

NAWAZ SHARIF SCHOOL OF EMINENCE (NSSE)

Physics Teacher Recruitment Test — Full Practice Paper (100 MCQs)

Total Questions: 100

Total Marks: 100

Time: 120 Minutes

Each MCQ: 1 Mark

★ Yellow highlighted options with ✓ indicate the correct answer

GENERAL INSTRUCTIONS

1. This paper consists of 100 Multiple Choice Questions (MCQs) covering all major Physics topics.
2. Each question carries ONE mark. There is NO negative marking.
3. The correct answer for each question is highlighted in yellow with a tick (✓).
4. Topics: Mechanics, Energy & Work, Waves & Light, Heat & Thermodynamics, Electricity & Magnetism, Modern Physics, Optics & Applied Physics.
5. This paper is intended for self-study and NSSE Physics Teacher recruitment preparation only.

SECTION A — Mechanics

Q1. The SI unit of force is:

- A Joule
- C Newton
- B Pascal
- D Watt

Q2. A body moving with uniform velocity has acceleration equal to:

- A Maximum
- C Zero
- B Minimum
- D Variable

Q3. Newton's second law of motion states that force is equal to:

- A Mass x Velocity
- B Mass x Acceleration
- C Mass x Distance
- D Mass x Speed

Q4. Which of the following is a vector quantity?

- A Mass
- C Speed
- B Temperature
- D Displacement

Q5. The slope of a velocity-time graph represents:

- A Speed
- C Acceleration
- B Distance
- D Momentum

Q6. A ball is thrown vertically upward. At the highest point, its velocity is:

- A Maximum
- C Zero
- B Equal to initial velocity
- D Negative

Q7. The gravitational acceleration near Earth's surface is approximately:

- A 8.9 m/s²
- B 9.8 m/s²
- C 10.8 m/s²
- D 11.2 m/s²

Q8. Newton's third law of motion states that every action has:

- A A greater reaction
- B An equal and opposite reaction
- C A smaller reaction
- D No reaction

Q9. The momentum of a body is defined as:

- A Mass x Distance
- C Mass x Velocity
- B Mass x Acceleration
- D Force x Time

Q10. Which law of motion is related to the concept of inertia?

- A Newton's Second Law C Newton's First Law B Newton's Third Law D Law of Gravitation

Q11. A car travels 150 km in 3 hours. Its average speed is:

- A 30 km/h C 50 km/h B 45 km/h D 60 km/h

Q12. The unit of work is:

- A Watt C Joule B Newton D Pascal

Q13. When an object is in free fall, the only force acting on it is:

- A Air resistance C Normal force B Gravity D Friction

Q14. The principle of conservation of momentum states that:

- A Momentum is always increasing C Total momentum of an isolated system remains constant B Momentum is always decreasing D Momentum depends on friction

Q15. A force of 20 N acts on a body of mass 4 kg. The acceleration produced is:

- A 2 m/s^2 C 5 m/s^2 B 4 m/s^2 D 80 m/s^2

SECTION B — Energy, Work & Power

Q16. The work done by a force is zero when the force is applied at an angle of:

- A 0° C 90° B 45° D 180°

Q17. Kinetic energy of a body depends on:

- A Mass and height C Velocity and height B Mass and velocity D Force and distance

Q18. The formula for potential energy is:

- A $PE = mv^2$ C $PE = \frac{1}{2}mv^2$ B $PE = mgh$ D $PE = Fd$

Q19. The unit of power is:

- A Joule C Watt B Newton D Pascal

Q20. When a spring is compressed, the energy stored is:

- A Kinetic energy C Chemical energy D Elastic potential energy B Thermal energy

Q21. A machine with 100% efficiency:

- A Produces more output than input C Always exists in real life B Has output energy equal to input energy D Generates extra energy

Q22. The law of conservation of energy states that energy:

- A Can be created from nothing C Cannot be created or destroyed, only transformed B Can be destroyed D Increases with time

Q23. Power is defined as:

- A Force per unit area C Energy per unit mass

B Work done per unit time D Force times distance

Q24. A 60 W bulb consumes how much energy in 10 seconds?

A 6 J C 600 J B 60 J D 6000 J

Q25. If the velocity of an object is doubled, its kinetic energy becomes:

A Double C Four times B Triple D Half

Q26. Which of the following is a non-renewable energy source?

