RAVI MATHS TUITION & TEST PAPERS , WHATSAPP 8056206308

10TH CBSE SCIENCE PHYSICS MCQS PREVIOUSLY ASKED

10th Standard

Science

Multiple Choice Question 46 x 1 = 46

1) The magnetic field inside a long straight current carrying solenoid

(a) is zero (b) decrease as we move towards its end (c) increases as we move towards its end

(d) is the same at all points.

2) A positively charged particle (alpha-particle) projected towards west is deflected towards north by a magnetic field. The direction of magnetic field is

(a) towards south (b) towards east (c) downward (d) upward

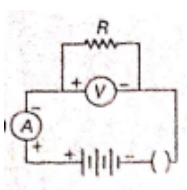
3) An electric kettle consumes 1 Kw of electric power when operated at 220 V. A fuse wire of what rating must be used for it?

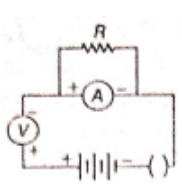
(a) 1A (b) 2A (c) 4A (d) 5A

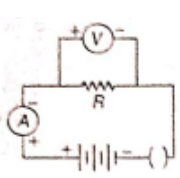
4) The expressions that relate (i) Q, l and t and (ii) Q,V and W respectively are (Here, the symbols have their usual meanings)

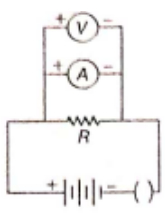
(a)		(b)		(c)		(d)	
(i) I = Q/t	(ii) W = V/Q	(i) Q = I x t	(ii) W = V x Q	(i) Q = I/t	(ii) V = W/Q	(i) I = Q/t	(ii) Q = V/W

5) Which one of the following Is the correct set-up for studying the dependence of the current on the potential difference across a resistor and why?

(a) 

(b) 

(c) 

(d) 

6) A cylindrical conductor of length l and uniform area of cross section A has resistance R, another conductor of length 2.5l and resistance 0.5 R of the same material has area of cross section

(a) 5 A (b) 2.5 A (c) 0.5 A (d) 1/5 A

7) In case of four wires of same material, the resistance will be minimum, if the diameter and length of the wire respectively are

(a) D/2 and L/4 (b) D/4 and 4L (c) 2D and L (d) 4D and 2L

8) A cylindrical conductor of length l and uniform area of cross section A has resistance R. The area of cross-section of another conductor of same material and same resistance but of length 2l is

(a) A/2 (b) 3A/2 (c) 2A (d) 3A

9) A complete circuit is left on for several minutes, causing the connecting copper wire to become hot. As the temperature of the wire increases, the electrical resistance of the wire

(a) decreases (b) remains the same (c) increases (d) increases for sometime and then decreases

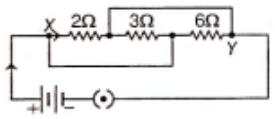
10) Two LED bulbs of 10 W and 5 W are connected in series. If the current flowing through 5 W bulb is 0.005 A, the current flowing through 10 W bulb is

(a) 0.02 A (b) 0.01 A (c) 0.005 A (d) 0.0025 A

11) The maximum resistance which can be made using four resistors, each of resistance 1/2 Ω is

(a) 2Ω (b) 1Ω (c) 2.5Ω (d) 8Ω

12) In the given circuit the total resistance between X and Y is



(a) 12Ω (b) 4Ω (c) 6Ω (d) 1Ω

13) If four identical resistors, of resistance 8Ω, are first connected in series so as to give an effective resistance Rs, and then connected in parallel so as to give an effective resistance Rp, then the ratio of Rs/Rp is

(a) 32 (b) 2 (c) 0.5 (d) 16

14) In domestic electric circuits, the wiring with 15 A current rating is for the electric devices which have

(a) higher power ratings such as geyser (b) lower power ratings such as fan

(c) metallic bodies and low power ratings (d) non-metallic bodies and low power ratings

15) For a current in a long straight solenoid N- and S- poles are created at the two ends. Among the following statements, the incorrect statement is

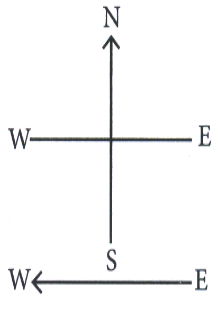
(a) The field lines inside the solenoid are in the form of straight lines which indicates that the magnetic field is the same at all points inside the solenoid

(b) The strong magnetic field produced inside the solenoid can be used to magnetise a piece of magnetic material like soft iron, when placed inside the coil.

