PHYSICS

BOOKS - AIIMS PREVIOUS YEAR PAPERS

AIIMS 2008

Physics

1. In an electrical circuit containing L C and R which of the following does not denote the distance of frecquincy ?

    A. LC

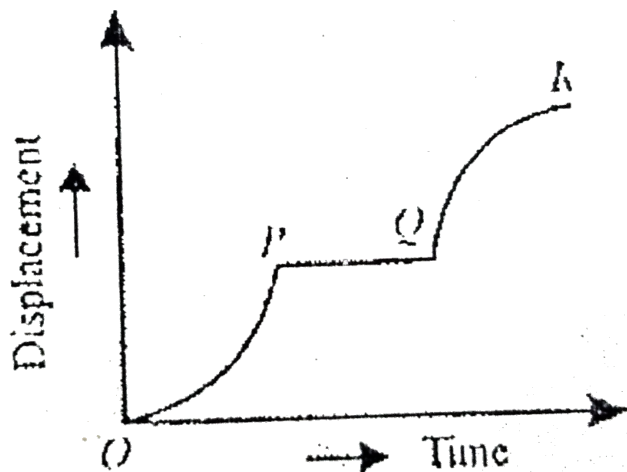   B. $\dfrac{1}{\sqrt{LC}}$

    C. $\dfrac{1}{R}C$

    D. $\dfrac{R}{L}$

Answer: D

2. The distplcement time graph of a prticle moving alon a staraingt line is drawn below

The acceleration of the paritcle during the regions OP, PQ and QR are

A.
OP	PQ	QR
−	0	+

B.
OP	PQ	QR
+	0	+

C.
OP	PQ	QR
+	0	−

D.
OP	PQ	QR
−	0	−

Answer: C

3. A particle of mass M moves with constant speed along a circular path of radius r under the action of a force F. Its speed is

A. $\sqrt{\dfrac{Fr}{m}}$

B. $\sqrt{\dfrac{F}{r}}$

C. $\sqrt{Fmr}$

D. $\sqrt{\dfrac{F}{m}r}$

Answer: A

4. A bullet is fired from a rifle and the rifle recoils , Kinetic energy of rifle is

A. less than K.E of bullet

B. grater than K.E of bullet

C. equal to K.E of bullet

D. none of the above

Answer: B

▶ **Watch Video Solution**

---

5. Side of an equilateral triangle is I . Three point masses, each of magnitude m, are palced at the three vertices of the triangle . Momment of inertia of this system about one side of the triangle as axis is given by

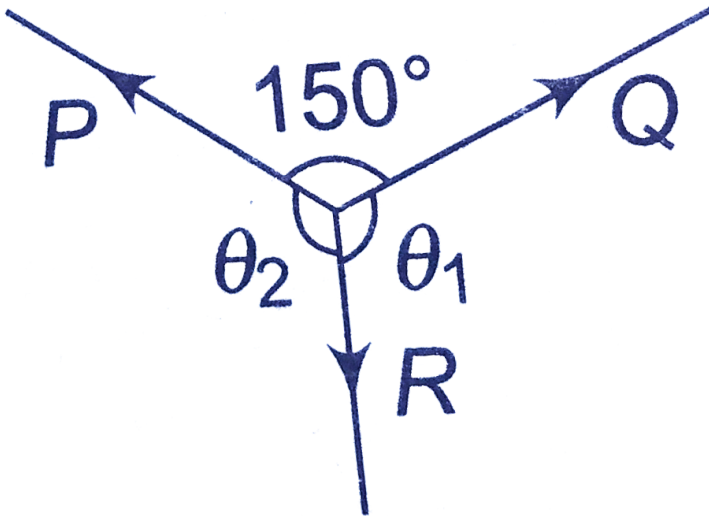A. $\dfrac{3ml^2}{4}$

B. $\dfrac{4}{3}mt^2$

C. $\dfrac{3}{2}ml^2$

D. $\dfrac{2}{3}ml^2$

Answer: A

6. P, Q and R are three coplanar forces acting at a point and are in equilibrium. Given $P = 1.9318kg - wt$, $\sin\theta_1 = 0.9659$, the value of R is ($\in kg - wt$)

A. 0.9659

B. 2

C. 1

D. $1/2$

Answer: C

---

7. Suppose the gravitational force varies inversely as the nth power of distance. Then the time period of a planet in circular orbit of radius R around the sun will be proportional to-

