

PHYSICS

For Class-X

1. **SIMPLE HARMONIC MOTION AND WAVES**
 - 1.1 Simple Harmonic Motion (SHM)
 - 1.2 Motion of mass attached to a spring
 - 1.3 Simple pendulum
 - 1.4 Waves, their nature and type
 - 1.5 Properties of waves
2. **SOUND**
 - 2.1 Sound waves
 - 2.2 Speed of sound
 - 2.3 Characteristics of sound
 - 2.4 Noise pollution
 - 2.5 Audible frequency range
 - 2.6 Ultrasound
3. **GEOMETRICAL OPTICS**
 - 3.1 Reflection of light
 - 3.2 Image location by spherical mirror equation
 - 3.3 Refraction of light
 - 3.4 Total internal reflection
 - 3.5 Refraction through a prism
 - 3.6 Image location by lens equation
 - 3.7 Magnifying power and resolving power
 - 3.8 Compound microscope
 - 3.9 Telescope
 - 3.10 Defects in vision
4. **ELECTROSTATICS**
 - 4.1 Electric charge
 - 4.2 Electrostatic induction
 - 4.3 Electroscope
 - 4.4 Coulomb's law
 - 4.5 Electric field and its intensity
 - 4.6 Electrostatic potential
 - 4.7 Applications of electrostatic
 - 4.8 Capacitors and capacitance
 - 4.9 Different types of capacitors
5. **CURRENT ELECTRICITY**
 - 5.1 Electric current
 - 5.2 Potential difference and emf
 - 5.3 Ohm's law
 - 5.4 Resistance, series and parallel combinations
 - 5.5 The I-V characteristics for ohmic and non ohmic conductors
 - 5.6 Electrical power and Joule's law
 - 5.7 Use of circuit components
 - 5.8 Measuring instruments (voltmeter, galvanometer, ammeter)
 - 5.9 Alternating current A.C
 - 5.10 Safety measures
6. **ELECTROMAGNETISM**
 - 6.1 Magnetic effect of a steady current
 - 6.2 Force on a current carrying conductor in a magnetic field

- 6.3 Turning effect on a current carrying coil in a magnetic field
 - 6.4 D.C motor
 - 6.5 Electromagnetic induction
 - 6.6 A.C generator
 - 6.7 Mutual Induction
 - 6.8 Transformer
- 7. INTRODUCTORY ELECTRONICS**
- 7.1 Thermionic emission
 - 7.2 Electron gun and cathode rays
 - 7.3 Deflection of electron by electric field
 - 7.4 Deflection of electron by magnetic field
 - 7.5 Cathode rays oscilloscope (CRO)
 - 7.6 Introduction to electronics
 - 7.7 Analogue and digital electronics
 - 7.8 Logic gates
- 8. INFORMATION AND COMMUNICATION TECHNOLOGY**
- 8.1 Components of ICT
 - 8.2 Flow of information
 - 8.3 Communication technology
 - 8.4 Storing information
 - 8.5 Handling information
- 9. RADIOACTIVITY**
- 9.1 Atom and Atomic nucleus
 - 9.2 Natural radioactivity
 - 9.3 Natural transmutations
 - 9.4 Background radiation
 - 9.5 Half life
 - 9.6 Radio isotopes
 - 9.7 Fission and fusion
 - 9.8 Hazards and safety measures

LIST OF PRACTICALS

1. To study the effect of the length of simple pendulum on its time period and hence find “g” by calculation.
2. To prove that time period of a simple pendulum is independent of (i) mass of the pendulum (ii) amplitude of the vibration.
3. To verify the laws of refraction by using a glass slab.
4. To find the refractive index of water by using concave mirror.
5. To determine the critical angle of glass using a glass prism.
6. To trace the path of a ray of light through glass prism and measure the angle of deviation.
7. To find the focal length of a convex lens by parallax method.
8. To set up a microscope and telescope.
9. Verify Ohm’s law (using wire as conductor).
10. To study resistors in series circuit.
11. To study resistors in parallel circuit.
12. To find the resistance of galvanometer by half deflection method.
13. To trace the magnetic field using a bar magnet.
14. To trace the magnetic field due to a current carrying circular coil.
15. To verify the truth table of OR, AND, NOT, NOR and NAND gates.
16. To make a burglar alarm/fire alarm using an appropriate gate.



Federal Board SSC-II Examination
Physics Model Question Paper

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Roll No:

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Answer Sheet No: _____

Signature of Candidate: _____

Signature of Invigilator: _____

SECTION – A

Time allowed: 20 minutes

Marks: 12

Note: Section-A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 20 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Q.1 Insert the correct option i.e. A / B / C / D in the empty box opposite each part. Each part carries one mark.

i. The relation between V , f and λ of a wave is:

A. $\lambda = Vf$

B. $V = f\lambda$

C. $f = V\lambda$

D. $V = \lambda/f$

ii. What is the frequency of second's pendulum?