(c) The pattern of the magnetic field associated with the solenoid is different from the pattern of the magnetic field around a bar magnet.

(d) The N- and S- Poles exchange position when the direction of current through the solenoid is reversed

16) A constant current flows in a horizontal wire in the plane of the paper from east to west as shown in the figure. The direction of the magnetic field will be north to south at a point



(a) Directly above the wire (b) directly below the wire

(c) At a point located in the plane of the paper, on the north side of the wire

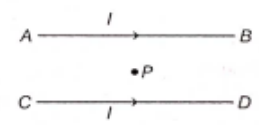
(d) At a point located in the plane of the paper, on the south side of the wire.

17) Which of the following pattern correctly describes the magnetic field around sqpa long straight wire carrying current?

(a) Straight lines perpendicular to the wire (b) Straight lines parallel to the wire

(c) Radial lines originating from the wire (d) Concentric circles centred around the wire

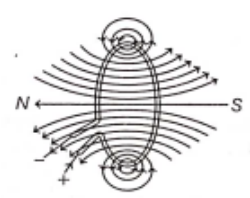
18) The resultant magnetic field at point P situated midway between two parallel wires (placed horizontally) each carrying a steady current I is

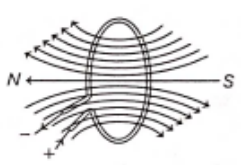


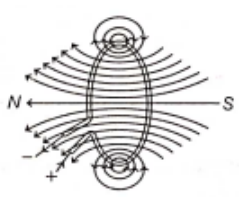
(a) in the same direction as the current in the wires (b) in the vertically upward direction (c) Zero

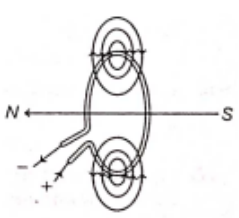
(d) in the vertically downward direction

19) The correct pattern of magnetic field lines of the field produced by a current carrying circular loop is

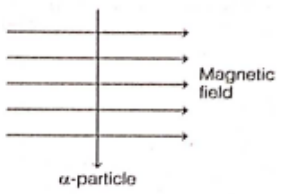
(a) 

(b) 

(c) 

(d) 

20) An alpha particle enters a uniform magnetic field as shown. The direction of force experienced by alpha particle is



(a) towards right (b) towards left (c) into the page (d) out of the page

21) The frequency of AC in some countries is 60 Hz.
What does this mean?

(a) The current changes direction 60 times in a second. (b) The current changes direction 120 times in a second

(c) The current changes direction after every 60 seconds

(d) The current changes direction after every 120 seconds.

22) Which of the following can make a parallel beam of light when light from a point source is incident on it?

(a) Concave mirror as well as convex lens (b) Convex mirror as well as concave lens

(c) Two plane mirrors placed at 90° to each other (d) Concave mirror as well as concave lens

23) Rays from Sun converge at a point 15 cm in front of a concave mirror. Where an object should be placed so that size of its image is equal to the size of the object?

(a) 30 cm in front of the mirror (b) 15 cm in front of the mirror

(c) between 15 cm and 30 cm in front of the mirror (d) more than 30 cm in front of the mirror.

24) To obtain a magnification of +2 with a concave mirror of radius of curvature 60 cm the object distance must be

(a) -90 cm (b) -45 cm (c) -30 cm (d) -15 cm

25) The image of a candle flame formed by a mirror is obtained on a screen placed on the same side of the mirror. According to new cartesian sign convention, If the image is three times the size of the flame, then the mirror is _____

(a) concave and magnification is +3 (b) concave and magnification is -3 (c) convex and magnification is -3

(d) convex and magnification is +3

26) The image of an object placed in front of a concave mirror of focal length 15 cm is of the same size as the object. The distance between the object and its image is

(a) 15 cm (b) 30 cm (c) 60 cm (d) zero

27) Which of the following mirror is used by a dentist to examine a small cavity In a patient's teeth?