A. $R^{\left(\frac{n+1}{2}\right)}$

B. $R^{\left(\frac{n-1}{2}\right)}$

C. R^n

D. $R^{\left(\frac{n-2}{2}\right)}$

Answer: A

8. A Ge specimen is dopped with Al. The concentration of acceptor atoms is ~$10^{21} atoms/m^3$. Given that the intrinsic concentration of electron hole pairs is ~$10^{19}/m^3$, the concentration of electron in the speciman is

A. $10^{17}/m^2$

B. $10^{15/m^3}$

C. $10^4/m^3$

D. $10^2/m^3$

Answer: A

▶ **Watch Video Solution**

9. A slab consists of two layers of different materials of the same thickness and having thermal conductivities K_1 and K_2. The equivalent thermal conductivity of the slab is

A. $\dfrac{2k_{31}K_2}{K_1 + k_2}$

B. $\sqrt{K_1 K_2}$

C. $\dfrac{K_1 K_2}{K_1 + K_2}$

D. $K_1 + K_2$

Answer: A

▶ Watch Video Solution

10. In Young's double slit experiment, the distance between two slits is made three times then the fringe width will becomes

A. 9 times

B. 1/9 times

C. 3 times

D. 1/3 times

Answer: D

▶ Watch Video Solution

11. A laser beam is used for carrying our surgery because it

A. is highly nonochromatic

B. is highly coherent

C. is heghl directional

D. can be sharply focussed.

Answer: A

▶ Watch Video Solution

12. A converging lens forms a real image I on its optic axis. A rectangular galss slab of refractive index μ and thickness t is introduced between the lens and I. I will move

