Summative Assessment – Term III - 2025-26

SET - A

Sample Question paper

Physics

Class : X

Time : 1 ½ hour

Total Score : 40

Instructions

- The first **15 minutes** is **cool-off time**. This time is meant for **reading the questions** and **planning your answers**.
- This question paper contains **18 questions.**
- In sections **A, B, C, and D**. **Choices** have been provided for questions **5, 11, 12, 14, and 18.**
- For questions with a choice, you only need to answer **one** of them.

SECTION A

Select the correct answer for questions 1 to 4. Each question carries 1 score. (4 x 1 = 4)

1. What happens when the frequency of a sound wave produced near an object is equal to the natural frequency of the object? (1)

i) The object vibrates.

ii) The object reflects the sound wave.

iii) The object is in resonance.

iv) The object produces a different frequency.

Which of the statements is/are correct?

a) iv only, b) i and iii, c) ii and iii, d) iii and iv

2. **Statement :** Myopia (Short sightedness) can be corrected with concave lenses.

Reason : Concave lenses diverge light rays and focus on the retina.

Which of the following options is correct? (1)

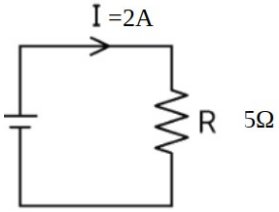
a) Both Statements and reason are correct, and the reason explains the Statement.

b) Both Statements and reason are correct, but the reason does not explain the Statement.

c) The Statement is correct, but the reason is incorrect.

d) The Statement is incorrect, but the reason is correct.

3. The diagram shows a simple electric circuit with a resistor (R) connected to a cell. How much heat is generated in the resistor in 10 s? (1)



a) 100 J

b) 200 J

c) 400 J

d) 800 J

4. Match column A with column B suitably. (1)

Column A	**Column B**
1. AC Generator	(i) Mutual Induction
2. DC Generator	(ii) Motor Principle
3. Loud speaker	(iii) Split ring
4. Transformer	(iv) Slip rings

Select correct options given below:

a) 1 – iv, 2- i, 3 – ii, 4 – iii

b) 1 – iv, 2- iii, 3 – ii, 4 - i

c) 1 – iii, 2- i, 3 – ii, 4 - iii

d) 1 – iv, 2- i, 3 – iii, 4 - ii

SECTION B

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

5 A. A movie projector displays 24 frames per second on the screen.
What is the peculiarity of the eye to see moving pictures like a cinema?
Explain how this peculiarity helps in the perception of moving pictures. (2)

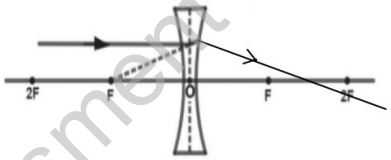
OR

5 B. If two primary colours of light, red and green, overlap on a screen, what secondary colour will be formed? Which is the complimentary colour of this secondary colour? Give reason. (2)

6. A sonar device on a ship sends a sound wave to the sea floor and receives the echo 4 s later. If the speed of sound in water is 1500 m/s, what is the depth of the sea there?

(2)

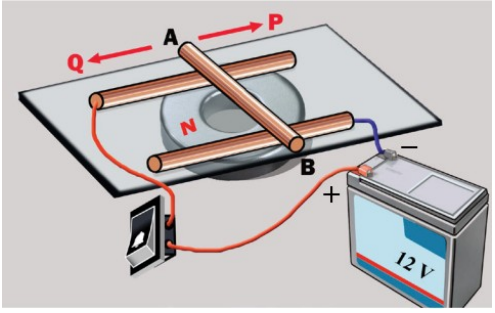
7. The path of a ray of light passing through a concave lens parallel to its principal axis drawn by a child is given below.



a) What is the mistake in the ray diagram? (1)

b) Redraw the correct diagram. (1)

8. In the figure, a conductor AB is arranged across parallel copper wires placed on an acrylic sheet above a ring magnet. A 12V battery is connected to the parallel conductors through a bell switch.

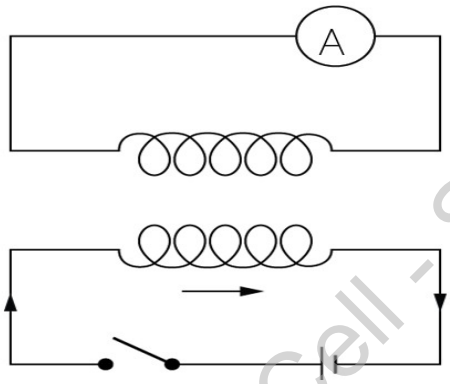


a) Find the direction of motion of the conductor AB when the bell switch is turned ON. Justify your finding. (1)

b) What change should be made to move the conductor AB in the opposite direction? (1)

9. An electric device has a resistance of 30 Ω and is designed to operate at a power of 120 W. What voltage must be applied to get this power? (2)

10. Observe the given picture and answer the following questions



a) An electric current is not continuously produced through the secondary coil when the switch is turned ON? Explain why? (1)

b) What change should be made in the primary circuit to ensure a continuous electric current in the secondary coil? (1)

