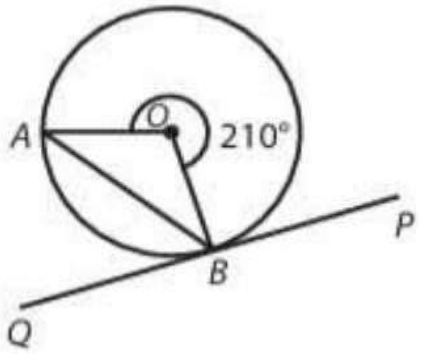
HOTS QUESTIONS

1. Let S_n denotes the sum of first n terms of an A.P. If $S_{2n} = 3S_n$, then the value of $\frac{S_{3n}}{S_n}$ is equal to is equal to

   (A) 4 (B) 6 (C) 8 (D) 10

2. If AB is chord of a circle with centre O&PQ is a tangent to the circle at B with reflex $\angle AOB = 210°$, then the value of $\angle ABQ$ is

   (A) 105° (B) 150° (C) 210° (D) 75°



3. The angles of depression of two consecutive kilometre stones on the road on right and left of an aeroplane are 60° and 45°, respectively as observed from the aeroplane. Find the height of the aeroplane from the ground. (Use: $\sqrt{3} = 1.732$)

   (A) 0.634 km (B) 1.682 km (C) 2.384 km (D) 0.236 km

4. Solve the following questions and select the correct option.

   (i) If $\frac{\cos \alpha}{\cos \beta} = m$ and $\frac{\cos \alpha}{\sin \beta} = n$, then $(m^2 + n^2)\cos \alpha \cos \beta \cot \beta$ is equal to .

   (ii) If $\operatorname{cosec} A = 2$, then the value of $\frac{1}{\tan A} + \frac{1-\cos A}{\sin A}$ is.

   (A) (i) $-n^3$; (ii) $-\sqrt{2} - 1$ (B) (i) - n; (ii) – 2

   (C) (i) $-n^3$; (ii) -2 (D) (i) $-n^2$; (ii) $-\sqrt{3} + 2$

5. Read the given statements carefully and select the correct option.

   Statement-I: If the quadratic equation $(4 - k)x^2 + (2k + 4)x + (8k + 1) = 0$ is a perfect square, then the values of k are 0 and 3.

   Statement-II: If α, β are the roots of the equation $25x^2 + 20x + 4 = 0$, then the equation whose roots are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$ is $4x^2 + 20x + 25 = 0$.

   (A) Both Statement-I and Statement-II are true.
   (B) Both Statement-I and Statement-II are false.
   (C) Statement-I is true but Statement-II is false.
   (D) Statement-I is false but Statement-II is true.

ANSWER KEY

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