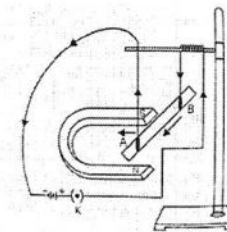


**MODEL PAPER**  
**CLASS X**  
**PHYSICS**

- 1) An object is placed 20 cm in front of a concave mirror of focal length 15 cm. The image formed will be:
 

|                                 |                                  |     |
|---------------------------------|----------------------------------|-----|
| a) Real, inverted and magnified | b) Real, inverted and diminished |     |
| c) Virtual, erect and magnified | d) Virtual, erect and diminished | (1) |
- 2) Which of the following statement about magnetic field lines of magnetic field is incorrect? (1)
  - a) North pole of the magnetic compass is assumed to point in the direction of magnetic field at a point.
  - b) Magnetic field lines are curled and closed.
  - c) Zero field strength is represented by parallel and evenly spaced magnetic field lines.
  - d) The degree of closeness of the field lines indicates the relative strength of the magnetic field.
- 3) Assertion: When the resistances are connected end-to-end consecutively, they are said to be in series.  
Reason: In case the total resistance is to be increased, then the individual resistances are connected in series. (1)
- 4) Define electric power. Write its SI unit. A kettle of 2kW is operated at 220V supply. Calculate the amount of current drawn from the supply. (2)
- 5) Define electric current. Write the unit used for electric current.  
If you pass 700mA of current through a bulb. How many electrons will pass through the filament in 10 min? (2)
- 6) A spherical lens of focal length 20 cm forms a 3 times magnified image of an object on a screen. Find the position of object and image. Draw a ray diagram to show the image formation. (3)
- 7) Draw a ray diagram for the following cases.
  - a) When a ray of light passing through center of curvature of a convex mirror is incident on it.
  - b) A ray of light parallel to principal axis is incident on concave mirror.
  - c) A ray of light passing through focus of convex mirror is incident on it. (3)
- 8) A horse shoe magnet and a current carrying conductor is placed perpendicular to the magnetic field as in figure. What will happen to the displacement of the conductor if
  - a) current through the conductor is increased.
  - b) A horse shoe magnet is replaced by another strong horse shoe magnet.
  - c) The length of the conductor is increased.
  - d) State the rule used to determine the direction of force acting on the conductor. (3)



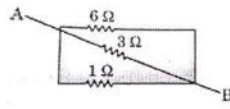
- 9) (a) "A convex lens can form a magnified erect as well as magnified inverted image of an object placed in front of it". Draw ray diagram to justify this statement stating the position of the object with respect to the lens in each case.  
(b) An object of height 4 cm is placed at a distance of 20 cm from a concave lens of focal length 10 cm. Use lens formula to determine the position of the image formed.

**OR**

- (i) Which mirror is used as a rear-view mirror? Write any two reason to support your answer. Draw ray diagram to show formation of image by this mirror when the vehicle is behind it at some distance.
- (ii) A mirror used in car to see traffic behind it is having focal length 3m. if another car is located at 1m from the first car. Find the position nature and magnification of the image formed in the mirror.

- 10) What Ranjan connected two or more resistances in such a way that the same potential difference gets applied to each of them. This kind of connection is said to be parallel. When she joined two or more resistances in parallel to one another then the same current gets additional path to flow and the overall resistance decreases. The equivalent resistance is given by

$$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$



- a) Ranjan connected three resistances as in figure below. Calculate the equivalent resistance between points A and B. (1)
- b) If n number of resistors of resistance R are connected in parallel then how much will be the equivalent resistance. (1)
- c) When a 12m wire divided into three equal pieces and its ends are twisted together, find the resultant resistance. (2)
- OR**
- d) If Ranjan connected three resistances 2Ω, 7Ω & 9Ω in parallel then what will be the equivalent resistance. If they are connected across a battery of 12V then how much will the current through 2Ω resistance. (2)

**DELHI PUBLIC SCHOOL , BHILAI**  
**MODEL QUESTION : SAMPLE PAPER**  
**SUBJECT – SCIENCE**  
**CLASS- X**  
**( Physics =25 Marks)**

**MM 80**  
**TIME: 3 hrs**

Q.1 A circuit has a fuse of 5A .What is the maximum number of 100 watt (220V) bulbs which can be safely used in the circuit –

- a) 1            **b) 11**            c) 22            d) 20 (1)

Q.2 Assertion : Resistance of a conductor depends on length, area of cross section and nature of the material of the conductor .

