

Edexcel A Level Physics - Unit 4

Conceptual Survey: Circular Motion (MCQ)

1. In uniform circular motion, the speed of an object is constant. Why is the motion still considered accelerated?

- A. Because the object moves in a circle
- B. Because the direction of velocity is continuously changing
- C. Because the force is constant
- D. Because the radius is constant

2. The direction of centripetal acceleration is:

- A. Tangential to the circle
- B. Away from the centre
- C. Towards the centre of the circle
- D. In the direction of motion

3. If the speed of an object in circular motion is doubled, the centripetal force becomes:

- A. Doubled
- B. Halved
- C. Four times larger
- D. Unchanged

4. Which expression correctly represents centripetal acceleration?

- A. v^2/r
- B. vr^2
- C. r/v^2
- D. v/r^2

5. In vertical circular motion, the tension at the top of the circle is:

- A. Greater than at the bottom
- B. Equal to weight only
- C. Less than at the bottom
- D. Zero in all cases

6. At the bottom of a vertical circle, the centripetal force is provided by:

- A. Weight only
- B. Tension only
- C. Tension minus weight
- D. Tension plus weight

7. Angular velocity (ω) is defined as:

- A. Linear speed divided by radius
- B. Change in angle per unit time
- C. 2π times the radius
- D. Frequency divided by time

8. The relationship between linear speed and angular velocity is:

- A. $v = \omega/r$
- B. $v = r/\omega$
- C. $v = \omega r$
- D. $v = \omega r^2$

9. For an object moving in a horizontal circle on a frictionless surface, the centripetal force must be provided by:

- A. Gravity
- B. Normal reaction
- C. Friction
- D. An external inward force

10. If the radius of circular motion increases while speed remains constant, centripetal acceleration:

- A. Increases
- B. Decreases
- C. Remains constant
- D. Becomes zero

11. The period of circular motion is defined as:

- A. Time taken for half a revolution
- B. Time taken for one complete revolution
- C. Distance divided by speed
- D. Frequency divided by 2π

12. Frequency and period are related by:

- A. $f = T$
- B. $f = 1/T$
- C. $f = 2\pi T$
- D. $f = T^2$

13. In a conical pendulum, increasing the speed will cause the angle with the vertical to:

- A. Decrease
- B. Remain constant
- C. Increase
- D. Become zero

14. When a car travels around a banked curve without friction, the centripetal force is provided by:

- A. Friction only
- B. Weight only
- C. The horizontal component of the normal force
- D. The vertical component of the normal force

15. In uniform circular motion, the kinetic energy of the object:

- A. Continuously increases
- B. Continuously decreases
- C. Remains constant
- D. Becomes zero at the top