SECOND TERM SUMMATIVE ASSESSMENT 2026-27

MODEL QUESTION PAPER

PHYSICS

Std: X SET 2 **Score: 40**

Cool-off time: 15 minutes **Time: 1½ Hours**

Instructions

- The first 15 minutes is cool-off time. Use it to read the questions and plan your answers.
- Answer according to the instructions and the score given for each question.
- For questions with a choice (A or B), answer only one.

Answer all questions from 1 to 4. Each question carries 1 score. **(4 × 1 = 4)**

1. Which of the following converts mechanical energy into electrical energy? (1)

A. Electric motor B. AC generator C. Transformer D. Loudspeaker

2. Assertion (A): Danger signals are usually red in colour. (1)

Reason (R): Red light has the longest wavelength in the visible spectrum and is scattered the least.

A. Both A and R are correct and R is the correct explanation of A.

B. Both A and R are correct but R is not the correct explanation of A.

C. A is correct but R is wrong.

D. A is wrong but R is correct.

3. Some statements about a current-carrying solenoid are given. (1)

(i) One end of the solenoid behaves like a north pole and the other like a south pole.

(ii) The magnetic field inside the solenoid is almost uniform.

(iii) The magnetic field inside the solenoid is zero.

(iv) Reversing the current does not change the poles.

Choose the correct statements.

A. (i) and (ii) B. (ii) and (iii) C. (i) and (iv) D. (iii) and (iv)

4. Match the physical quantities with their units. (1)

A	B
a) Electric power	(i) ohm
b) Electrical energy	(ii) watt
c) Resistance	(iii) kilowatt hour

A. a-(i), b-(ii), c-(iii) B. a-(ii), b-(iii), c-(i)

C. a-(iii), b-(ii), c-(i) D. a-(ii), b-(i), c-(iii)

Answer all questions from 5 to 11. Questions 7 and 11 have choice. Each question carries 2 scores. **(7 × 2 = 14)**

5. A boy standing in front of a cliff claps his hands and hears the echo after 2 s. The speed of sound in air is 340 m/s.

a) Find the distance between the boy and the cliff. (1)

b) What is the minimum distance needed to hear an echo distinctly? (1)

6. A beam of white light passes through a glass prism.

a) Name the phenomenon observed. (1)

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b) Which colour deviates the most? Why? (1)

7. (A) A circular coil carries an electric current.

a) How do the magnetic field lines appear at the centre of the coil? (1)

b) Write one way to increase the magnetic field at the centre. (1)

OR

(B) Write two similarities between the magnetic field of a bar magnet and that of a current-carrying solenoid. (2)

8. An electric bulb is marked 60 W, 230 V.

a) What does this marking mean? (1)

b) Calculate the current drawn by the bulb. (1)

9. The metal body of an electric iron is connected to the earth wire.

a) Why is this done? (1)

b) What is the colour of the insulation of the earth wire? (1)

10. An emf is induced in a coil when a magnet is moved near it.

a) Write two factors on which the magnitude of the induced emf depends. (1)

b) Name the instrument used to detect the induced current. (1)

11. (A) A current-carrying conductor placed in a magnetic field experiences a force. What happens to the direction of the force when

a) only the direction of the current is reversed? (1)

b) the directions of both the current and the magnetic field are reversed? (1)

OR

(B) Electricity is transmitted from power stations at very high voltages. Give two reasons. (2)

Answer all questions from 12 to 17. Questions 12 and 17 have choice. Each question carries 3 scores. (6 × 3 = 18)

12. (A) An object is placed 30 cm in front of a concave lens of focal length 15 cm.

a) Find the position of the image. (2)

b) Find the magnification. (1)

OR

(B) The near point of a person's eye is 75 cm.

a) Name the defect of vision. (1)

b) What type of lens is used to correct it? (1)

c) Write one reason for this defect. (1)

13. Blue and yellow lights are mixed together on a white screen.

a) What colour is seen on the screen? (1)

b) What are complementary colours? (1)

c) Why does a sheet of white paper look white in sunlight? (1)

14. A solenoid is connected to a battery. When viewed from end X, the current in the coil flows anticlockwise.

a) Which pole is formed at end X and which at end Y? (1)

b) Name the rule that helps you find this. (1)

c) Write one practical use of a solenoid with a soft iron core. (1)

15. An electric heater is marked 1100 W, 220 V.

a) Find the current through the heater. (1)

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b) Find the resistance of its heating coil. (1)

c) How many units of electrical energy will it consume in 2 hours? (1)

16. Two resistors of 10 Ω and 20 Ω are connected in series to a 30 V supply.

a) Find the current in the circuit. (1)

b) Find the heat produced in each resistor in 10 seconds. (1)

c) Which resistor gets hotter? Why? (1)

17. (A) A step-down transformer changes 230 V to 23 V. The primary coil has 1000 turns.

a) Find the number of turns in the secondary coil. (1)

b) If the current in the secondary is 2 A, find the current in the primary (assume an ideal transformer). (1)

c) Mention one place where a step-down transformer is used. (1)

OR

(B) Electricity generated at 11 kV is stepped up to 220 kV for transmission.

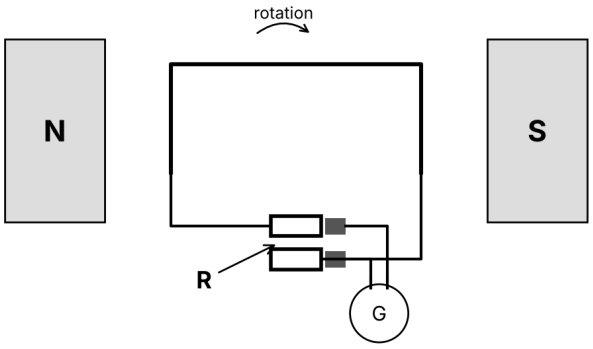
a) Why is the voltage stepped up? (1)

b) Which type of transformer is used at a distribution substation? (1)

c) Write the expression for the energy lost as heat in the transmission lines. (1)

Question 18 has choice. It carries 4 scores. **(1 × 4 = 4)**

18. (A) The figure shows a simple AC generator.



a) On which principle does it work? (1)

b) Write the energy change. (1)

c) Name the parts marked R and identify their function. (1)

d) What change should be made in the generator to get direct current? (1)

OR

(B) Compare an electric motor and an electric generator.

a) Write two differences between them. (2)

b) Name the rule used to find the direction of rotation in a motor and the rule used to find the direction of the induced current in a generator. (2)