Reason : Resistivity does not depend on the nature of material but it only depends on the dimension of the conductor. (1)

Q.3 When a straight conductor is carrying current perpendicularly upward then as per right hand thumb rule

- (1)
- a) Direction of magnetic field lines around it will be as concentric circles pointing clockwise.  
b) Direction of magnetic field lines around it will be as concentric circles pointing anticlockwise.  
c) There will be parallel and straight magnetic field lines around it.  
d) None of the above.

Q.4 a) Why does glass slab not split white light into seven colours ? (2)

b) Why is the colour of sky blue during the day ? Explain.

Q.5 Draw the pattern of magnetic field due to a current carrying solenoid. (2)

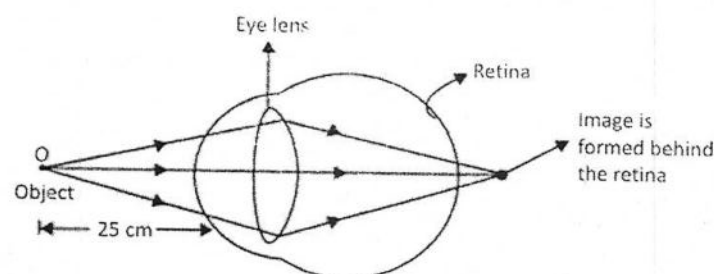
Also indicate the pattern of magnetic field found inside the solenoid ?

Q.6 i) Write position, nature and size of image formed in each of the following cases (Fig not required) ,when-

- a) an object is placed beyond centre of curvature of a concave mirror.  
b) an object is placed between F and 2F of a convex lens convex lens .  
c) an object is placed just before a convex mirror .

d) an object is placed at infinity before a concave lens. ii) Magnification produced by a spherical mirror is  $-3$ . What would be the nature and size of the image formed in this case ?

Q.7



- a) Name the kind of eye defect shown by above diagram of human eye .  
b) Write two causes of this eye defect .  
c) Draw diagram to show correction of this defect using suitable lens.  
(3)

Q.8 State i) Maxwell's Right Hand Thumb Rule for magnetic field around a straight conductor carrying current.

- ii) Fleming 's Left hand rule for force on a conductor carrying current, placed in a magnetic field.    iii) Any One advantage of parallel domestic wiring over series one.    (3)

- Q10 a) Derive an expression for equivalent resistance of the three resistors connected in parallel.  
 b) Study the circuit diagram Fig- 2, Given  $R_1 = 7.2 \Omega$ ,  $R_2 = 8 \Omega$  and  $R_3 = 12 \Omega$  find the value of i) Equivalent resistance ii) Current through resistance  $R_1$  iii) potential difference across resistance  $R_1$ .

(5)

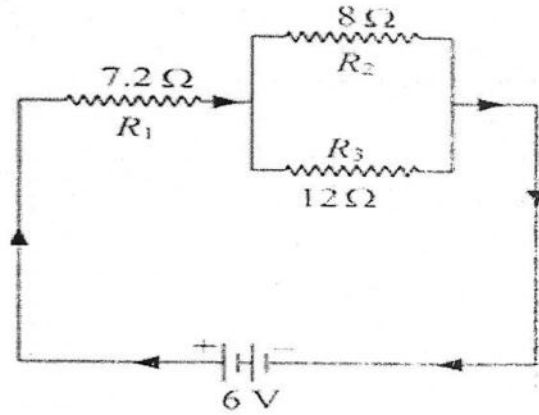
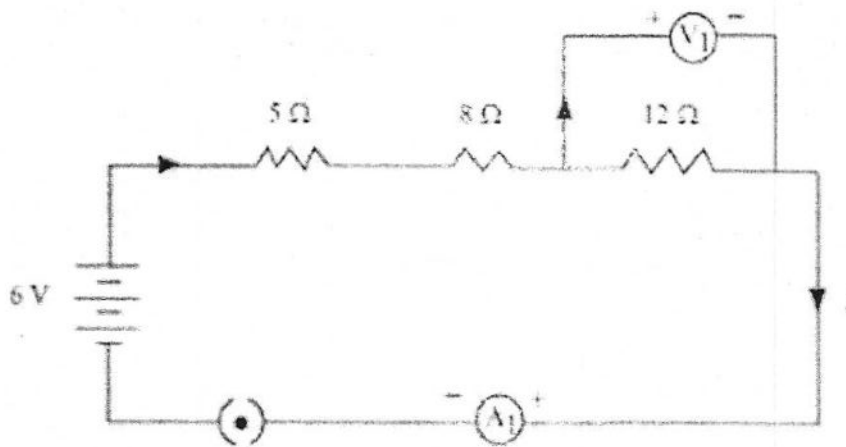