A. towards the lens $(\mu - 1)x$

B. towards the lens by $\left(1 - \dfrac{1}{\mu}\right)x$

C. anway from the lens by $(\mu - 1)$

D. away from the lens by $\left(1 - \dfrac{1}{\mu}\right) x$

Answer: D

▶ **Watch Video Solution**

---

13. The velocity of electromagnetic radiatior in a medium of permittivity ε_0 and permeability μ_0 is given by

A. $\dfrac{1}{\sqrt{\mu_0 \varepsilon_0}}$

B. $\sqrt{\dfrac{\mu_0}{\varepsilon_0}}$

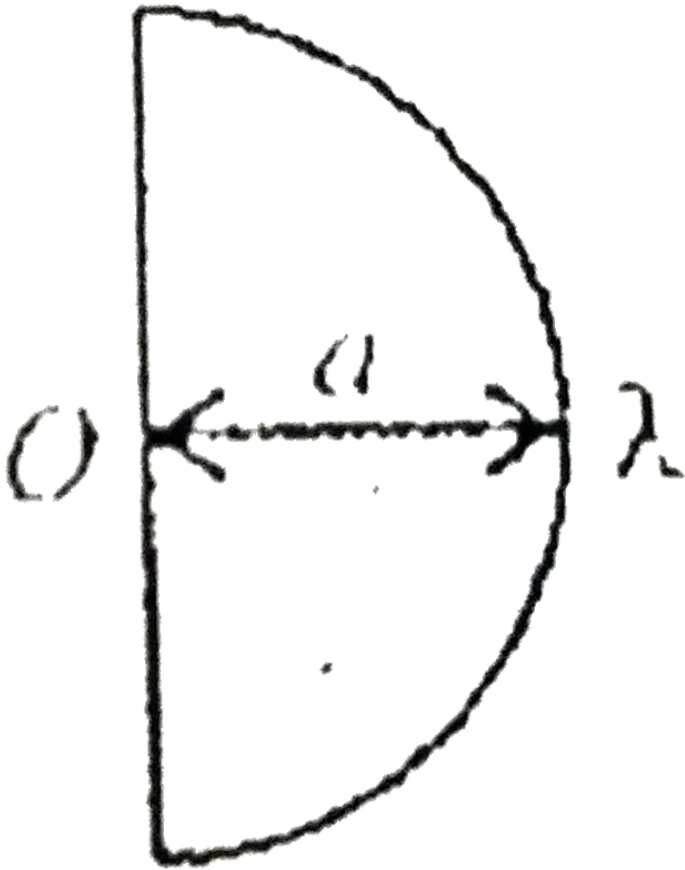C. $\sqrt{\dfrac{\varepsilon_0}{\mu_0}}$

D. $\sqrt{\mu_0 \varepsilon_0}$

Answer: A

▶ **Watch Video Solution**

14. Electric field at centre of a uniforly charged semicirlce of radius a is

A. $\dfrac{\lambda}{2\pi\varepsilon_0 a^3}$

B. $\dfrac{\lambda}{2\pi\varepsilon_0 a^2}$

C. $\dfrac{\lambda_2}{2\pi\varepsilon_0 a}$

D. $\dfrac{\lambda}{2\pi\varepsilon_0 a}$

Answer: D

15. If frequency of R- L circuit is f then impedence will be

A. $\sqrt{R^2 + (2\pi f L)^2}$

B. $R^2 + (2\pi f^2)^2$

C. $\sqrt{R^L \pi f^2}$

D. $\sqrt{(R^2 - L\pi f^2)}$

Answer: A

16. Two closed organ pipes of length 100 cm and 101 cm product 16 beats is 20 sec, When each pipe is sounded in its fundamental mode calculate the velocity of sound .

A. $303ms^{-1}$

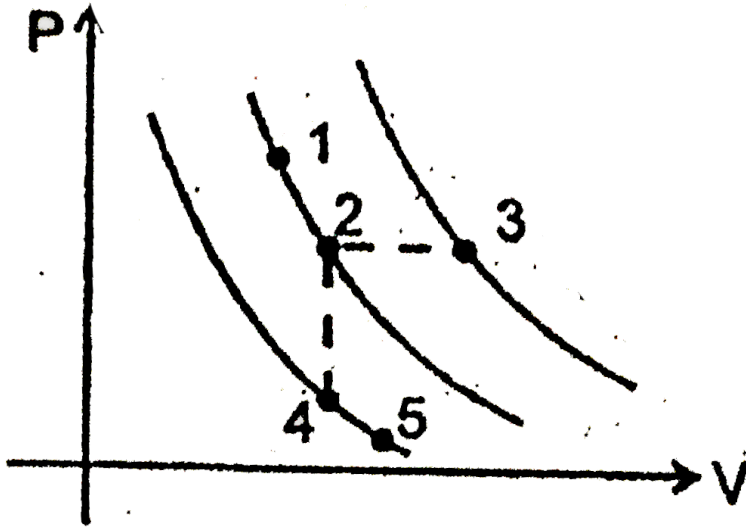B. $332ms^{-1}$

C. $323.2ms^{-1}$

D. $300ms^{-1}$

Answer: C

▶ **Watch Video Solution**

17. A certain gas is taken to the five states representes by dots in the graph. The plotted lines are isotherms. Order of the most probable speed

v_p of the molecules at these five states is

A.

v_p at $3 > v_p$ at $1 = v_p$ at $3 > v_p$ at $4 = v_p$ at $4 = v_p$ at

B.

v_p at $> v_p$ at $2 = v_p$ at $3 > v_p$ at $4 = v_p$ at $4 = v_P$ at 5

C. v_p at $3 > v_p$ at $2 = v_p$ at $4 > v_p$ at $1 = v_p$ at 5

D. insufficient information to predict the resul

Answer: A

▶ Watch Video Solution

18. N_1 atoms of a radioactive element emit N_2 beta partilces per second. The decay cosntant of the element is (in s^{-1})
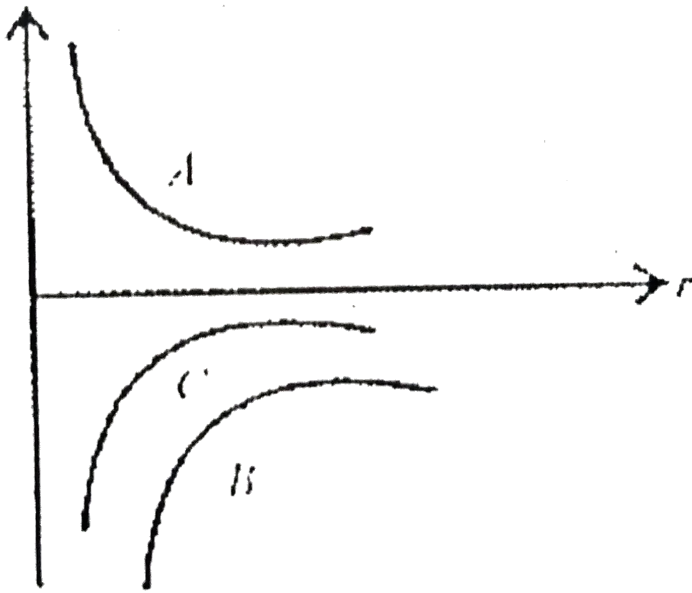
A. N_1 / N_2

B. N_2 / N_1

C. $N_1 (\ln 2)$

D. $N_2 (\ln 2)$

Answer: B

▶ **Watch Video Solution**

19. Figure shows the variation of energy with the orbit radius r of a satellite in a circular motion. Mark the correct statement.