A. 0.5 Hertz

B. 1 Hertz

C. 1.5 Hertz

D. 2 Hertz

iii. What is the refractive index of water?

A. 2.42

B. 1.5

C. 1.33

D. 1.00

iv. A converging mirror with a radius of curvature of 20cm creates a real image 30cm from the mirror. What is the object distance?

A. 5.0cm

B. 7.5cm

C. 15cm

D. 20cm

v. S.I. unit of capacitance is:

A. Coulomb

B. Ampere

C. Joule

D. Farad

vi. Which of the following is the unit of specific resistance?

A. ohm

B. ohm metre

C. ohm/metre

D. metre

DO NOT WRITE ANYTHING HERE

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- vii. 05 Joule of work is needed to shift 10 Coulomb of charge from one plate to another. The potential difference between the plates is:
- A. 0.5V B. 2V
C. 5V D. 10V
- viii. Number of switches used in a Magnetic Relay is/are:
- A. 1 B. 2
C. 3 D. 4
- ix. Cathode rays are actually:
- A. X-rays B. Electron beam
C. Magnetic field D. Proton beam
- x. Inverter is another name for _____ Gate.
- A. AND B. NAND
C. NOT D. OR
- xi. 1MB = _____ KB
- A. 10^6 B. 10^{-3}
C. 10^3 D. 1024
- xii. Which type of wave is slower?
- A. Light B. Sound
C. Radio Waves D. Infra-red

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Q No.1: Total Marks:

12

Marks Obtained:



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**Federal Board SSC-II Examination
Physics Model Question Paper**

Time allowed: 2.40 hours

Total Marks: 53

Note: Sections 'B' and 'C' comprise pages 1-2 and questions therein are to be answered on the separately provided answer book. Answer only eleven parts from section 'B' and attempt any two questions from section 'C'. Use supplementary answer sheet i.e. sheet B if required. Write your answers neatly and legibly.

SECTION – B
(Marks: 33)

- Q.2** Attempt any eleven parts from the following. The answer of each part should not exceed 3 to 4 lines.
- (i) What is the advantage of having shock absorbers in a car?
 - (ii) If the length of a simple pendulum is doubled, what will be the change in its time period?
 - (iii) Elephants can communicate effectively with one and another, even when they are separated by many kilometers. Why?
 - (iv) How ultrasound is used to locate under water depths or for locating objects lying deep on the ocean floor?
 - (v) Give the construction and working of a pin hole camera.
 - (vi) A man raises his left hand in a plane mirror, the image facing him is raising his right hand. Explain why?
 - (vii) Explain why a fish under water appears to be at a different depth below the surface than it actually is? Does it appear deeper or shallower?
 - (viii) In a dry day if you walk in carpeted room and then touch some conductor you will get a small electric shock. Can you tell why does it happen?
 - (ix) Why is very dangerous to swim in the open sea, play in an open field or hide under a tree during a thunderstorm?
 - (x) Elaborate on working of Electrostatics Air cleaners.
 - (xi) Why is it advantageous to use "Circuit Breakers" in the wiring of a building?
 - (xii) What is the difference between a generator and a motor?
 - (xiii) Give three reasons to support the evidence that cathode rays are negatively charged electrons.
 - (xiv) Why is optical fiber more useful tool for the communication process?
 - (xv) Give three harmful effects on human beings due to large doses or prolonged small doses of radiations.

SECTION – C
(Marks: 20)

Note: Attempt any two questions.

(2×10=20)

- Q.3** a. Explain image formation with ray diagrams for objects placed at different positions from a convex lens. (06)
b. The power of convex lens is 5 D. At what distance the object should be placed from the lens so that its real and 2 times larger image is formed. (04)
- Q.4** (a) State and explain ohm's law. Give characteristics of ohmic and non ohmic conductors. (06)
(b) If the length of copper wire is 1 meter and its diameters is 2mm, then find the resistance of this cooper wire. (specific resistance of cooper= $1.69 \times 10^{-8} \Omega m$) (04)
- Q.5** (a) Explain the phenomenon of fission reaction. (06)
(b) A radioactive element has a half life of 40 minutes. The initial count rate was 1000 per minute. How long will it take for the count rate to drop to (a) 250 per minute (b) 125 per minute? (04)
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**Federal Board SSC-II Examination
Physics Practical Model Question Paper**

Time allowed: 2 hours

Total Marks: 10

Note: Perform any ONE of the following practicals:

- Q.1 Prove that the time period of a simple pendulum is independent of:
- (i) Mass of the pendulum (2.5)
 - (ii) Amplitude of vibration (2.5)
- Q.2 Trace the path of a ray of light through a glass prism and measure the angle of deviation. (05)
- Q.3 Verify the truth table for AND, OR and NOT gates. (05)
- Note Book (2)
- Viva Voce (3)
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