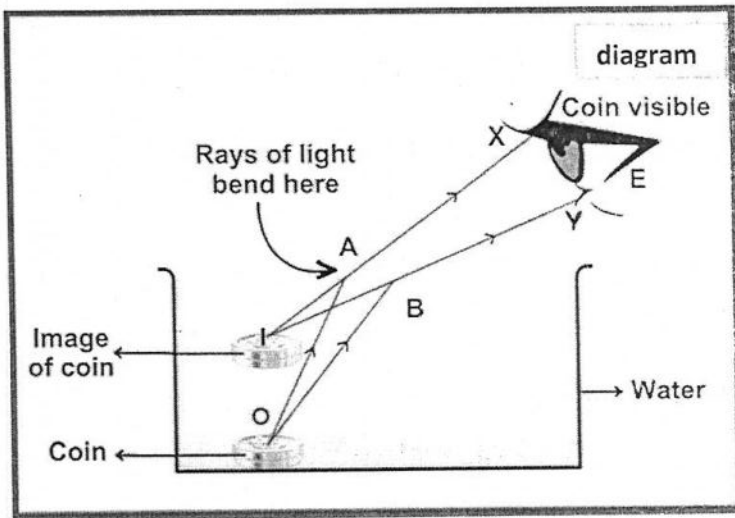
Fig-2

OR a) Write Statement of Ohm's Law . Also Draw labelled Circuit diagram used for Experimental Verification of Ohm's Law. What slope of V-I graph indicate?

- a) b) Study following circuit diagram and Find readings of potential difference  $V_1$  across  $12 \Omega$  resistor and Circuit Current  $A_1$



Q.10 Study the diagram drawn below and read the given passage and answer the questions based on passage and related studied concept.    (4)



- a) Which is greater here apparent depth or real depth for the coin ?
- b) How does a ray of light bend when it passes from denser ( water) to rarer medium (air ).show in a ray diagram.
- c) Write two examples where similar illusion can be seen in daily life due to refraction.
- OR
- c) State Snell's Law and write formula for Refractive Index relating angle of incidence and angle of refraction.

**Prepared by-Rajendra prasad Sinha**

**For Class X, Sample Paper 2024 , physics MM 25**

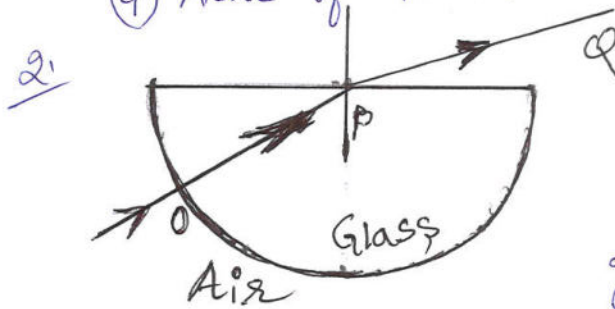


SAMPLE PAPER 2024-25

CLASS - X

(PHYSICS) (25 MARKS)

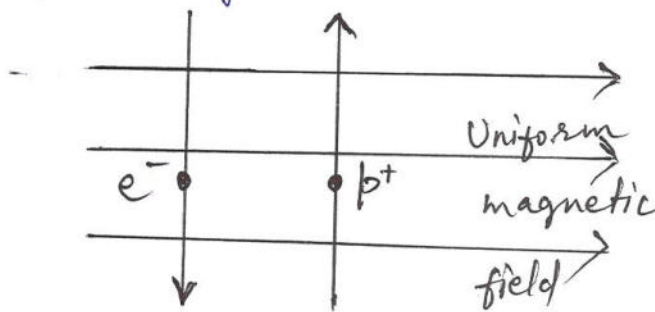
1. If the size of scattering particles is large enough then — (1)
- (a) the light won't get scattered
  - (b) the scattered light may appear blue
  - (c) the scattered light may appear white
  - (d) None of these.



