11. A point starts from rest and moves along a circular path with a constant tangential acceleration. After one rotation, the ratio of its radial acceleration to its tangential acceleration will be equal to

(a) 1 (b) 2π (c) $\frac{1}{2}\pi$ (d) 4π

12. A particle is moving on a circular path of 10 m radius. At any instant of time, its speed is 5 ms^{-1} and the speed is increasing at a rate of 2 ms^{-2}. At this instant, the magnitude of the net acceleration will be

(a) 3.2 ms^{-2} (b) 2 ms^{-2} (c) 2.5 ms^{-2} (d) 4.3 ms^{-2}

13. A point on the rim of a flywheel has a peripheral speed of 10 ms^{-1} at an instant when it is decreasing at the rate of 60 ms^{-2}. If the magnitude of the total acceleration of the point at this instant is 100 ms^{-2}, the radius of the flywheel is

(a) 1.25 m (b) 12.5 m
(c) 25 m (d) 2.5 m

14. A particle moves in a circular path of radius R with an angular velocity $\omega = a - bt$, where a and b are positive constants and t is time. The magnitude of the acceleration of the particle after time $\frac{2a}{b}$ is

(a) $\frac{a}{R}$ (b) a^2R (c) $R(a^2 + b)$ (d) $R\sqrt{a^4 + b^2}$

15. The distance of a particle moving on a circle of radius 12 m measured from a fixed point on the circle is given by $s = 2t^3$ (in metre). The ratio of its tangential to centripetal acceleration at $t = 2$s is

(a) 1 : 1 (b) 1 : 2 (c) 2 : 1 (d) 3 : 1

16. A body is moving on a circle of radius 80 m with a speed 20 m/s which is decreasing at the rate 5 ms^{-2} at an instant. The angle made by its acceleration with its velocity is

(a) 45° (b) 90°
(c) 135° (d) 0°