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CLASS 11

Physics

Sample Paper 2 - Questions

33 questions | 70 marks | 2026-27

Time: 3 hours. Answer all questions and subparts unless a choice is stated. Marks are shown on the right. Write answers on separate sheets. Independently prepared practice paper.

Section A - Objective questions

1. A body starts from rest with acceleration 2 m/s^2 for 4 s. Calculate its displacement. **1**
(A) 18 (B) 16 (C) 15 (D) 17

2. Select the term described below. Dimensions help test consistency of physical equations. **1**
(A) Work-energy theorem (B) Elasticity (C) Dimensional analysis (D) Vector addition

3. Select the term described below. Magnitude and direction determine a resultant. **1**
(A) Elasticity (B) Vector addition (C) Dimensional analysis (D) Work-energy theorem

4. A resultant force of 6 N acts on a 2 kg object. Calculate acceleration. **1**
(A) 2 (B) 3 (C) 4 (D) 5

5. Select the term described below. Velocity changes at a constant rate. **1**
(A) Dimensional analysis (B) Work-energy theorem (C) Elasticity (D) Uniform acceleration

6. Select the term described below. Independent components describe ideal motion under gravity. 1
(A) Work-energy theorem (B) Elasticity (C) Dimensional analysis (D) Projectile motion

7. A 2 kg object moves at 5 m/s. Calculate its kinetic energy. 1
(A) 26 (B) 27 (C) 24 (D) 25

8. Select the term described below. Resultant force equals the rate of change of momentum. 1
(A) Newton's second law (B) Dimensional analysis (C) Elasticity (D) Work-energy theorem

9. Select the term described below. Contact force adjusts up to a limiting value to oppose impending relative motion. 1
(A) Elasticity (B) Dimensional analysis (C) Static friction (D) Work-energy theorem

10. A gas receives 120 J of heat and does 20 J of work. Calculate its internal-energy increase. 1
(A) 101 (B) 99 (C) 100 (D) 102

11. Select the term described below. Net work equals the change in kinetic energy. 1
(A) Work-energy theorem (B) Dimensional analysis (C) Elasticity (D) Static friction

12. Select the term described below. Total momentum stays constant when net external impulse is zero. 1
(A) Elasticity (B) Dimensional analysis (C) Static friction (D) Conservation of momentum

13. A wave has frequency 20 Hz and wavelength 2 m. Calculate speed. 1
(A) 39 (B) 40 (C) 42 (D) 41

14. Select the term described below. The turning effect depends on force and perpendicular lever arm. 1
(A) Elasticity (B) Dimensional analysis (C) Static friction (D) Torque

15. Select the term described below. Rotational momentum depends on configuration and angular motion.
(A) Dimensional analysis (B) Elasticity (C) Angular momentum (D) Static friction 1

16. A body starts from rest with acceleration 3 m/s^2 for 4 s. Calculate its displacement.
(A) 26 (B) 23 (C) 25 (D) 24 1

Section B - Short responses

17. A resultant force of 12 N acts on a 4 kg object. Calculate acceleration. 2

18. A 4 kg object moves at 5 m/s. Calculate its kinetic energy. 2

19. A gas receives 140 J of heat and does 40 J of work. Calculate its internal-energy increase. 2

20. A wave has frequency 40 Hz and wavelength 2 m. Calculate speed. 2

21. A body starts from rest with acceleration 4 m/s^2 for 4 s. Calculate its displacement. 2

Section C - Short responses

22. A resultant force of 18 N acts on a 6 kg object. Calculate acceleration. 3

23. A 6 kg object moves at 5 m/s. Calculate its kinetic energy. 3

24. A gas receives 160 J of heat and does 60 J of work. Calculate its internal-energy increase. 3

25. A wave has frequency 60 Hz and wavelength 2 m. Calculate speed. 3

26. A body starts from rest with acceleration 5 m/s^2 for 4 s. Calculate its displacement. 3

27. A resultant force of 24 N acts on a 8 kg object. Calculate acceleration. 3

28. A 8 kg object moves at 5 m/s. Calculate its kinetic energy. 3

Section D - Case and application questions

29. Consider the following case: An expression for speed must have dimensions of length divided by time.

(a) Name the concept demonstrated in the case. 1

(b) Explain how the details of the case support your choice. 1

(c) Explain Projectile motion with another appropriate example. 2

30. Consider the following case: Perpendicular displacement components combine using geometry.

(a) Name the concept demonstrated in the case. 1

(b) Explain how the details of the case support your choice. 1

(c) Explain Newton's second law with another appropriate example. 2

Section E - Extended responses

31. A ball is projected horizontally at 10 m/s from a 20 m high platform. Neglect air resistance and take g = 10 m/s^2. Calculate flight time, horizontal range and speed just before impact. 5

32. A 2 kg block moves on a horizontal surface under a 10 N horizontal pull. Its coefficient of kinetic friction is 0.2. Take g = 10 m/s^2. Calculate normal reaction, friction, acceleration and resultant work over 5 m. 5

33. Derive the orbital speed of a satellite in a circular orbit of radius r around a planet of mass M. State how orbital speed changes if the orbit radius is multiplied by four. 5

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