The angle of incidence from air to glass at the point O, on hemispherical glass slab is — (1)

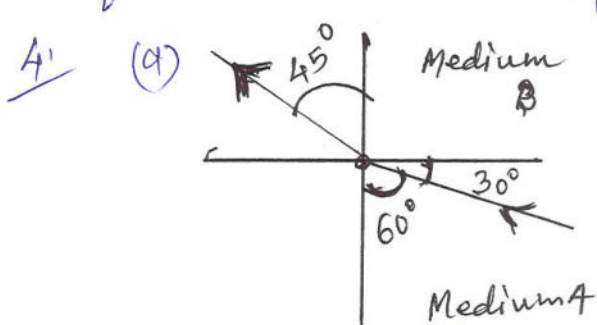
- (a)  $45^\circ$  (b)  $0^\circ$  (c)  $90^\circ$  (d)  $180^\circ$

3. The diagram given here represents movement of charged particle in uniform magnetic field (1)



Assertion: Both electrons & positron experience forces, into the plane of paper.

Reason: - Direction of force on charge moving in magnetic field is decided by right hand thumb rule.

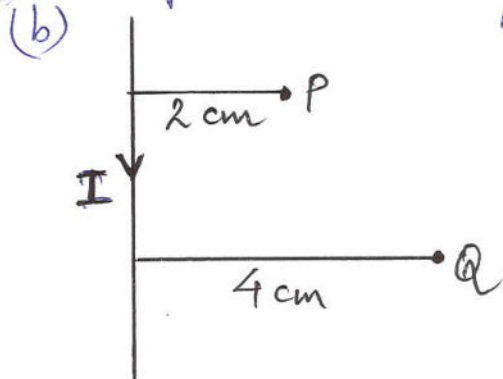


Determine the refractive index of medium 'B' relative to medium 'A'.

- (b) Speed of light in a transparent medium is 0.6 times that of speed of light in vacuum, what is the refractive index of medium.

8. Is the position of stars as seen by us, its actual position? Justify your answer and also mention the name of related phenomenon. (2)

6. (a) For a heater rated as  $1\text{ kW}$  and  $220\text{ V}$ , calculate energy consumed in  $2\text{ hrs}$  and current through coil. (3)



In the given diagram, if field at Q point is  $8\text{ T}$ , then what will be field at P point? Explain your answer briefly. (Given I is constant current)

7. M is a transparent device which causes refraction of light incident on it. The refracting faces of device M form some angle 'G' which can be either an acute angle or right angle. Identify M & G and draw a ray diagram showing path of ray of light incident on one refracting face of device M at obliquely. (Min 3 labellings). (3)

8. (a) When an object of height  $4\text{ cm}$  is placed at a distance of  $30\text{ cm}$  from a concave mirror, it forms real image at a distance of  $15\text{ cm}$  from mirror. If the same object is placed in front of a convex mirror of focal length  $15\text{ cm}$  at the same distance, then compare magnifications produced in both cases. (3)

(b) State any two sign conventions related to spherical mirrors.

9. (a) State the law which explains relationship between current flowing through a conductor and potential difference across it. (2)



(b) Write one difference between resistance & resistivity.

(c) The p.d. between terminals of heater is 75 V when it draws a current of 5 A from source. What current will heater draw if p.d. is increased to 150 V? Also determine resistance of coil of heater.

OR

(a) Two metallic wires A & B are connected in series. If resistances of wires are  $4\ \Omega$  and  $12\ \Omega$  respectively & p.d. of 50 V is applied across the circuit, then determine  
(i) current flowing through circuit  
(ii) p.d. across the wire of  $12\ \Omega$

(b) Explain the cause of resistance.

(c) How does resistivity of semiconductor change with temperature?

40. Case-Based Question  
Electric fuse is an important component of all domestic circuits. It prevents damage to the appliances and circuit due to overloading. It is made up of an alloy with low melting point. Overloading can occur when live wire & neutral wire come into direct contact. It can also occur due to accidental hike in the supply voltage and even by connecting too many appliances to a single socket. Fuse is always connected in live wire with red insulation. It is unsafe to connect fuse in neutral wire because in case of excess current in circuit, appliance remains connected to the high potential point of ~~supply~~ supply through live wire. Now if a person touches the faulty appliance, he gets an electric shock. The metallic case of appliance should be properly earthed. Earthing is useful only if fuse is in the live wire.

