

## 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 **6, 8, 14, 17 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. **Statement 1** : When the number of turns of coils in a solenoid carrying a constant current increases, the total flux in the solenoid increases.

**Statement 2** : When the number of turns of coils in a solenoid carrying a constant current increases, the flux through a single turn of coil does not increase. (1)

- a) **Statement 1 and Statement 2** are correct.
- b) **Statement 1 and Statement 2** are not correct.
- c) **Statement 1** is correct, but **Statement 2** is not correct.
- d) **Statement 1** is correct, but **Statement 2** is not correct.

2. Which of the following is the correct relationship when the phenomena in columns P and Q are appropriately paired? (1)

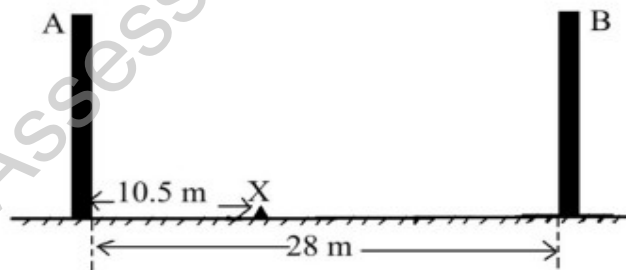
P	Q
A) Dispersion	i) The rainbow
B) Scattering	ii) Path of light is visible
C) Tyndall effect	iii) Blue colour of the sky
	iv) Persistence of vision

- a) A-iii, B -ii, C-i
  - b) A-ii, B-iii, C-i
  - c) A-i, B-iii, C-ii
  - d) A-i, B-iv, C-iii
3. How many hours does an appliance of power 1000 W work to use 1 kilowatt-hour of electrical energy? (1)
4. Choose the correct statement associated with the wheel and axle mechanism, from the following? (1)
- i) The mechanical advantage is greater than one.
  - ii) The work done by effort and the work done by load are equal.
  - iii) The effort arm is shorter than the load arm.
  - iv) The radius of the wheel is larger, and the radius of the axle is smaller.
- a) i,ii and iii    b) i, ii and iv    c) ii, iii and iv    d) i, iii and iv

### SECTION B

**Answer questions from 5 to 11. Questions 6 and 8 have a choice. Each question carries 2 score. (7 x 2 = 14)**

5. Observe the picture.



A and B are two walls. The distance between them is 28 m. A person claps at a position marked X. The distance from the wall A to X is 10.5 m.

- a) Which wall produces the first echo that can be clearly heard by the person? (1)
- b) How much time will it take to hear the first echo of the clap?  
(Consider the speed of sound in air as 350 m/s). (1)

**6A.** Following lenses are given to you.

- Convex lens with focal length 100 cm
- Concave lens with focal length 100 cm
- Convex lens with focal length 10 cm
- Concave lens with focal length 10 cm

Select the suitable lenses for the objective and eyepiece to construct a telescope. Justify your answer. (2)

**OR**

**6 B.** A compound microscope magnifies objects.

a) Where must an object be placed with reference to the objective lens? (1)

(At F, between F and 2F, beyond 2F, between F and the lens)

b) Why should the object **not** be placed at any of the other given positions? (1)

**7.** What is meant by carbon footprint? Suggest any one method to reduce the carbon footprint. (2)

**8 A.** An object appears green in green light, red in red light, and dark in blue light.

a) What is the colour of this object in white light? Why? (1)

b) In which colour will this object appear in cyan light? Why? (1)

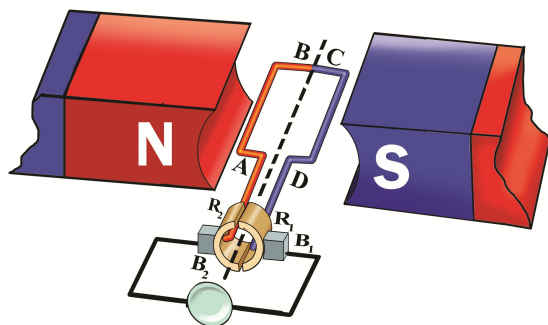
**OR**

**8 B.** White light is passed through a magenta filter, then through a yellow filter, and finally through a red filter, and projected onto a white wall.

a) Which colours of light will pass through the magenta filter? Why? (1)

b) Which colour will fall on the white wall? Why? (1)

