RAVI MATHS TUITION CENTER , CHENNAI- 82. WHATSAPP - 8056206308

10TH CBSE PHYSICS 3 MARKS TEST 1

10th Standard

Science

Exam Time : 01:15:00 Hrs

Total Marks : 75

25 x 3 = 75

1) 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 to your right side. What is the direction of magnetic field?

2) State the rule to determine the direction of a
(i) Magnetic field produced around a straight conductor carrying current
(ii) Force experienced by a current carrying straight conductor placed in a magnetic field which is perpendicular to it.
(iii) current induced in a coil due to its rotation in a magnetic field.

3) How do we think the displacement of rod AB will be affected, if
(i) current in rod AB is increased,
(ii) a stronger horse-shoe magnet is used and
(iii) length of the rod AB is increased?

4) Light enters from air to glass having refractive index 1.50.What is the speed of light in the glass?The speed of light in vacuum is $3x10^8$ ms^{-1}.

5) The magnification produced by a plane mirror is +1. What does it mean?

6) (a) What is meant by 'Electric Resistance' of a conductor?
(b) A wire of length 'L' and resistance 'R' is stretched so that its length is doubled and the area of cross-section is halved. How will its:
(i) resistance change
(ii) resistivity change

7) (a) State Ohm's Law.
(b) Draw a schematic diagram of the circuit for studying Ohm's Law.

8) If a 12 V battery is connected to the arrangement of resistances given below, calculate
(i) the total effective resistance of the arrangement and
(ii) the total current flowing in the circuit

9) How much current will an electric bulb draw from 220 V source if the resistance of the bulb is 1200 Ω? If in place of bulb, a heater of resistance 100 Ω is connected to the sources, calculate the current drawn by it.

10) An electric bulb is rated at 60 W, 240 V. Calculate its resistance. If the voltage drops to 192 V, calculate the power consumed and the current drawn by the bulb. (Assume that the resistance of the bulb remain unchanged.)

11) V-I graph for two wires A and B are shown in the figure. Ifboth wires are of same length and same thickness, which of the two is made of a material of high resistivity? Give justification for your answer.

12) A coil of insulated copper wire is connected to a galvanometer. What will happen if a bar magnet is
(i) Pushed into the coil
(ii) Withdrawn from inside the coil
(iii) Held stationary inside the coil

13) Distinguish between an electric motor and generator?

14) For the current carrying solenoid as shown below, draw magnetic field lines and giving reason explain that out of the three points A, Band C at which point the field strength is maximum and at which point it is minimum.

15) What is an electromagnet? Draw a circuit diagram to show how a soft iron piece can be transformed into an electromagnet.

16) What are magnetic field lines? Justify the following statements
(a) Two magnetic field lines never intersect each other.
(b) Magnetic field lines are closed curves

17) A compass needle is placed near a current-carrying wire. State your observation for the following cases, and give reason for the same in each case.
(a) Magnitude of electric current in the wire is increased.
(b) The compass needle is displaced away from the wire

18) The magnetic field associated with a current-carrying straight conductor is in anticlockwise direction. If the conductor was held along the east-west direction, what will be the direction of current through it? Name and state the rule applied to determine the direction of current.

19) Draw a ray diagram to show the path of the reflected ray in each of the following cases. A ray of light incident on a convex mirror
(a) strikes at its pole making an angle from the principal axis.
(b) is directed towards its principal focus.
(c) is parallel to its principal axis.

20) To construct a ray diagram we use two. rays of light which are so chosen that it is easy to determine their directions after reflection from the mirror. Choose these two rays and state the path of these rays after reflection from a concave mirror, Use these two rays to find the nature and position of the image of an object placed at a distance of 15 cm from a concave mirror of focal length 10 cm.

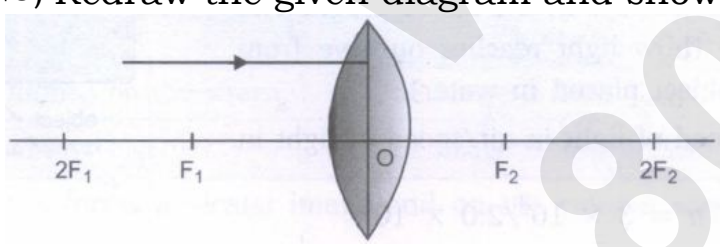
21) A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 24 cm. The distance of the object from the lens is 16 cm. Find the position, size and nature of the image formed, using the lens formula

22) A convex lens has a focal length of 10 cm. At what distance from the lens should the object be placed so that it gives a real and inverted image 20 cm away from the lens? What would be the size of the image formed if the object is 2 cm high? With the help of a ray diagram show the formation of the image by the lens in this case

23) Draw ray diagrams to represent the nature, position and relative size of the image formed by a convex lens for the object placed:
(a) At 2F
(b) Between F_1 and the optical centre O of lens

24) An object of 2 cm high is placed at a distance of 64 cm from a white screen on placing a convex lens at a distance of 32 cm from the object it is found that a distant image of the object is formed on the screen. What is the focal length of the convex lens and size of the image formed on the screen? Draw a ray diagram to show the formation of the image in this position of the object with respect to the lens.

25) Redraw the given diagram and show the path of refracted ray.



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