A. C is total energy .B kinetic energy and A is potenial energy

B. A is kinetic energy, B total energy and C potential energy

C. A and B are the kinetic and potential energies and C the total energy of the satellite.

D. C and A are kinetic and potential energy repectiveluy and B the total energy of the satellite.
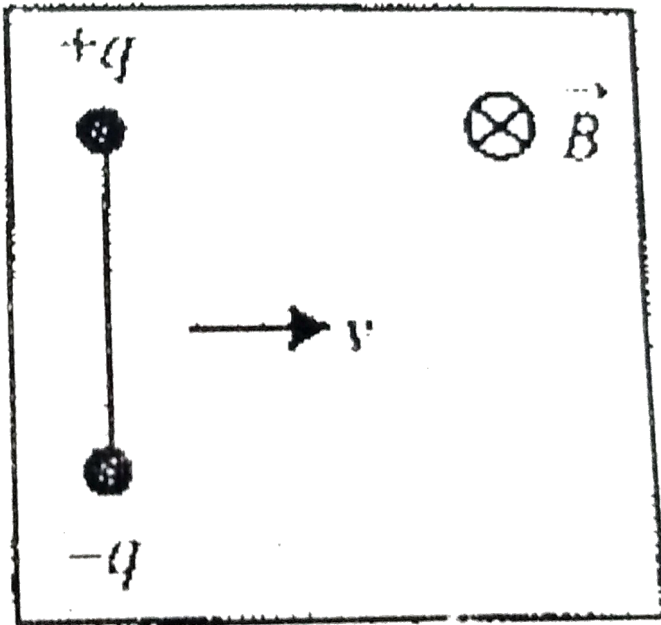
Answer: C

Watch Video Solution

20. Two changes +q and -q are attached to the two end of a light rod of length L, as shown in figure . The system is given a velocity v perpendicular to magnetic force on the system of charges and magnitude of force on one charges by the rod , are respectively .

A. zero , zero

B. zero, qvB

C. 2qvB , 0

D. 2qvB, qvB

Answer: B

> ▶ Watch Video Solution

---

21. If a wire is extended to a new length , the L, the work done is

A. $\dfrac{YA}{l}(l-l)$

B. $\dfrac{YA}{l}(l-l)^2$

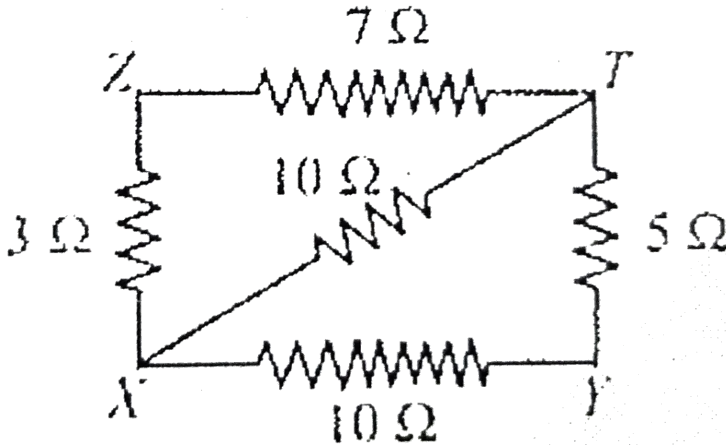C. $\dfrac{1}{2}\dfrac{YA}{l}(l-l')^2$

D. $\dfrac{YA}{l}(l-l)^2$

Answer: C

> ▶ Watch Video Solution

22. The equivalent resistance between the point X and Y in the following

circuit diagram will be

A. 10Ω

B. 5Ω

C. 7Ω

D. 3Ω

Answer: B

▶ Watch Video Solution

23. The intensity of magnetic field due to an isolated pole of strength m at a pont distant r from it will be proportional to