9. Observe the figure.



- a) What form of electricity is obtained in the external circuit when the armature of this device rotates? Justify the answer. (1)
- b) If the armature is kept stationary and the field magnet is rotated, what form of electricity will be obtained in the external circuit? What is the reason? (1)
10. A transformer without any power loss operating at 240 V has 3000 turns in the primary and 750 turns in the secondary.
- a) What is the voltage across the secondary? (1)
- b) If the power in the secondary is 480 W, what is the primary current? (1)
11. The important part of a safety fuse is the fuse wire.
- a) What are the properties of a fuse wire? (1)
- b) What situations could lead to an excessive current that causes a fuse wire to melt? (1)

### SECTION C

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

12. The distance between a compression and the adjacent rarefaction of a sound wave is 17.5 cm. This wave takes 2 s to travel a distance of 1400 m.
- a) What is the wavelength of the wave? (1)
- b) What is the frequency of the wave? (2)

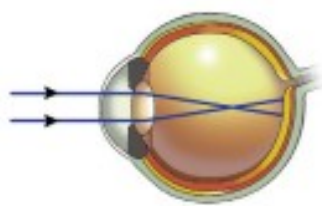
13. An object placed in front of a lens produces an erect image. Here magnification is  $\frac{1}{2}$ .
- a) What is the height of the object compared to the height of the image? (1)  
(Half / Double / Same size / Four times)

b) Draw the image formation in this case. (2)

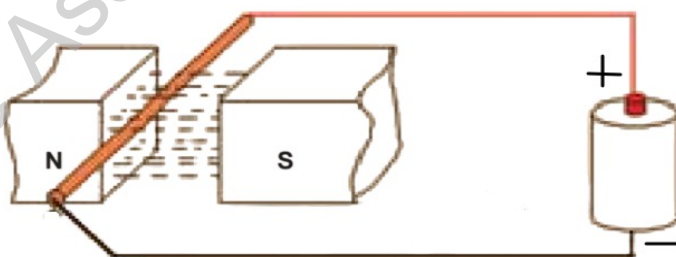
- 14 A. a) What is the distance to the near point for a healthy human eye? (1)  
b) How does this distance change for a person suffering from presbyopia? (1)  
c) The power of accommodation for them is (higher/lower). (1)

OR

14 B. Observe the figure.

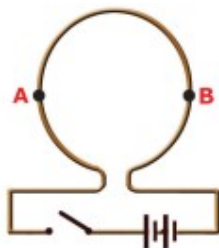


- a) Where is the far point of individuals with this defect? (1)  
(At Infinity / At a certain distance from the eye / 25 cm)
- b) Write two reasons for this defect. (1)
- c) How can this defect be corrected? (1)
15. Observe the figure showing a conductor connected to battery and placed between the magnetic poles N and S,



- a) What is the direction of force on the conductor? Which law helped to find this? (2)
- b) Explain why the conductor is moving in this direction. (1)

16. A conducting wire AB is bent in the form of a loop. The two ends of this wire are connected to a battery.



- What is the direction of the magnetic field formed around the conductor at points A and B when the switch is turned on? (1)
  - Explain how will you determine the direction of the magnetic field when current passes through the conducting loop. (2)
- 17A. An electric heating appliance marked 800 W, 240 V operates for 10 minutes.
- Calculate the quantity of heat produced. (1)
  - What will be the power of the appliance if the voltage is 120 V? (2)

OR

- 17B. A heating appliance is marked 1000 W, 230 V.
- What does it mean? (1)
  - What will be the resistance of this appliance? (1)
  - If we change the labelling of the same device as 250 W, X ; find the value of X? (1)

#### SECTION D

Answer any 1 question. Each carries 4 score.

(4 x 1 = 4)

- 18A. A 1200 kgwt load is lifted to the top of a 3 m high building using a 9 m long inclined plane.
- How much force is required to lift this load along the inclined plane? (2)
  - Prove that there is no gain in work in using the inclined plane during this process. (2)

OR

- 18B. Screw Jacks are used to lift objects easily. 30 cm length of the threaded region of the screw contains 15 screw threads. The length of each thread is 10 cm.
- What is meant by pitch of a screw? (1)
  - Calculate the mechanical advantage of this screw jack. (3)

