PRINCE EDWARD ISLAND PHYSICS 12 · UNIT B · 25 QUESTIONS

Circular and Planetary Motion — Practice Test

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

1 **A cyclist moves in a circle at speed 10 metres per second with radius 20 metres. Its centripetal acceleration in metres per second squared is**



ANSWER

Understand It with Pulse | Flag a mistake

2 **An object moves in a circle at speed 20 metres per second with radius 10 metres. Its centripetal acceleration in metres per second squared is**

ANSWER

Understand It with Pulse | Flag a mistake

3 **An object moves in a circle at speed 15 metres per second with radius 30 metres. Its centripetal acceleration in metres per second squared is**

ANSWER

Understand It with Pulse | Flag a mistake

4 **A satellite orbits with period 8 hours. A satellite at twice the orbital radius, by Kepler third law using a factor of $2^{1.5}$, has period in hours, rounded to four decimal places, of**



ANSWER _____

Understand It with Pulse | Flag a mistake

5 **A 2 kilogram object in circular motion at 10 metres per second with radius 5 metres needs centripetal force in newtons of**

ANSWER _____

Understand It with Pulse | Flag a mistake

6 **A 4 kilogram bowling ball in circular motion at 5 metres per second with radius 10 metres needs centripetal force in newtons of**



ANSWER

Understand It with Pulse | Flag a mistake

7 **Centripetal acceleration points toward the**

A centre of the circle

B tangent

C outside of the circle

D direction of motion only

Understand It with Pulse | Flag a mistake

8 **Centripetal force is a**

A fictitious force only

B force away from centre

C force along the tangent

D net force toward the centre

Understand It with Pulse | Flag a mistake

9 **In uniform circular motion, speed is constant but velocity changes because**

A radius changes

B time changes

C direction changes

D magnitude changes

Understand It with Pulse | Flag a mistake

10 **Kepler first law says planetary orbits are**

A straight lines

B ellipses with the Sun at a focus

C circles only

D parabolas

Understand It with Pulse | Flag a mistake

11 **Kepler second law says a planet sweeps out equal areas in**

- A equal times
- B equal distances
- C equal speeds
- D equal radii

Understand It with Pulse | Flag a mistake

12 **Kepler third law relates orbital period to**

- A planet mass only
- B planet size only
- C temperature
- D orbital radius

Understand It with Pulse | Flag a mistake

13 **Gravitational force between two masses decreases with**

A their sum

B their product only

C the square of their separation

D their separation

Understand It with Pulse | Flag a mistake

14 **A geostationary satellite stays over the same point because its period equals**

A one year

B Earth rotation period

C the Moon period

D one hour

Understand It with Pulse | Flag a mistake

15 **A spinner wheel completes 10 revolutions in 20 seconds. Its frequency in hertz is**



ANSWER _____

Understand It with Pulse | Flag a mistake

16 **An object completes 20 revolutions in 10 seconds. Its frequency in hertz is**

ANSWER _____

Understand It with Pulse | Flag a mistake

17 **An object with period 0.5 seconds has frequency in hertz of**

ANSWER _____

Understand It with Pulse | Flag a mistake

18 **An object moves in a circle at speed 6 metres per second with radius 3 metres. Its centripetal acceleration in metres per second squared is**

ANSWER _____

Understand It with Pulse | Flag a mistake

19 **Doubling the separation between two masses reduces gravitational force by a factor of**

ANSWER _____

Understand It with Pulse | Flag a mistake

20 **A race car moves in a circle at speed 12 metres per second with radius 6 metres. Its centripetal acceleration in metres per second squared is**



ANSWER

Understand It with Pulse | Flag a mistake

21 **A 5 kilogram object in circular motion at 4 metres per second with radius 8 metres needs centripetal force in newtons of**

ANSWER

Understand It with Pulse | Flag a mistake

22 **An object completes 60 revolutions in 30 seconds. Its frequency in hertz is**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 **An object with period 4 seconds has frequency in hertz as a decimal is**

ANSWER _____

Understand It with Pulse | Flag a mistake

24 **Using Kepler's third law, a planet at 9 times Earth's orbital radius has a period in Earth years of**



ANSWER

Understand It with Pulse | Flag a mistake

25 **Halving the separation between two masses increases gravitational force by a factor of**

ANSWER

Understand It with Pulse | Flag a mistake

ANSWER KEY

1.	5	**10.**	B	**19.**	0.25
2.	40	**11.**	A	**20.**	24
3.	7.5	**12.**	D	**21.**	10
4.	22.6274	**13.**	C	**22.**	2
5.	40	**14.**	B	**23.**	0.25
6.	10	**15.**	0.5	**24.**	27
7.	A	**16.**	2	**25.**	4
8.	D	**17.**	2		
9.	C	**18.**	12		

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