A. $m_p l r^2$

B. $m_p r^2$

C. $r^2 l m_p$

D. $m_p l r$

Answer: A

▶ Watch Video Solution

24. A bulb and a conender are connected in series with an A.C source. On increasing the frequency of the source its brightness will

A. increase

B. decrease

C. sometimes increase and sometimes decrease

D. neigther increase nor decrease .

Answer: A

> ▶ **Watch Video Solution**

---

25. Two heater wires, made of the same material and having the same length and the same radius, are first connected in series and then in parallel to a constant potential difference. If the rate of heat produced in the two cases are Hs and Hp respectively then $\dfrac{Hs}{Hp}$ will be

A. $1/2$

B. 2

C. $1/4$

D. 4

Answer: C

> ▶ **Watch Video Solution**

26. The ratio of magnetic fields on the axis of a cricular current cerrying coil of radius a to the magnetic field at its centre lying on the periphery of the surface of the sphere will be .

A. $\dfrac{1}{\left(1 + \frac{a^2}{x^2}\right)^{3/2}}$

B. $\dfrac{1}{\left(1 + \frac{a^2}{x^2}\right)^{1/2}}$

C. $\dfrac{1}{\left(1 + \frac{a^2}{x^2}\right)^{2}}$

D. $\dfrac{1}{\left(1 + \frac{a^2}{x^2}\right)^{3}}$

Answer: A

▶ **Watch Video Solution**

---

27. Lumen is the unit of

A. luminouse flux

B. laminosity

C. illumination

D. quantity of light

Answer: A

▶ Watch Video Solution

---

28. A charge q_0 is distributed uniformly on a ring of radius R. A sphere of equal radius R constructed with its centre on the circumference of the ring. Find the electric flux through the surface of the sphere.

A. $\dfrac{q}{\varepsilon_0}$

B. $\dfrac{q}{2\varepsilon_0}$

C. $\dfrac{q}{3\varepsilon_0}$

D. $\dfrac{q}{4\varepsilon_0}$

Answer: C

▶ Watch Video Solution

29. When 100 V dc is applied across a coil, a current of 1A flows through it

and when 100 V ac of 50 Hz is applied to the same coil, only 0.5 flows

The inductance of coil is

A. 0.55 H

B. 5.5 mH

C. 0.55mH

D. 55mH.

Answer: A

▶ Watch Video Solution

30. A bulb of 25 W , 200 V and another bulb of 100 W 200 V are connected

in series with a supply line of 220 V. Then

A. both bulbs will glow with same brightness

B. both bulbs will get fused

C. 25 W bulb will glow more brightly

D. 100 W bulb will glow more brightly.

Answer: C

▶ **Watch Video Solution**

---

31. Which of the following is matched wrongly?

A. oil drop experiment $\rightarrow$ millikan

B. dual nature of light $\rightarrow$ de Brogile

C. uncertainty principle $\rightarrow$ Heisenberg

D. none of these

Answer: D

▶ **Watch Video Solution**

32. The for bidden gap in the energy bands of sillcon is

A. 2. 6 eV

B. 1.1 eV

C. 0.6 eV

D. 6 eV

Answer: B

▶ **Watch Video Solution**

33. When white light passes through a prism, the devination is maximum for

A. violet light

B. green light

C. red light

D. yellow light

Answer: A

▶ **Watch Video Solution**

34. Which of the following gates correspond to the truth table given below ?

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

A. NAND

B. OR

C. XOR

D. NOR

Answer: D

35. Light is incident normally on a diffraction grating through which the first order diffraction is seen at $32°$. The second order diffraction will be seen at

A. at$80°$

B. at$64°$

C. at$48°$

D. there is no ssecond order diffraction

Answer: D

36. If three wave no atmosphere, the average temperature on the surface of earth would be :-
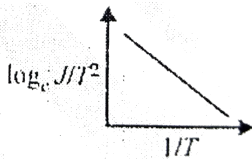
A. lower

B. higher

C. same

D. 0 C

Answer: A

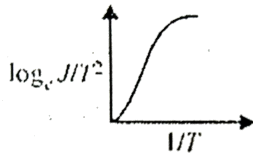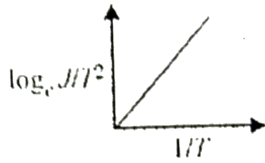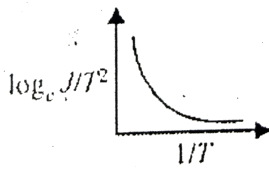▶ **Watch Video Solution**

37. The current curve between $\log_e \dfrac{j}{T^2}$ and $\dfrac{l}{T}$

A.