(a) Convex mirror (b) Plane mirror (c) Concave mirror (d) Any spherical mirror

28) The refractive index of flint glass is 1.65 and that for alcohol is 1.36 with respect to air. What is the refractive index of the flint glass with respect to alcohol?

(a) 0.82 (b) 1.21 (c) 1.11 (d) 1.01

29) The angle of Incidence from air to glass at the point O on the hemispherical glass slab is

(a) 45° (b) 0° (c) 90° (d) 180°

30) When light is incident on a glass slab, the incident ray, refracted ray and the emergent ray are in three media A, B and C. If n_1, n_2, and n_3, are the refractive indices of A, B and C respectively and the emergent ray is parallel to the incident ray, which of the following is true?

(a) $n_1 < n_2 < n_3$ (b) $n_1 > n_2 > n_3$ (c) $n_1 < n_2 = n_3$ (d) $n_1 = n_3 < n_2$

31) If a lens and a spherical mirror both have a focal length of -15 cm, then it may be concluded that

(a) both are concave (b) the lens is concave and the mirror is convex

(c) the lens is convex and the mirror is concave (d) both are convex

32) If the real image of a candle flame formed by a lens is three times the size of the flame and the distance between lens and image is 80 cm, at what distance should the candle be placed from the lens?

(a) - 80 cm (b) -40 cm (c) $-\frac{40}{3}$cm (d) $-\frac{80}{3}$cm

33) An object is placed in front of a concave lens. For all positions of the object, the image formed is always

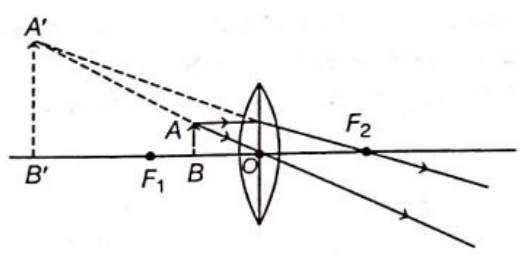
(a) real, diminished and inverted (b) virtual, diminished and erect (c) real, enlarged and erect

(d) virtual, erect and enlarged

34) An object of height 3.0 cm is placed vertically on the principal axis of a convex lens. When the object distance is -37.5 cm, an image of height -2.0 cm is formed at a distance of 25.0 cm from the lens. Next, the same object is placed vertically at 25.0 cm from the lens. In this situation, the image distance v and height h of the image is (according to the new cartesian sign convention)

(a) v = + 37.5 cm; h = +4.5 cm (b) v = -37.5 cm; h = +4.5 cm (c) v = + 37.5 cm; h = -4.5 cm

(d) v = -37.5 cm; h = -4.5 cm

35) 

The above lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.

(a) 4 cm (b) 6.67 mm (c) 4 mm (d) 3.33 mm

36) If the power of a lens is -4.0 D, then it means that the lens is a

(a) concave lens of focal length -50 m (b) convex lens of focal length + 50 cm

(c) concave lens of focal length - 25 cm (d) convex lens of focal length - 25 m

37) A lens has a power of + 4.0 D. It is

(a) a convex lens of focal length 4 m (b) a concave lens of focal length 4 m

(c) a convex lens of focal length 0.25 m (d) a concave lens of focal length 0.25 m

38) In an experiment to study independent inheritance of two separate traits : shape and colour of seeds, the ratio of the different combination in F_2 progeny would be

(a) 1 : 3 (b) 1 : 2 : 1 (c) 9 : 3 : 3 : 1 (d) 9 : 1 : 1 : 3

39) Twinkling of stars is due to atmospheric

(a) dispersion of light by water droplets (b) refraction of light by different layers of varying refractive indices

(c) scattering of light by dust particles (d) internal reflection of light by clouds

40) The persistence of vision for normal eye is

(a) $(\frac{1}{10})$ th of a second (b) $(\frac{1}{16})$ th of a second (c) $(\frac{1}{6})$ th of a second (d) $(\frac{1}{18})$ th of a second

41) In human eye the part which allows light to enter into the eye is

(a) retina (b) pupil (c) eye lens (d) cornea

42) When a ray of light passes through a glass prism, it suffers two refractions. During these refractions, the ray bends

(a) away from the base in both cases (b) towards the base in both cases

(c) towards the base in first case and away from the base in second case

(d) away from the base in first case and towards the base in second case

43) If a beam of red light and a beam of violet light are Incident at the same angle on the Inclined surface of a prism from air medium and produce angles of refraction rand v respectively, which of the following Is correct?