P.T.O.



- (a) State any two cause of overloading.
- (b) What is main function of fuse wire?
- (c) Explain the importance of earthing.

Why can't fuse be connected in neutral wire?  
OR

Class - X Physics  
Practice Paper

M.M. 25

- Q.1) The phenomena of light involved in the formation of a rainbow in the sky are:  
a refraction, dispersion and reflection  
b refraction, dispersion and total internal reflection  
c dispersion, scattering and reflection  
d dispersion, refraction and internal reflection

- Q.2) The size of pupil of eye is adjusted by  
a cornea b retina c Iris d blind spot.

Question 3 consist of two statements assertion (A) and reason (R) Answer this question by selecting the appropriate option given below.

- a Both A and R are true and R is correct explanation of A.  
b Both A and R are true, but R is not correct explanation of A.  
c A is true but R is false.  
d A is false but R is true.

- Q.3) Assertion (A) A current-carrying solenoid always comes to rest in geographical N-S direction when suspended freely.  
Reason (R) One end of current carrying straight solenoid behaves as a north pole and the other end as south pole. just as bar magnet.

- Q.4) Give the reason why it is?  
a why does the sky appear dark instead of blue to an astronaut?  
b why does the sun appear reddish early in the morning?

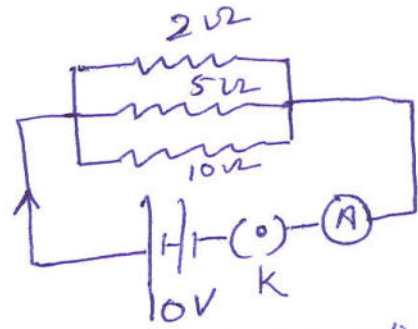


Q.5 An electric fan runs from the 220V mains. The current flowing through it is 0.5A. How much energy is transformed in 2min?

Q.6 In the given circuit calculate

a Total effective resistance

b Current through each resistor



Q.7 Draw a labelled diagram to show magnetic field lines due to straight, current-carrying conductor and state the rule to give direction of magnetic field lines. What happens to magnetic field when the current increases?

Q.8 Explain a Fuse b Short circuit

Q.9 a A person cannot read a book at distance less than 50cm. Name the defect of vision he is suffering from.

b How the defect can be corrected. draw a suitable diagram

c What are possible causes of the defect.

Q.10 a What do you mean by resistance of a conductor?

b List the factors on which the resistance depends.

c How is the resistance of a wire affected if (i) length is doubled (ii) its radius is doubled. (OR)

a state Ohm's law

b ~~write~~ How a voltmeter and ammeter is connected in a circuit.

c How many 176 Ω resistors in parallel are required to carry 5A on a 220V line.



Q.11 Imagine that you are sitting in a chamber with your back to one wall. An electron beam moving horizontally from back wall towards the front wall is deflected by a strong magnetic field in your right side.

a Define that rule which state for the direction of magnetic field

b list three methods of producing magnetic field

c what is the direction of magnetic field

OR

what will be the direction of deflection of magnetic field goes from right to left.

# Class X Physics

Q.1 b

Q.2 c

Q.3 a

Q.4 1+1

Q.5  $P = VI$  (1/2)  $P = 220 \times 0.5 = 110W$  (1/2)  
 $E = P \times t$  (1/2)  $E = 110 \times 120 = 13200J$  (1/2)

Q.6  $\frac{1}{R} = \frac{1}{2} + \frac{1}{5} + \frac{1}{10} = R = 1.25 \Omega$  (1)  
 $I_1 = \frac{7}{10} \frac{10}{2}$ ,  $I_2 = \frac{10}{5}$   $I_3 = \frac{10}{10}$  (1)

Q.7 fig (1) mark } Statement of }  
arrows (1/2) mark } law } (1)  $B \propto I$  (1/2)

Q.8 a (1/2) b (1/2)

Q.9 hypermetropia (1)

fig (1)

Increase in focal length }  
decrease in size of eyeball } (1)