B.

C.

D.

Answer: A

▶ **Watch Video Solution**

---

38. An object 5 cm tall is placed 1 m from a concave spherical mirror which

has a radius of curvature of 20 cm. The size of the image is

A. 0.11 cm

B. 0.50 cm

C. 0.55 cm

D. 0.60 cm

Answer: C

> ▶ Watch Video Solution

**39.** The magnifiying power of a compound microscope increase with

A. the focal length of objective lens is increased and that of eye lens is

decreased

B. the focal length of eye lens is increased and that of objective lens is

decreased

C. focal length of both objects and eye-piece are increased

D. focal lenghts of both objects and eye -piece are decreased.

Answer: B

> ▶ Watch Video Solution
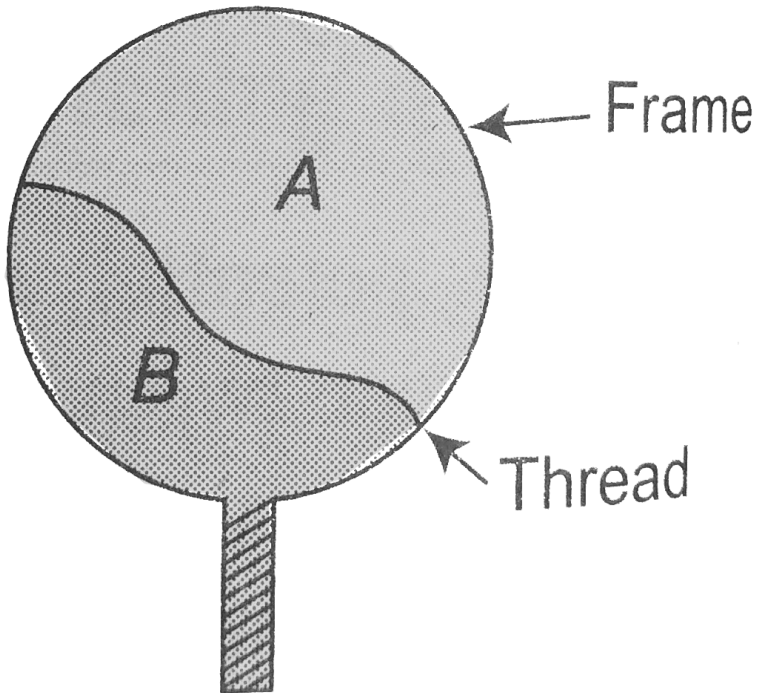
40.

A thread is tied slightly loose to a wire frame as in figure and the frame is

dipped into a soap solution and taken out . The frame is comletely

covered with the film. When the portion A puntured with a pin The

thread.

   A. becomes covcave towords A

   B. becomes concvex towards A

   C. either (a) or (b) depending on the size of A with respect to B

D. remains in the initial position

Answer: C

41. Assertion: In the relation $f = \dfrac{1}{2l}\sqrt{\dfrac{T}{m}}$, where symbols have standard meaning , m represent linear mass density.

Reason: The frequency has the dimensions linear of time.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

42. Assertion : Range of projectile of projection of a body is made n times

. Its time of fights becomes n times .

Reason Range of jprojectile does not depend on the initial velocity of a

body .

    A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: C

43. Statement I: A needle placed carefully on the surface of water may float, whereas the ball of the same material will always sink.

Statement II: The buoyancy of an object depends both on the material and shape of the object.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: C

▶ **Watch Video Solution**

44. Assertion : The colour of the green flower seen through red glass appears to be dark.

Reason : Red glass transmits only red light.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

▶ **Watch Video Solution**

45. Assertion: The alternating current lags behined the e.m.f. by a phase angle of $\pi/2$, when AC flows through an inductor.

Reason: The inductive reactance increases as the frequency of AC source decreases.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: C

46. Asseration:A spark occure between the poles of a switch when the switch is opened.

Reason:current flowing in the conductor produces magnetic field.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

▶ **Watch Video Solution**

---

47. Assertion : X - rays can penetrate through the flesh but not through

the bones.