A Solar energy C Coal B Wind energy D Hydropower

Q27. The efficiency of a machine is calculated as:

A Input / Output x 100 B Output / Input x 100 C Force / Distance x 100 D Power / Energy x 100

SECTION C — Waves, Sound & Light

Q28. The speed of light in a vacuum is approximately:

A 3×10^8 m/s B 3×10^8 m/s C 3×10^{10} m/s D 3×10^9 m/s

Q29. Sound waves are examples of:

A Transverse waves C Longitudinal waves B Electromagnetic waves D Surface waves

Q30. The number of complete vibrations per second is called:

A Amplitude C Frequency B Wavelength D Period

Q31. The relationship between wave speed, frequency and wavelength is:

A $v = f / \lambda$ B $v = f \times \lambda$ C $v = \lambda / f$ D $v = f + \lambda$

Q32. Which phenomenon explains the bending of light as it passes from one medium to another?

A Reflection B Refraction C Diffraction D Interference

Q33. The unit of frequency is:

A Meter C Hertz B Second D Pascal

Q34. Which type of wave requires a medium to travel?

A Light waves C Sound waves B Radio waves D X-rays

Q35. The phenomenon of total internal reflection is used in:

A Mirrors B Optical fibres C Lenses D Prisms

Q36. The pitch of a sound depends on its:

A Amplitude C Frequency B Speed D Wavelength

Q37. Which colour of light has the highest frequency in the visible spectrum?

- A Red C Green
 B Yellow D Violet ^

Q38. The Doppler effect refers to the change in:

- A Speed of a wave C Observed frequency due to relative motion ^
 B Amplitude of a wave D Wavelength in vacuum

Q39. A concave lens is also known as a:

- A Converging lens C Plane lens
 B Diverging lens ^ D Cylindrical lens

Q40. Echoes are produced due to:

- A Refraction of sound C Reflection of sound ^
 B Absorption of sound D Diffraction of sound

Q41. The audible frequency range for humans is approximately:

- A 0–20 Hz C 20,000 Hz–200,000 Hz
 B 20 Hz–20,000 Hz ^ D 200 Hz–2,000 Hz

Q42. Ultrasonic waves have frequencies:

- A Below 20 Hz C Above 20,000 Hz ^
 B Between 20 Hz and 20 kHz D Exactly 20 Hz

SECTION D — Heat & Thermodynamics

Q43. The SI unit of temperature is:

- A Celsius C Kelvin ^
 B Fahrenheit D Rankine

Q44. Heat transfer through a vacuum is possible only by:

- A Conduction C Radiation ^
 B Convection D All of the above

Q45. The boiling point of water at standard atmospheric pressure is:

- A 90°C C 110°C
 B 100°C ^ D 120°C

Q46. Which law states that the pressure of a gas at constant volume is directly proportional to its temperature?

- A Boyle's Law C Gay-Lussac's Law ^
 B Charles's Law D Avogadro's Law

Q47. The process by which heat is transferred through a solid without movement of material is:

- A Convection C Conduction ^
 B Radiation D Evaporation

Q48. 0°C is equal to how many Kelvin?

- A 0 K C 273 K ^
 B 100 K D 373 K

Q49. Specific heat capacity is the heat required to raise the temperature of:

- A 1 g of substance by 1°F C 1 litre of substance by 10°C
 B 1 kg of substance by 1°C ^ D Any mass of substance by 1°C

Q50. The first law of thermodynamics is related to:

- | | |
|---|--|
| <input type="radio"/> A Conservation of momentum | <input type="radio"/> C Conservation of mass |
| <input checked="" type="radio"/> B Conservation of energy | <input type="radio"/> D Conservation of charge |

Q51. Which of the following is the best conductor of heat?

- | | |
|-------------------------------|---|
| <input type="radio"/> A Wood | <input checked="" type="radio"/> C Silver |
| <input type="radio"/> B Glass | <input type="radio"/> D Rubber |

Q52. The phenomenon of heat transfer through the movement of fluids is called:

- | | |
|------------------------------------|---|
| <input type="radio"/> A Conduction | <input checked="" type="radio"/> C Convection |
| <input type="radio"/> B Radiation | <input type="radio"/> D Sublimation |

Q53. Thermal expansion of a solid refers to the:

- | | |
|---|---|
| <input type="radio"/> A Decrease in volume when heated | <input type="radio"/> C Change in mass when cooled |
| <input checked="" type="radio"/> B Increase in size when heated | <input type="radio"/> D No change in size when heated |

Q54. Which gas law describes the relationship between volume and temperature at constant pressure?

