

# REVISION TEST 04 (TRIGONOMETRY)

## CLASS: X : MATHEMATICS

M.M. 30 Marks

T.T. 1 hr

### SECTION – A(1 marks each)

1. If  $\cos \theta = \frac{1}{2}$ ,  $\sin \phi = \frac{1}{2}$  then find the value of  $\theta + \phi$
2. If  $\tan (20^\circ - 3\theta) = \cot (5\theta - 20^\circ)$ , then find the value of  $\theta$ .
3. If  $\cos 2\theta = \sin 4\theta$ , where  $2\theta$  and  $4\theta$  are acute angles, find the value of  $\tan 3\theta$ .

### SECTION – B(2 marks each)

4. If  $\sin (A + B) = 1$  and  $\sin (A - B) = \frac{1}{2}$ , then find the value of A and B.
5. Evaluate:  $\frac{\sin 18^\circ}{\cos 72^\circ} + \sqrt{3} \{ \tan 10^\circ \tan 30^\circ \tan 40^\circ \tan 50^\circ \tan 80^\circ \}$
6. If  $3 \tan A = 4$ , then find the value of  $\frac{3 \sin A + 2 \cos A}{3 \sin A - 2 \cos A}$

### SECTION – C(3 marks each)

7. Using the formula:  $\sin (A + B) = \sin A \cos B + \cos A \sin B$ , find the value of  $75^\circ$ .
8. Prove that:  $\frac{1}{\operatorname{cosec} A - \cot A} - \frac{1}{\sin A} = \frac{1}{\sin A} - \frac{1}{\operatorname{cosec} A + \cot A}$ .
9. If  $\sec \theta + \tan \theta = m$ , show that  $\left( \frac{m^2 - 1}{m^2 + 1} \right) = \sin \theta$ .

### SECTION – D(4 marks each)

10. If  $\operatorname{cosec} \theta - \sin \theta = a^3$  and  $\sec \theta - \cos \theta = b^3$ , prove that  $a^2 b^2 (a^2 + b^2) = 1$
  11. If  $a \cos^3 \theta + 3a \sin^2 \theta \cos \theta = m$  and  $a \sin^3 \theta + 3a \sin \theta \cos^2 \theta = n$ , prove that  $(m + n)^{2/3} + (m - n)^{2/3} = 2a^{2/3}$
  12. If  $A = 30^\circ$ , verify that:  
(i)  $\sin 2A = \frac{2 \tan A}{1 + \tan^2 A}$  (ii)  $\cos 2A = \frac{1 - \tan^2 A}{1 + \tan^2 A}$
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