

# 2021-February

## Session-02-26-2021-shift-1-16-30

AI24BTECH11031 - Shivram S

1) The value of  $\lim_{h \rightarrow 0} 2 \left\{ \frac{\sqrt{3} \sin(\frac{\pi}{6} - h) - \cos(\frac{\pi}{6} + h)}{\sqrt{3}h(\sqrt{3} \cos h - \sin h)} \right\}$  is [Feb 2021]

- a)  $\frac{3}{4}$                       b)  $\frac{2}{\sqrt{3}}$                       c)  $\frac{4}{3}$                       d)  $\frac{2}{3}$

2) A fair coin is tossed a fixed number of times. If the probability of getting 7 heads is equal to the probability of getting 9 heads, then the probability of getting 2 heads is: [Feb 2021]

- a)  $\frac{15}{2^{12}}$                       b)  $\frac{15}{2^{13}}$                       c)  $\frac{15}{2^{14}}$                       d)  $\frac{15}{2^8}$

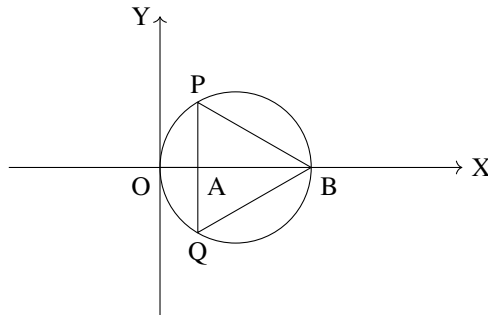
3) If  $(1, 5, 35)$ ,  $(7, 5, 5)$ ,  $(1, \lambda, 7)$  and  $(2\lambda, 1, 2)$  are coplanar, then the sum of all possible values of  $\lambda$  is: [Feb 2021]

- a)  $-\frac{44}{5}$                       b)  $\frac{39}{5}$                       c)  $-\frac{39}{5}$                       d)  $\frac{44}{5}$

4) Let  $R = \{(P, Q) \mid P \text{ and } Q \text{ are at the same distance from the origin}\}$  be a relation, then the equivalence class of  $(1, -1)$  is the set: [Feb 2021]

- a)  $S = \{(x, y) \mid x^2 + y^2 = 1\}$                       c)  $S = \{(x, y) \mid x^2 + y^2 = \sqrt{2}\}$   
 b)  $S = \{(x, y) \mid x^2 + y^2 = 4\}$                       d)  $S = \{(x, y) \mid x^2 + y^2 = 2\}$

5) In the circle given below, let  $OA = 1$  unit,  $OB = 13$  unit and  $PQ$  perpendicular to  $OB$ . Then, the area of the triangle  $PQB$  (in square units) is: [Feb 2021]



a)  $26\sqrt{3}$

b)  $24\sqrt{2}$

c)  $24\sqrt{3}$

d)  $26\sqrt{2}$