- | | |
|--|--|
| <input type="radio"/> A Boyle's Law | <input type="radio"/> C Gay-Lussac's Law |
| <input checked="" type="radio"/> B Charles's Law | <input type="radio"/> D Avogadro's Law |

SECTION E — Electricity & Magnetism

Q55. The SI unit of electric charge is:

- | | |
|--------------------------------|--|
| <input type="radio"/> A Ampere | <input checked="" type="radio"/> C Coulomb |
| <input type="radio"/> B Volt | <input type="radio"/> D Ohm |

Q56. Ohm's Law states that current is:

- | | |
|---|--|
| <input type="radio"/> A Directly proportional to resistance | <input checked="" type="radio"/> C Directly proportional to voltage at constant resistance |
| <input type="radio"/> B Inversely proportional to voltage | <input type="radio"/> D Equal to resistance x power |

Q57. The unit of electrical resistance is:

- | | |
|--------------------------------|--|
| <input type="radio"/> A Ampere | <input type="radio"/> C Watt |
| <input type="radio"/> B Volt | <input checked="" type="radio"/> D Ohm |

Q58. Electric current is defined as:

- | | |
|---|--|
| <input checked="" type="radio"/> A Charge per unit time | <input type="radio"/> C Power per unit voltage |
| <input type="radio"/> B Voltage per unit resistance | <input type="radio"/> D Energy per unit charge |

Q59. In a series circuit, the total resistance is:

- | | |
|---|---|
| <input type="radio"/> A Less than the smallest resistance | <input type="radio"/> C Always constant regardless of resistors |
| <input checked="" type="radio"/> B Equal to the sum of individual resistances | <input type="radio"/> D Equal to the product of resistances |

Q60. Which of the following is a good conductor of electricity?

- | | |
|--------------------------------|---|
| <input type="radio"/> A Rubber | <input checked="" type="radio"/> C Copper |
| <input type="radio"/> B Glass | <input type="radio"/> D Wood |

Q61. The power consumed by an electrical appliance is given by:

- | | |
|---|-------------------------------------|
| <input type="radio"/> A $P = V/I$ | <input type="radio"/> C $P = V^2/I$ |
| <input checked="" type="radio"/> B $P = VI$ | <input type="radio"/> D $P = I/V$ |

Q62. The phenomenon of electromagnetic induction was discovered by:

- | | |
|--|---|
| <input type="radio"/> A James Watt | <input type="radio"/> C Isaac Newton |
| <input checked="" type="radio"/> B Michael Faraday | <input type="radio"/> D Benjamin Franklin |

Q63. A transformer is used to:

- A Convert AC to DC
- B Store electrical energy
- C Change the voltage of AC
- D Measure current

Q64. The magnetic field around a current-carrying conductor forms:

- A Straight lines
- B Radial lines
- C Concentric circles
- D Parallel lines

Q65. Which device converts mechanical energy into electrical energy?

- A Motor
- B Transformer
- C Generator
- D Capacitor

Q66. Alternating current (AC) changes its direction:

- A Never
- B Once per cycle
- C Periodically (many times per second)
- D Only when switched off

Q67. The formula for calculating electrical energy consumed is:

- A $E = PT$
- B $E = P/T$
- C $E = T/P$
- D $E = P + T$

Q68. Which law relates the force between two charges?

- A Faraday's Law
- B Ohm's Law
- C Coulomb's Law
- D Ampere's Law

Q69. The unit of electrical potential difference is:

- A Ampere
- B Ohm
- C Volt
- D Watt

Q70. In a parallel circuit, the voltage across each component is:

- A Different for each component
- B The same across all components
- C Zero for some components
- D Dependent on resistance only

SECTION F — Modern Physics & Atomic Structure

Q71. The nucleus of an atom consists of:

- A Electrons and protons
- B Protons and neutrons
- C Neutrons and electrons
- D Only protons

Q72. The atomic number of an element represents the number of:

- A Neutrons
- B Protons
- C Electrons and protons
- D Protons only

Q73. Radioactivity was discovered by:

- A Marie Curie
- B Ernest Rutherford
- C Henri Becquerel
- D Niels Bohr

Q74. Which type of radiation is the most penetrating?