11 A. A wheel and axle system is used to lift a load of 500 kg. If the radius of the wheel is 0.8 m and the radius of the axle is 0.2 m, what is the force required to lift the load? (2)

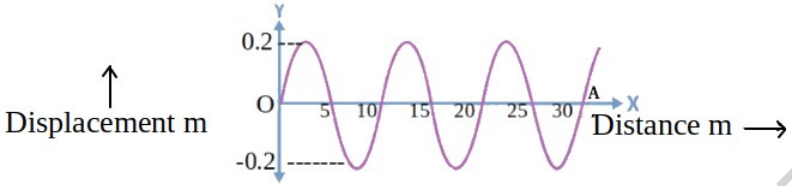
OR

11 B. A force of 100 N is required to push a load up an inclined plane of length 5 m and height 3 m. Calculate the mechanical advantage of the inclined plane. (2)

SECTION C

Answer questions 12 to 17, each question carries 3 scores. Questions 12 and 14 have choices. **(6 x 3 = 18)**

12 A. The state of vibration of the particles of the wave at a particular instant is depicted.



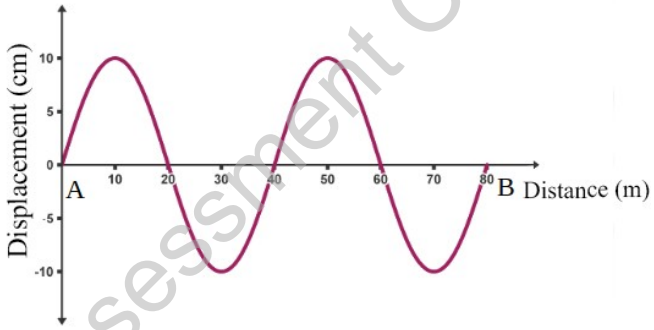
a) What is amplitude of this wave? (1)

b) If it takes 3 s to travel from O to A, find frequency of the wave. (1)

c) Find period of this wave. (1)

OR

12 B. A wave travels from A to B in 1s is depicted below

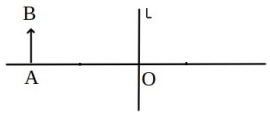


a) Which type of waveform is indicated in the figure? (1)

b) How does speed of the wave be found by relating wavelength and frequency? (1)

c) What is the speed of this wave? (1)

13. In the image, AB is an object placed on the principal axis of lens L. The image formed by the lens is erect and magnified.



a) Identify the lens indicated in the figure. Give reason. (1)

b) Draw the ray diagram for the image formation. (2)

14 A. An ideal transformer has a primary coil of 1000 turns and a secondary coil of 500 turns. If the primary voltage is 120 V,

a) what is the secondary voltage? (1)

b) what is the output power of the transformer when the input current is 5A? (2)

OR

14 B. An ideal transformer has input voltage of 220 V and output voltage of 110 V. If the input current is 2 A.

a) calculate the output current. (1)

b) Find the ratio of number of turns in primary to secondary coils, (1)

c) If an electrical appliance with 110 V, 500 W power is connected to the secondary of a transformer and operated, will the actual power be available? Explain. (1)

15. A plant with green leaves and red flowers is kept in red light

a) What will be the observed colours of leaves and flowers? Give reason. (2)

b) If a yellow flower is kept in the same light. What will be the observed colour? (1)

16. The following appliances are used daily in a house.

i. A 200 W television for 5 hours.

ii. Five 40 W LED bulbs for 4 hours each.

Calculate the total electricity bill for 30 days. If the cost of electricity is ₹ 5.00 per unit (kWh). (3)

17. The image shows a nail being pulled out using a nail puller.

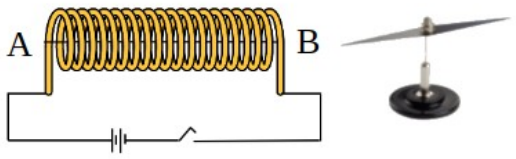
a) Which type of lever is a nail puller? Why? (1)

b) A force of 50 N had to be applied to pull out the nail. If the mechanical advantage of the nail puller is 5, what was the force experienced by the nail? (2)

SECTION D

Answer any 1 question. Each carries 4 scores. **(4 x 1 = 4)**

18 A. A magnetic needle is arranged near the end B of a solenoid named AB.



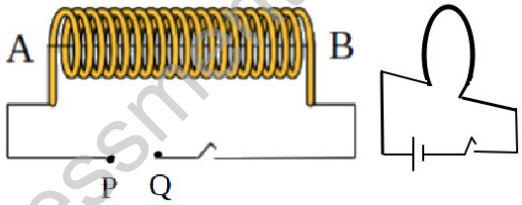
a) Which pole of the magnetic needle is attracted to B when the switch is turned ON? (1)

b) Explain how you arrived at this answer. (1)

c) Suggest 2 ways to increase the magnetic strength of a solenoid carrying an electric current. (2)