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

SET- C

Sl. No.	Answer/Value Points	Score	Total Score
1	a) <b>Statement 1 and Statement 2 are correct.</b>	1	1
2	c) A-i, B-iii, C-ii	1	1
3	1 h	1	1
4	b) i, ii, iv	1	1
5	a) B	1	2
	b) $t = \frac{2d}{v}$ , $t = \frac{(2 \times 17.5)}{350}$ $= \frac{(35)}{350} = 0.1 \text{ s}$	1	
6A	a) Objective- Convex lens with 100 cm focal length Eyepiece- Convex lens with 10 cm focal length	1	2
	b) To form large and clear image of the far away object	1	
6B	a) between F and 2F	1	2
	b) If the object is placed at F, image is formed at infinity. If the object is placed beyond 2F, the image formed will be smaller. If the object is placed between F and the lens, the image formed will be virtual.	1	
7	Carbon footprint-definition	1	2
	Any one method to decrease carbon footprint	1	
8A	a) Yellow. An object appears green in green light, red in red light, and dark in blue light, and its color is yellow. Yellow is a combination of the primary colors green and red. It reflects the yellow colour in the white light.	1	2
	b) Green, Cyan is the combination of the primary colours green and blue.	1	
8B	Red, Blue. Reason : The reason is that magenta is a secondary colour formed by combining the primary colours red and blue.	1	2
	Red and blue colors in the white light, pass through a magenta filter. Only the red colour then passes through a yellow filter. The emerging red colour also passes through a red filter. The color that falls on the white wall is red.	1	

9	a) DC, In a DC generator, the AC produced in the armature is converted into DC in the external circuit using a split-ring commutator system.	1	2
	b) AC, Due to the armature not rotating, the position of the split ring commutators does not change.	1	
10	$V_s = N_s \times \frac{V_p}{N_p}$	$\frac{1}{2}$	2
	$V_s = 60 \text{ V}$	$\frac{1}{2}$	
	$I_p \times V_p = P$	$\frac{1}{2}$	
	$I_p \times 240 = 480$	$\frac{1}{2}$	
11	$I_p = 2 \text{ A}$		2
	a) Low melting point	1	
	Over loading, short circuit	1	
12	a) Wavelength = $17.5 \times 2 = 35 \text{ cm}$ $= 0.35 \text{ m}$	1	3
	b) $v = \frac{D}{t}$ $v = 700 \text{ m/s}$	1	
	Frequency = $\frac{700}{0.35} = 2000 \text{ Hz}$	1	
13	a) Double	1	3
	b) Correct Ray diagram of image formation	2	
14A	a) 25 cm	1	3
	b) More than 25 cm	1	
	c) less	1	
14B	a) At a certain distance from the eye	1	3
	b) The size of the eyeball is larger, the power of the lens is more	1	
	Use concave lens of suitable focal length	1	



15	In the upward direction	1	3
	Fleming's left hand rule (Explanation specifying the upward direction of force, using the direction given by Fleming's left hand rule)	1	
	Force is experienced by a current carrying conductor placed in a magnetic field its direction is given by Fleming's left hand rule.	1	
16	a) At A – anticlockwise direction b) At B – clockwise direction or any relevant answer	1	3
	c) If the direction of the current in the conductor loop is clockwise, the direction of the magnetic field will be into the coil. Using right hand thumb rule.	2	
17A	a) $H = P \times t$ $H = 800 \times 10 \times 60$ $H = 480000 \text{ J}$	$\frac{1}{2}$ $\frac{1}{2}$	3
	b) $P = \frac{V^2}{R}$ $R = \frac{V^2}{P} = 240 \times \frac{240}{800} = 72\Omega$ $P = \frac{V^2}{R} = 120 \times \frac{120}{72} = 200 \text{ W}$ $P = 200 \text{ W}$	1 1	
17B	a) When there is a potential difference of 230 V, the device works with a power of 1000 W.	1	3
	b) $R = \frac{V^2}{P}$ $R = 52.9 \Omega$	$\frac{1}{2}$ $\frac{1}{2}$	
	c) $P = 250 \text{ W}$ $P = \frac{V^2}{R}$ $V^2 = PR = 250 \times 52.9 = 13225$ In the label X stands for, $V = 115 \text{ V}$	1	
18A	a) $E = \frac{(L \times h)}{t}$ $E = 4000 \text{ N}$	2	4
	When lifted directly $W = F \times s = 12000 \times 3 = 36000 \text{ J}$	1	
	When lifted through the inclined plane $W = F \times s = 4000 \times 9 = 36000 \text{ J}$	1	

<b>18B</b>	a) Pitch is the distance between the two consecutive threads.	1	4
	Pitch = $\frac{30}{15} = 2 \text{ cm}$		
	Length of one thread = 10 cm	1	
	Mechanical advantage = $\frac{\text{Length of one thread}}{\text{pitch}}$	1	
	Mechanical advantage = $\frac{10}{2} = 5$	1	

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