ONTARIO PHYSICS, GRADE 12, UNIVERSITY PREPARATION (SPH4U) · UNIT B · 25 QUESTIONS

Energy and Momentum — 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 wooden crate is pushed across a warehouse floor. Work is done on the crate when its displacement occurs in the direction of the**



A Velocity only

B Force

C Mass

D Time

Understand It with Pulse | Flag a mistake

2 **A force of 20 newtons moves an object 5 metres in the direction of the force. The work done, in joules, is**

ANSWER _____

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3 **Kinetic energy depends on mass and the square of**

A Force

B Acceleration

C Speed

D Distance

Understand It with Pulse | Flag a mistake

4 **A mass of 2 kilograms moving at 5 metres per second has kinetic energy, in joules, of**

ANSWER _____

Understand It with Pulse | Flag a mistake

5 **A 4 kilogram rock rests on a ledge 10 metres above the ground in a field of 9.8 newtons per kilogram. Its gravitational potential energy, in joules, is**



ANSWER

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6 **Elastic potential energy is stored in a spring when it is**

A Broken

B Heated

C Compressed or stretched

D At rest

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7 **A spring with spring constant 100 newtons per metre compressed 0.2 metres stores elastic energy, in joules, of**

ANSWER _____

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8 **Power is defined as work done per unit**

A Distance

B Mass

C Force

D Time

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9 **Work of 600 joules done in 20 seconds gives power, in watts, of**

ANSWER _____

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10 **A brass pendulum swings back and forth. Conservation of mechanical energy applies when only conservative forces do work, so total mechanical energy stays**



A Decreasing

B Increasing

C Constant

D Zero

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11 **Momentum is defined as mass times**

A Energy

B Velocity

C Force

D Acceleration

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12 **A mass of 3 kilograms moving at 4 metres per second has momentum, in kilogram metres per second, of**

ANSWER _____

Understand It with Pulse | Flag a mistake

13 **Impulse equals change in**

A Speed only

B Mass

C Energy

D Momentum

Understand It with Pulse | Flag a mistake

14 **A force of 50 newtons acting for 0.4 seconds gives impulse, in newton seconds, of**

ANSWER _____

Understand It with Pulse | Flag a mistake

15 **Two billiard balls collide on a pool table. In an elastic collision, both momentum and kinetic energy are**



A Zero

B Conserved

C Doubled

D Lost

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16 **In a perfectly inelastic collision, colliding objects**

- A Reverse direction always
- B Bounce apart
- C Stop completely
- D Stick together

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17 **A longer collision reduces the average force because impulse equals force times**

- A Mass
- B Distance
- C Time
- D Speed

Understand It with Pulse | Flag a mistake

18 **A 2 kilogram object moving at 6 metres per second collides and sticks to a stationary 2 kilogram object. Their common speed, in metres per second, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

19 **A rocket gains speed forward by expelling gas backward, which follows conservation of**

A Charge

B Mass only

C Energy only

D Momentum

Understand It with Pulse | Flag a mistake

20 **A red race car speeds up along a straight track. The work energy theorem states net work equals change in**



A Power

B Potential energy only

C Kinetic energy

D Momentum

Understand It with Pulse | Flag a mistake

21 **A pendulum at its highest point has maximum potential energy and**

A Maximum kinetic energy

B Zero kinetic energy

C Maximum momentum

D Zero total energy

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22 **A ball dropped from rest converts gravitational potential energy mainly into**

A Thermal energy only

B Kinetic energy

C Chemical energy

D Elastic energy

Understand It with Pulse | Flag a mistake

23 **In a closed system with no external impulse, total momentum is**

A Increasing

B Zero always

C Conserved

D Decreasing

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24 **A spring constant is larger for a spring that is**



A Easier to stretch

B Heavier

C Stiffer

D Longer always

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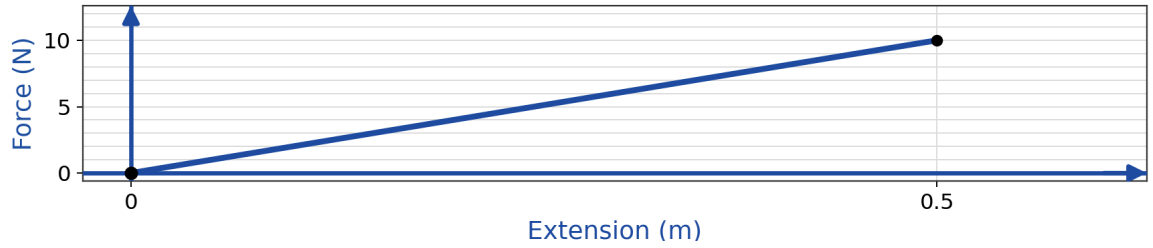
25 **The graph shows force rising linearly with extension to 10 newtons at 0.5 metres. The work done stretching it, in joules, is**



- **A** 1.0
- **B** 2.5
- **C** 10.0
- **D** 5.0

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ANSWER KEY

1. B
2. 100
3. C
4. 25
5. 392
6. C
7. 2
8. D
9. 30
10. C
11. B
12. 12
13. D
14. 20
15. B
16. D
17. C
18. 3
19. D
20. C
21. B
22. B
23. C
24. C
25. B

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