ದಿನಾಂಕ	ವಿಷಯ	ಸಮಯ		ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯ	
30-04-2019	ಭೌತಶಾಸ್ತ್ರ	ಬೆ. 10.30 ರಿಂದ 11.50 ರವರೆಗೆ		ವರ್ಷನ್ ಕೋಡ್	ಕ್ರಮ ಸಂಖ್ಯೆ
				C-3	**537191**

ಒಟ್ಟು ಅವಧಿ	ಉತ್ತರಿಸಲು ಇರುವ ಗರಿಷ್ಠ ಅವಧಿ	ಗರಿಷ್ಠ ಅಂಕಗಳು	ಒಟ್ಟು ಪ್ರಶ್ನೆಗಳು	ನಿಮ್ಮ ಸೀಟ್ ಸಂಖ್ಯೆಯನ್ನು ಬರೆಯಿರಿ			
80 ನಿಮಿಷಗಳು	70 ನಿಮಿಷಗಳು	60	60	C	T	3	5	2

ಮಾಡಿ
1. ಓಎಂಆರ್ ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಮತ್ತು ಪ್ರವೇಶ ಪತ್ರದಲ್ಲಿ ಮುದ್ರಿತವಾಗಿರುವ ಸೀಟ್ ಸಂಖ್ಯೆ ಮತ್ತು ಹೆಸರು ಒಂದೇ ಆಗಿದೆಯೆ ಎಂದು ಮತ್ತೊಮ್ಮೆ ದೃಢೀಕರಿಸಿಕೊಳ್ಳಿ, ವ್ಯತ್ಯಾಸವಿದ್ದಲ್ಲಿ ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಂದ ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮೇಲ್ವಿಚಾರಕರಿಗೆ ತಿಳಿಸಿ.
2. ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಂದ ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮೇಲ್ವಿಚಾರಕರಿಗೆ ತಿಳಿಸಿ.
3. ನಿಮಗೆ ನೀಡುವ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯ ಮತ್ತು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯ ವರ್ಷನ್ ಕೋಡ್ ಒಂದೇ ಆಗಿರುವುದನ್ನು ಖಾತ್ರಿಪಡಿಸಿಕೊಳ್ಳಿ, ವ್ಯತ್ಯಾಸವಿದ್ದಲ್ಲಿ ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಗೆ ತಿಳಿಸಿ.
4. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ವರ್ಷನ್ ಕೋಡ್ ಮತ್ತು ಕ್ರಮ ಸಂಖ್ಯೆಯನ್ನು ನಾಮಿನಲ್ ರೋಲ್ ನಲ್ಲಿ ತಪ್ಪಿಲ್ಲದೆ ಬರೆಯಬೇಕು.
5. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯ ಕೆಳಭಾಗದ ನಿಗದಿತ ಜಾಗದಲ್ಲಿ ಪೂರ್ಣ ಸಹಿ ಮಾಡಬೇಕು.

ಮಾಡಬೇಡಿ
1. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಮುದ್ರಿತವಾಗಿರುವ ಟೈಮಿಂಗ್ ಮಾರ್ಕನ್ನು ತಿದ್ದಬಾರದು / ಹಾಳುಮಾಡಬಾರದು / ಅಳಿಸಬಾರದು.
2. ಮೂರನೇ ಬೆಲ್ ಬೆ. 10.40 ಕ್ಕೆ ಆಗುತ್ತದೆ. ಅಲ್ಲಿಯವರೆಗೂ.
   • ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಬಲಭಾಗದಲ್ಲಿರುವ ಸೀಲ್ ಅನ್ನು ತೆಗೆಯಬಾರದು.
   • ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಒಳಗಡೆ ಇರುವ ಪ್ರಶ್ನೆಗಳನ್ನು ನೋಡಲು ಪ್ರಯತ್ನಿಸಬಾರದು ಅಥವಾ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸಲು ಪ್ರಾರಂಭಿಸಬಾರದು.

