

1–25: Mechanics & Laws of Motion

1. What is Newton's First Law?

A body remains at rest or in motion unless acted upon by an external force.

2. What is momentum?

Product of mass and velocity ($p = mv$).

3. Unit of force?

Newton (N).

4. What is the SI unit of pressure?

Pascal (Pa).

5. What does a spring balance measure?

Force.

6. Value of acceleration due to gravity (g)?

9.8 m/s².

7. Newton's second law formula?

F = ma.

8. Why is a seat belt used in vehicles?

To counter inertia.

9. What is a scalar quantity?

A quantity with only magnitude.

10. What is a vector quantity?

A quantity with both magnitude and direction.

11. What is work?

Force × displacement.

12. SI unit of work?

Joule.

13. What is power?

Rate of doing work.

14. Unit of power?

Watt.

15.1 HP = ?

746 Watts.

16. What is energy?

Capacity to do work.

17. Law of conservation of energy?

Energy can neither be created nor destroyed.

18. SI unit of energy?

Joule.

19. What is potential energy?

Energy due to position.

20. What is kinetic energy?

Energy due to motion.

21. Formula for kinetic energy?

(1/2)mv².

22. Example of third law of motion?

Recoil of a gun.

23. Why do objects fall?

Due to gravity.

24. Why is work zero when displacement is zero?

Because $W = F \times d$.

25. What is friction?

Force opposing motion.

26–50: Heat, Thermodynamics & Sound

26. SI unit of temperature?

Kelvin.

27.Normal body temperature in Celsius?

37°C.

28.What is conduction?

Heat transfer in solids.

29.What is convection?

Heat transfer in liquids and gases.

30.What is radiation?

Heat transfer without medium.

31.Best conductor of heat?

Silver.

32.Poor conductor of heat?

Wood.

33.What is latent heat?

Heat required to change state without temperature change.

34.What is boiling point of water?

100°C.

35.What is freezing point of water?

0°C.

36.What is sound?

Vibration transmitted through medium.

37.SI unit of frequency?

Hertz (Hz).

38.Speed of sound in air?

343 m/s.

39.In which medium is sound fastest?

Solid.

40.Human audible range?

20 Hz to 20,000 Hz.

41.What is ultrasonic sound?

>20,000 Hz.

42.Example of ultrasonic use?

Sonar.

43.What is echo?

Reflection of sound.

44.Minimum distance to hear echo?

17 meters.

45.What is resonance?

Amplification due to matching frequencies.

46.Sound cannot travel through?

Vacuum.

47.Decibel measures?

Loudness of sound.

48.What is reverberation?

Persistence of sound.

49.Pitch depends on?

Frequency.

50.Loudness depends on?

Amplitude.

51–75: Light, Optics & Modern Physics

51.Speed of light in vacuum?

3×10^8 m/s.

52.SI unit of light intensity?

Candela.

53.Laws of reflection?

Angle of incidence = angle of reflection.

54.What is refraction?

Bending of light.

55.Lens used in microscope?

Convex.

56.Mirror used in car side view?

Convex mirror.

57.Farsightedness is corrected by?

Convex lens.

58.Nearsightedness is corrected by?

Concave lens.

59.What is prism used for?

To disperse light.

60.Rainbow formation is due to?

Dispersion.

61.What is total internal reflection?

Complete reflection within medium.

62.Fiber optics work on?

Total internal reflection.

63.White light is made up of?

7 colors.

64.Which color has highest frequency?

Violet.

65.Which color has longest wavelength?

Red.

66.Unit of electric charge?

Coulomb.

67.What is an electric current?

Flow of electrons.

68.SI unit of current?

Ampere.

69.Device that stores charge?

Capacitor.

70.Ohm's Law?

$V = IR$.

71.SI unit of resistance?

Ohm (Ω).

72.What is AC current?

Alternating current.

73.What is DC current?

Direct current.

74.Battery provides?

DC current.

75.Mains electricity is?

AC (220V, 50Hz in India).

76–100: Nuclear, Magnetism & Miscellaneous

76.SI unit of magnetic field?

Tesla.

77.Earth's magnetism is due to?

Liquid core motion.

78.Magnetic compass works on?

Earth's magnetic field.

79.What is electromagnetic induction?

Production of current by changing magnetic field.

80.Who discovered electromagnetic induction?

Michael Faraday.

81. Transformer works on?

AC current.

82. Primary fuel in nuclear reactors?

Uranium-235.

83. Nuclear energy is produced by?

Fission.

84. Who discovered radioactivity?

Henri Becquerel.

85. Who discovered X-rays?

Wilhelm Röntgen.

86. What is half-life?

Time to reduce radioactive substance to half.

87. Alpha particles are?

Helium nuclei.

88. Beta particles are?

Electrons.

89. Gamma rays are?

Electromagnetic radiation.

90. What is LASER?

Light Amplification by Stimulated Emission of Radiation.

91. Uses of LASER?

Surgery, welding, barcode scanners.

92. What is satellite?

Body revolving around planet.

93. GPS works on?

Satellites.

94. First Indian satellite?

Aryabhata.

95.SI unit of pressure?

Pascal.

96.Barometer is used to measure?

Atmospheric pressure.

97.SI unit of frequency?

Hertz.

98.Which has no mass?

Photon.

99.SI unit of electric energy?

Kilowatt-hour (kWh).

100. Who is called Father of Modern Physics?

Albert Einstein.