(a) r = v (b) r > v (c) r = 1/v (d) r < v

44) The phenomena of light involved in the formation of rainbow in the sky are

(a) refraction, dispersion and scattering (b) refraction, reflection and dispersion

(c) refraction, dispersion and total internal reflection (d) reflection, dispersion and total internal reflection

45) Twinkling of stars is due to atmospheric

(a) dispersion of light by water droplets (b) refraction of light by different layers of varying refractive indices

(c) scattering of light by dust particles (d) internal reflection of light by clouds

46) When light enters the atmosphere It strikes on extremely fine particles, which deflect the rays of light In all possible directions. This is due to

(a) reflection of light (b) atmospheric refraction (c) scattering of light (d) dispersion of light

Assertion and reason 7 x 1 = 7

47) Assertion (A) : Alloys are commonly used in electrical heating devices like electric iron and heater.
Reason (R) : Resistivity of an alloy is generally higher than that of its constituent metals but the alloys have lower melting points than their constituent metals.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
(c) If Assertion is true but Reason is false.
(d) If Assertion is false but Reason is true.

48) Assertion (A) : The magnetic field lines around a current carrying straight wire do not intersect each other.
Reason (R) : The magnitude of the magnetic field produced at a given point increases as the current through the wire increases.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

49) Assertion (A) : On freely suspending a current carrying solenoid, it comes to rest in geographical N-S direction.
Reason (R) : One end of current carrying straight solenoid behaves as a North pole and the other end as a South pole, just like a bar magnet.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

50) Assertion (A) : A current carrying straight conductor experiences a force when placed perpendicular to the direction of magnetic field.
Reason (R) : The net charge on a current carrying conductor is always zero.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

51) Assertion (A) : A person suffering from myopia cannot see the distant objects clearly.
Reason (R) : A converging lens is used for the correction of myopic eye as it can form real as well as virtual image of the objects placed in front of it.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

52) Assertion (A) : Sky appears blue in the day time.
Reason (R) : White light is composed of seven colours.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

53) Assertion (A) : Red light signals are used to stop the vehicles on the road.
Reason (R) : Red coloured light is scattered the most so as to be visible from a large distance.
(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason is false.
(d) If Assertion is false, but Reason is true.

Case Study Questions 2 x 4 = 8

54) Many optical instruments consist of a number of lenses. They are combined to increase the magnification and sharpness of the image. The net power (P) of the lenses placed in contact is given by the algebraic sum of the powers of the individual lenses P_1,P_2, P_3..... as
$P = P_1 + P_2 + P_3$ .....
This is also termed as the simple additive property of the power of lens, widely used to design lens systems of cameras, microscopes and telescopes. These lens systems can have a combination of convex lenses and also concave lenses.
(i) What is the nature (convergent/divergent) of the combination of a convex lens of power + 4D and a concave lens of power - 2D?
(ii) Calculate the focal length of a lens of power 2.5D.
(iii) Draw a ray diagram to show the nature and position of an image formed by a convex lens of power + 0.1D, when an object is placed at a distance, of 20 cm from its optical centre.
Or
How is a virtual image formed by a convex lens different from that formed by a concave lens?
Under what conditions do a convex and a concave lens form virtual images?

55) On a sunny day, Krish looked at the sky through a water fountain and he was surprised to see a rainbow In the sky
(i) The location of the sun when Krish observed a rainbow was
(a) behind him
(b) in front of him
(c) overhead
(d) on his left side
(ii) The phenomena of light involved in the formation of a rainbow are
(a) reflection, refraction and dispersion
(b) refraction, dispersion and total internal reflection
(c) refraction, dispersion and scattering
(d) dispersion, scattering and total internal reflection
(iii) In the formation of a rainbow, the role of water droplets present in the water fountain is to act as a
(a) glass slab
(b) convex lens
(c) concave lens
(d) prism
(iv) While entering a water droplet, the sunlight gets
(a) refracted only
(b) reflected internally
(c) refracted and dispersed
(d) first refracted and then dispersed while coming out of the water droplet

****