

Important short questions, chapter-wise:

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Chapter 1:

precision and accuracy definitions, plus all exercise questions

Chapter 2:

complete chapter along with numericals

Chapter 3:

Definitions of elastic collision, inelastic collision, vector, torque, null vector, isolated system, range of projectile, projectile motion, momentum, time of flight of projectile

Exercise short questions: 3.2 – 3.10

Chapter 4:

Definitions of work, energy, power and their units, energy and its types, escape velocity, work-energy principle, Ex Questions: 4.1-4.5, 4.10

Chapter 5:

all exercise questions

Chapter 6:

Exercise short questions (6.2 - 6.8) and definitions of terminal velocity. fluid dynamics, the venturi effect, Stokes' law, equation of continuity, Bernoulli's equation,

Chapter 7:

Ex questions 7.1, 7.2, 7.4, 7.5 - 7.10

Chapter 8: Ex questions 8.4 - 8.8 + definitions of stationary waves, periodic waves, beats

Chapter 9:

Definitions of the wavefront, Hygen's principle, diffraction, uses and properties of x-rays, Ex Questions 9.1-9.7

Chapter 10:

Definitions of critical angle, refractive index, total internal reflection, a convex lens and the concave lens, resolving power and magnification + Ex Questions 10.1-10.5

Chapter 11:

Heat and temperature, the molar specific heat of a gas, reversible process, kinetic theory of gas, Boyle's Law, entropy and negative entropy, Ex Questions: 11.5 -11.13

Important Long Questions and Numerical:

Chapter 2:

1. EXAMPLE NO: 2.5 (from chapter 2)
2. Explain cross product or vector of two vector state right hand rule and give at

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at least four characteristics. 3. Define vector product or cross product. Explain with right-hand rule and give four characteristics of cross product.

Chapter 3:

4. State and explain the law of conservation of linear momentum.
 5. What is a projectile? Derive expressions of the i) Maximum Height ii) Horizontal range.
 6. Find angle of projection of a projectile for which its maximum height and horizontal ranges are equal.
 7. Define elastic and inelastic collisions. Discuss elastic collision in one dimension and show that velocity of approach is equal to the velocity of separation
- NUMERICALS: 3.5, 3.10, 3.11 + Examples 3.2, 3.7

Chapter 4:

8. Define escape velocity. Derive an expression of escape velocity and calculate its value on the Earth's surface.
 9. Define absolute potential energy. Derive its mathematical expression.
 10. Define gravitational field. Show that gravitational field is conservative field.
- NUMERICALS: 4.3, 4.4, 4.7, 4.8 + Examples 4.3

Chapter 5:

11. Explain Rotational kinetic energy. Find rotational kinetic energy of a disc and hoop.
 12. What are geostationary satellites? Derive the relation/expression for radius of geostationary orbit.
- NUMERICALS: 5.6, 5.3, 5.10

Chapter 6:

13. State Bernoulli's theorem. Also derive Bernoulli's equation.
 14. An airplane wing is designed so that the speed of the air across the top of the wing is 450 ms^{-1} the speed of air below the wing is 410 ms^{-1} . What is the pressure difference between the top and bottom of the wings? Density of air = 1.29 kgm^{-3}
 15. What gauge pressure is required in the city mains for a stream from a fire hose connected to the mains to reach a vertical height of 15 m?
- NUMERICALS: 6.1

Chapter 7:

16. Prove that total energy of a mass spring system remains constant.
17. What is simple pendulum? Show that the motion of simple pendulum is simple harmonic motion. Also calculate the time period of the simple pendulum.

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NUMERICAL: 7.1, 7.3 , 7.4, 7.5

Chapter 8:

18. Show that $v_t = v_e + 0.61t$

19. Derive Newton's formula for the speed of sound in air and describe the correction by Laplace in it.

20. Describe the transvers stationary waves in a stretched string. Show that the frequencies of stretched string are quantized.

20. Define Doppler's effect, Derive apparent frequency if. a) Observer moves towards the stationary source b) Observer moves away from the stationary source.

NUMERICALS: 8.5, 8.6

Chapter 9:

21. Discuss in detail the Young's double slit experiment to study the interference of light.

NUMERICAL: 9.7