

## Module 5: Angular Momentum - I

5.1  $Y_{2,0} = N P_2 \mu$  where  $P_2 \mu = \frac{1}{2} (3\mu^2 - 1)$  and  $\mu = \cos \theta$ . The normalization constant  $N$  will be given by

(a)  $\sqrt{\frac{5}{2}}$

(b)  $\sqrt{\frac{5}{2\pi}}$

(c)  $\sqrt{\frac{5}{4\pi}}$

(d)  $\sqrt{\frac{5}{4}}$

[Answer (c)]

5.2  $Y_{2,-2} = \left( \sqrt{\frac{15}{16}} \sin^2 \theta \right) \left( \frac{1}{\sqrt{2\pi}} e^{k\phi} \right)$ . The value of  $k$  will be

(a)  $k = 2$

(b)  $k = 2i$

(c)  $k = -2$

(d)  $k = -2i$

[Answer (d)]