

**Topics : Quadratic Equations, Trigonometric Ratio & Identities, Sequence & Series**

**Type of Questions**

**M.M., Min.**

**Single choice Objective (no negative marking) Q.1,2,3**

**(3 marks, 3 min.)**

**[9, 9]**

**Multiple choice objective (no negative marking) Q.4**

**(5 marks, 4 min.)**

**[5, 4]**

**Subjective Questions (no negative marking) Q.5,6,7**

**(4 marks, 5 min.)**

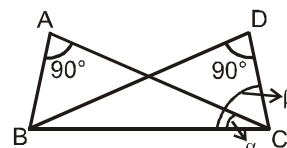
**[12, 15]**

1. Three friends whose ages form a G.P. divide a certain sum of money in proportion to their ages. If they do that three years later, when the youngest is half the age of the oldest, then he will receive 105 rupees more than he gets now and the middle friend will get 15 rupees more than he gets now, then ages of the friends are

(A) 12, 18, 27 (B) 6, 12, 24 (C) 9, 18, 36 (D) none of these

2. In the given figure AB, BC, BD cannot be in

(A) A.P. only (B) A.P., G.P. only  
(C) A.P. & H.P. only (D) AP, GP, HP



3. If  $2 \tan \frac{\alpha}{2} = \tan \frac{\beta}{2}$ , then  $\frac{3 + 5 \cos \beta}{5 + 3 \cos \beta}$  is equal to :

(A)  $\cos \alpha$  (B)  $\cos \beta$  (C)  $\sin \alpha$  (D)  $\sin \beta$

4.  $p, q, r$  are three positive real numbers in A.P., then the roots of the quadratic equation  $px^2 + qx + r = 0$  are real for

(A)  $\left| \frac{r}{p} - 7 \right| \geq 4\sqrt{3}$  (B)  $\left| \frac{p}{r} - 7 \right| \geq 4\sqrt{3}$  (C) all  $p$  and  $r$  (D) no  $p$  and  $r$

5. If  $\frac{3 + \cot(60^\circ + A^\circ) \cot A^\circ}{\cot(60^\circ + A^\circ) + \cot A^\circ} = \tan(\alpha^\circ + A^\circ)$ , then find the value of  $\alpha$ .

6. Prove that  $\frac{\tan 5\theta + \tan 3\theta}{\tan 5\theta - \tan 3\theta} = 4 \cos 2\theta \cos 4\theta$

7. If  $A$  lies in the first quadrant such that  $\log_{\sin A} \tan A$  is negative, then the value of  $A$  lies in the interval \_\_\_\_\_.

## Answers Key

1. (A) 2. (D) 3. (A) 4. (A)(B) 5.  $30^\circ$

7.  $45^\circ < A < 90^\circ$