 3 min.)

[9, 9]

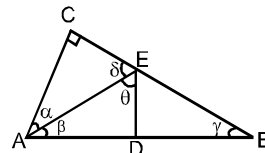
Subjective Questions (no negative marking) Q.5

(4 marks, 5 min.)

[4, 5]

**COMPREHENSION (Q.No. 1 to 3) :**

In the figure below, it is given that  $\angle C = 90^\circ$ ,  $AD = DB$ ,  $ED$  is perpendicular to  $AB$ ,  $AB = 20$  units and  $AC = 12$  units.



1. Area of triangle AEC is

- (A) 24 sq. units      (B) 21 sq. units      (C) 42 sq. units      (D)  $\frac{21}{2}$  sq. units

2. The value of  $\tan(\delta + \beta)$ , is

- (A)  $-\frac{117}{44}$       (B)  $\frac{17}{4}$       (C)  $\frac{3}{4}$       (D)  $\frac{5}{4}$

3. The value of  $\cos(\alpha + \beta)$ , is

- (A)  $\frac{4}{5}$       (B)  $\frac{3}{5}$       (C)  $\frac{117}{125}$       (D)  $-\frac{44}{125}$

4. If  $(1 + \tan 1^\circ) \cdot (1 + \tan 2^\circ) \cdot (1 + \tan 3^\circ) \dots (1 + \tan 45^\circ) = 2^n$ , then 'n' is equal to

- (A) 16      (B) 23      (C) 30      (D) none of these

5. The most general solution of  $\tan \theta = -1$  and  $\cos \theta = \frac{1}{\sqrt{2}}$  is :

- (A)  $n\pi + \frac{7\pi}{4}$ ,  $n \in \mathbb{I}$       (B)  $n\pi + (-1)^n \frac{7\pi}{4}$ ,  $n \in \mathbb{I}$       (C)  $2n\pi + \frac{7\pi}{4}$ ,  $n \in \mathbb{I}$       (D) none of these

6. If  $\cos^2 \frac{\pi}{8}$  is a root of the equation  $x^2 + bx + c = 0$ , where  $b, c \in \mathbb{Q}$ , then the ordered pair  $(b, c)$  is:

- (A)  $\left(1, \frac{1}{8}\right)$       (B)  $\left(-1, \frac{1}{8}\right)$       (C)  $\left(1, -\frac{1}{8}\right)$       (D)  $\left(-1, -\frac{1}{8}\right)$

7. Find the greatest & the least values of the expression  $(x \in \mathbb{R}) \frac{1}{\sin^6 x + \cos^6 x}$ .

## Answers Key

1. (B) 2. (A) 3. (B) 4. (B) 5. (C) 6. (B)

7. max. = 4 , min. = 1