- A Alpha particles
- B Beta particles
- C Gamma rays
- D X-rays

Q75. $E = mc^2$ was proposed by:

- A Isaac Newton
- B Niels Bohr
- C Albert Einstein
- D Max Planck

Q76. The half-life of a radioactive substance is the time taken for:

- A All atoms to decay
- B The substance to halve in mass
- C The substance to double in mass

B Half of the radioactive atoms to decay D The radiation to stop completely

Q77. Photoelectric effect proves that light has:

A Wave nature only C No energy
 B Particle nature (photon nature) D Only magnetic properties

Q78. The model of the atom with electrons in fixed orbits was proposed by:

A J.J. Thomson C Niels Bohr D James Chadwick
 B Ernest Rutherford

Q79. Which particle was discovered by J.J. Thomson?

A Proton C Electron D Positron
 B Neutron

Q80. Nuclear fission involves:

A Combining of two light nuclei C Emission of light energy only
 B Splitting of a heavy nucleus into smaller nuclei D Absorption of gamma rays

Q81. Which type of nuclear reaction powers the Sun?

A Nuclear fission C Radioactive decay
 B Nuclear fusion D Electromagnetic induction

Q82. The quantum of light energy is called a:

A Electron C Neutron
 B Photon D Proton

SECTION G — Optics & Measurement

Q83. The focal length of a convex lens is always:

A Negative C Zero
 B Positive D Infinite

Q84. The magnification produced by a plane mirror is:

A +2 C +1 D 0
 B -1

Q85. Which instrument is used to measure very small lengths accurately?

A Metre rule C Barometer
 B Vernier callipers D Thermometer

Q86. The image formed by a convex mirror is always:

A Real, inverted, magnified C Virtual, erect, diminished D Virtual, inverted, magnified
 B Real, erect, diminished

Q87. Snell's law relates to the phenomenon of:

A Reflection C Diffraction
 B Refraction D Dispersion

Q88. A mirage is caused by:

A Reflection of light C Total internal reflection of light D Scattering of light
 B Diffraction of light

Q89. The least count of a Vernier calliper is typically:

A 1 mm C 0.01 mm
 B 0.1 mm D 0.001 mm

Q90. Which mirror is used in car rear-view mirrors?

- A Concave mirror
- B Plane mirror
- C Convex mirror
- D Parabolic mirror

Q91. The refractive index of a medium is defined as:

- A Speed of light in medium / Speed of light in vacuum
- B Speed of light in vacuum / Speed of light in medium
- C Wavelength in medium / Wavelength in vacuum
- D Frequency in vacuum / Frequency in medium

SECTION H — General & Applied Physics

Q92. The instrument used to measure atmospheric pressure is:

- A Thermometer
- B Manometer
- C Barometer
- D Hydrometer

Q93. Pressure is defined as:

- A Force x Area
- B Force / Area
- C Mass / Volume
- D Force x Distance

Q94. Archimedes' principle states that a body immersed in a fluid experiences:

- A A downward force equal to its weight
- B An upward buoyant force equal to the weight of displaced fluid
- C No force from the fluid
- D A horizontal force from the fluid

Q95. The phenomenon responsible for surface tension is:

- A Gravity
- B Adhesion between fluid and container
- C Cohesion between fluid molecules
- D Pressure difference

Q96. Pascal's law states that pressure applied to an enclosed fluid is:

- A Absorbed by the container
- B Transmitted equally in all directions
- C Reduced at greater depth
- D Concentrated at one point

Q97. Which of the following is an example of simple harmonic motion?

- A A car moving on a road
- B A simple pendulum oscillating with small amplitude
- C A ball rolling down a slope
- D A rocket launching

Q98. The time period of a simple pendulum depends on:

- A Mass of the bob and length
- B Length of the pendulum only
- C Mass of the bob only
- D Amplitude of oscillation

Q99. Which branch of physics deals with the study of motion without considering its cause?

- A Dynamics
- B Kinetics
- C Kinematics
- D Statics

Q100. The escape velocity from Earth's surface is approximately:

- A 7.9 km/s
- B 11.2 km/s
- C 15.0 km/s
- D 3.0 km/s