Reason : The penetrating power of X - rays depends on voltage.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

48. Assertion: It is essential that all the lines available in the emission spectrum will also be available in the absorption spectrum.

Reason: The spectrum of hydrogen atom is only absorption spectrum.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: D

49. Assertion : A double convex lens $(\mu = 1.5)$ has focal length $10cm$. When the lens is immersed in water $(\mu = 4/3)$ its focal length becomes $40cm$.

Reason : $\dfrac{1}{f} = \dfrac{\mu_1 - \mu_m}{\mu_m}\left(\dfrac{1}{R_1} - \dfrac{1}{R_2}\right)$

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

50. Statement-I : Diode lasers are used as optical sources in optical communication.

Statement-II : Diode lasers consume less energy.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

▶ **Watch Video Solution**

---

51. Assertion: We cannot think of magnetic field configuration with three poles.

Reason: A bar magnet does exert a torque on itself due to its own field.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: D

▶ Watch Video Solution

52. Assertion: In a simple harmonic motion the kinetic and potential energy becomes equal when the displacement is $\dfrac{1}{\sqrt{2}}$ time the amplitude

Reason: is SHM kinetic energy is zero when potential energy is maximum

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

53. Statement -1 : A bird perches on a high power line and nothing happens to the bird. Statement -2 : The level of bird is very high from the ground.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: C

54. Assertion: Stopping potential depends upon the frequency of incident light but is independent of the intensity of the light.

Reason :The maximum kinetic energy of the photoclectrons is proportional to stopping potential

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: B

---

55. Asseration:Induced coil are made of copper.

Reason:Induced current is more in wire having less resistance.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

56. Assertion: When radius of circular loop carrying current is doubled, its magnetic moment becomes four times.

Rrason: Magnetic moment depends on area of the loop.

    A. If both assertion and reason are ture 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
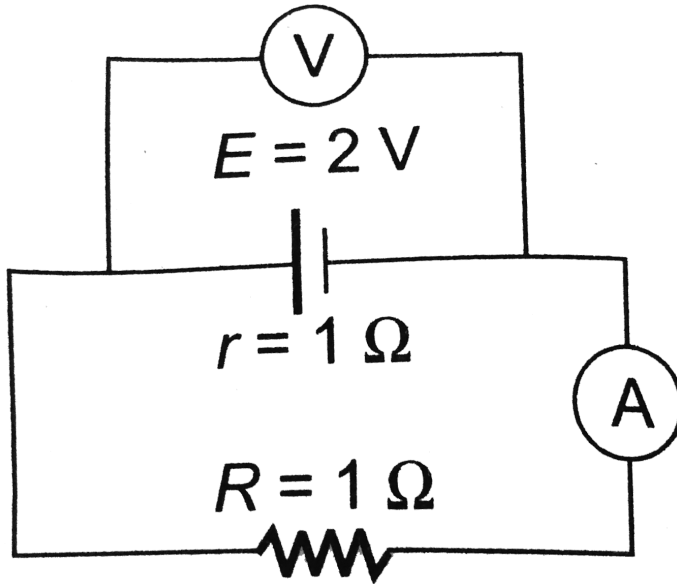
    D. If both assertion and reson are false.

Answer: A

▶ **Watch Video Solution**

---

57. Assetion : In the following circuit emf is $2V$ and internal resistance of the cell is 1Ω and $R = 1\Omega$, then reading of the voltmeter is $1V$.

Reason : $V = E - ir$ where $E = 2v$, $i = \dfrac{2}{2} = 1A$ and $R = 1\Omega$

$E = 2\,V$

$r = 1\,\Omega$

$R = 1\,\Omega$

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

58. Assertion : A domestic electrical appliance working on a three pin

continue working even if the top pin is removed

Reason : The third pin is used only as safety device.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

59. Assertion: The energy of charged particle moving in uniform magnetic field does not change.

Reason: Work done by magnetic field on the charge is zero.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: D

60. .^{90}Sr from the radioactive fall out from nuclear bomb ends up in the bones of human being through the milk consumed by them. It causes

impairment of the production of res blood cells.

The energetics β – particles emitted in the decay of $.^{90}Sr$ damage the bone marrow.

A. If both assertion and reason are ture 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 both assertion and reson are false.

Answer: A

⏵ **Watch Video Solution**