OR

18 B. A current carrying circular loop is arranged near the end B of a solenoid AB. In order to get a current through the solenoid a cell is to be connected between P and Q.



a) Which terminal of a cell should be connected to the point P so that the conductor loop is repelled from the end B? (1)

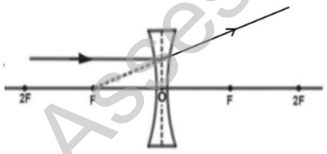
b) When the flux produced by the solenoid is increased, what change occurs to the flux produced by the single loop? (1)

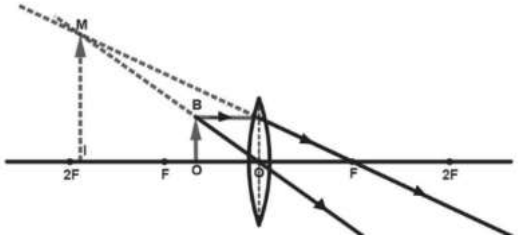
c) If the positive terminal of the cell is connected to the point P and the negative terminal to the point Q, at which end of the solenoid will North pole be formed? (1)

d) How does the magnetic field produced around a current carrying solenoid differ from the magnetic field around a bar magnet? (1)

Summative Assessment – III -2025-26
Model Question Paper
PHYSICS - X
Answer key

SET - A

Qn No	Answer	Score	Total Score
	SECTION A		
1	b) i and iii	1	1
2	a) Both Statement and reason are correct, and the reason explains the Statement.	1	1
3	b) 200 J	1	1
4	b) 1 – iv, 2- iii, 3 – ii, 4 - i	1	1
	SECTION B		
5A	Persistence of Vision Correct Explanation	1 1	2
5B	Yellow Blue Correct Explanation	1 ½	2
6	$d = \frac{(v \times t)}{2}$ $= \frac{(1500\ m/s \times 4s)}{2}$ $= 3000\ m$	1 1	2
7	a) Concave lens is a diverging lens b) 	1 1	2
8	a) Towards Q b) Change the poles of the ring magnet OR Change the terminals of the battery	1 1	2
9	$P = \frac{V^2}{R}$ $V = \sqrt{(P \times R)}$ $V = \sqrt{(120\ W \times 30\ \Omega)}$ $= \sqrt{3600}$ $= 60\ V$	1 1	2

10	a) DC source is connected in primary circuit. Correct explanation b) Connect AC source instead of DC	1 1	2
11A	Mechanical advantage $= \frac{\text{Radius of wheel}}{\text{Radius of axle}}$ $= \frac{0.8\ m}{0.2\ m} = 4$ Force required $= \frac{\text{Load}}{\text{Mechanical advantage}}$ $= \frac{500\ \text{kg} \times 9.8\ \text{m}/s^2}{4}$ = 1225 N	1 1	2
11B	OR Mechanical Advantage (MA) $= \frac{\text{Length}}{\text{Height}}$ $= \frac{5\ \text{m}}{3\text{m}}$ = 1.67	1 1	2
	SECTION C		
12A	a) amplitude, a = 0.2 m b) Number of vibrations of the particles of the medium in 1s frequency, f $= \frac{3}{3}$ = 1 Hz c) T $= \frac{1}{f}$ = 1s	1 1 1	3
12B	a) Transverse wave or Longitudinal b) v = fλ c) Distance travelled by the wave in 1s = 2Hz × 40m = 80 m/s	1 1 1	3
13	a) Convex Lens, any correct justification b)  	1 2	3

14 A	a) 60 V b) input power t = output power output power = 600 W	1 1 1	3
14 B	$\frac{V_p}{V_s} = \frac{I_s}{I_p}$; $I_S = 4$ A $\frac{N_p}{N_s} = \frac{V_p}{V_s} = 2:1$ No, Out put power = $V_S \times I_S$ $= 110 \times 4 = 440$ W Correct explanation	1 1 1	3
15	a) leaves - Dark Flowers - Red b) Yellow Flower – Red	1 1 1	3
16	**Television :** $E_{TV} = 1 \times 200W \times 5\ h = 1000\ Wh$ **LED Bulbs** $E_{bulbs} = 5 \times 40W \times 4\ h = 800\ Wh$ Total Daily E = 1000Wh + 800Wh = 1800 Wh Total Monthly E (Wh) = 1800Whday × 30days = 54000Wh Total Monthly E (kWh) = $\frac{54000}{1000Wh} = 54kWh$ Cost = Units consumed (kWh) × Cost per unit Cost = 54units × ₹5.00/unit Total Cost = ₹ 270.00	1 1 1	3
17	a) First Order $M A = \frac{Load}{Effort}$ $5 = \frac{Effort\ Load}{50\ N}$ Load = 5×50 N Load = 250 N	1 1 1	3

SECTION D			
18 A	a) South b) Correct Explanation c) Any two methods	1 1 2	4
18 B	a) Negative b) No Change c) B d) Strength can be increased/ Poles can be changed	1 1 1 1	4