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಮುಖ್ಯ ಸೂಚನೆಗಳು

1. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಒಟ್ಟು 60 ಪ್ರಶ್ನೆಗಳಿದ್ದು, ಪ್ರತಿ ಪ್ರಶ್ನೆಗೂ 4 ಬಹು ಆಯ್ಕೆಯ ಉತ್ತರಗಳು ಇರುತ್ತವೆ.
2. ಮೂರನೇ ಬೆಲ್ ಅಂದರೆ ಬೆ. 10.40ರ ನಂತರ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯ ಬಲಭಾಗದಲ್ಲಿರುವ ಸೀಲ್ ತೆಗೆದು ಈ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಯಾವುದೇ ಪುಟಗಳು ಮುದ್ರಿತವಾಗಿಲ್ಲದೇ ಇರುವುದು ಕಂಡು ಬಂದಲ್ಲಿ ಅಥವಾ ಹರಿದು ಹೋಗಿದ್ದಲ್ಲಿ ಅಥವಾ ಯಾವುದೇ ಪುಟಗಳು ಬಿಟ್ಟುಹೋಗಿದೆಯೇ ಎಂಬುದನ್ನು ಖಚಿತಪಡಿಸಿಕೊಂಡು, ಈ ರೀತಿ ಆಗಿದ್ದರೆ ಕೂಡಲೇ ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಂದ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಿಕೊಳ್ಳಿ ನಂತರ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸಲು ಪ್ರಾರಂಭಿಸುವುದು.
3. ಮುಂದಿನ 70 ನಿಮಿಷಗಳಲ್ಲಿ
   • ಪ್ರತಿ ಪ್ರಶ್ನೆಯನ್ನು ಎಚ್ಚರಿಕೆಯಿಂದ ಓದಿ.
   • ಪ್ರತಿ ಪ್ರಶ್ನೆಯ ಕೆಳಗೆ ಕೊಟ್ಟಿರುವ ನಾಲ್ಕು ಬಹು ಆಯ್ಕೆಯ ಉತ್ತರಗಳಲ್ಲಿ ಸರಿಯಾದ ಉತ್ತರವನ್ನು ಆಯ್ಕೆ ಮಾಡಿ. ಒಂದಕ್ಕಿಂತ ಹೆಚ್ಚು ಉತ್ತರಗಳು ನಿಮ್ಮ ಗಮನಕ್ಕೆ ಬಂದರೂ ನಿಮಗೆ ಅತಿಉತ್ತಮವೆನಿಸಿದ ಒಂದನ್ನೇ ಆರಿಸುವುದು.
   • ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗೆ ಅನುಗುಣವಾಗಿರುವ ಸರಿ ಉತ್ತರವನ್ನು ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಅದೇ ಕ್ರಮ ಸಂಖ್ಯೆಯ ಮುಂದೆ ನೀಡಿರುವ ಸಂಬಂಧಿಸಿದ ವೃತ್ತವನ್ನು **ನೀಲಿ ಅಥವಾ ಕಪ್ಪು** ಶಾಯಿಯ ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ನಿಂದ ಸಂಪೂರ್ಣ ತುಂಬುವುದು.

ಸರಿಯಾದ ಕ್ರಮ CORRECT METHOD	ತಪ್ಪು ಕ್ರಮಗಳು WRONG METHODS

4. ಈ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಸ್ಕ್ಯಾನ್ ಮಾಡುವ ಸ್ಕ್ಯಾನರ್ ಬಹಳ ಸೂಕ್ಷ್ಮವಾಗಿದ್ದು ಸಣ್ಣ ಗುರುತನ್ನು ಸಹ ದಾಖಲಿಸುತ್ತದೆ. ಆದ್ದರಿಂದ ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯಲ್ಲಿ ಉತ್ತರಿಸುವಾಗ ಎಚ್ಚರಿಕೆ ವಹಿಸಿ.
5. ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯಲ್ಲಿ ಕೊಟ್ಟಿರುವ ಖಾಲಿ ಜಾಗವನ್ನು ರಫ್ ಕೆಲಸಕ್ಕೆ ಉಪಯೋಗಿಸಿ. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಇದಕ್ಕೆ ಉಪಯೋಗಿಸಬೇಡಿ.
6. ಕೊನೆಯ ಬೆಲ್ ಅಂದರೆ ಬೆ. 11.50 ಆದ ನಂತರ ಉತ್ತರಿಸುವುದನ್ನು ನಿಲ್ಲಿಸಿ. ನಿಮ್ಮ ಎಡಗೈ ಹೆಬ್ಬೆರಳ ಗುರುತನ್ನು ನಿಗದಿತ ಜಾಗದಲ್ಲಿ ಹಾಕಿ.
7. ಓ.ಎಂ.ಆರ್. ಉತ್ತರ ಪತ್ರಿಕೆಯನ್ನು ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರಿಗೆ ಯಥಾಸ್ಥಿತಿಯಲ್ಲಿ ನೀಡಿರಿ.
8. ಕೊಠಡಿ ಮೇಲ್ವಿಚಾರಕರು ಮೇಲ್ಭಾಗದ ಹಾಳೆಯನ್ನು ಪ್ರತ್ಯೇಕಿಸಿ (ಕೆಳಗಿನ ಪ್ರತಿ) ತನ್ನ ವಶದಲ್ಲಿ ಇಟ್ಟುಕೊಂಡು ತಳಬದಿಯ ಯಥಾಪ್ರತಿಯನ್ನು (Candidate's Copy) ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸ್ವಯಂ ಮೌಲ್ಯಮಾಪನಕ್ಕಾಗಿ ಮನೆಗೆ ಕೊಂಡೊಯ್ಯಲು ಕೊಡುತ್ತಾರೆ.
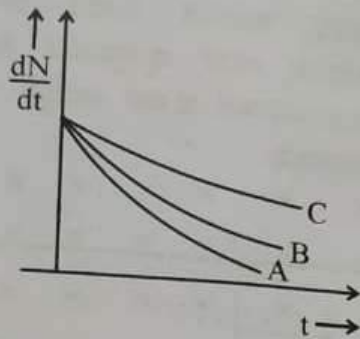9. ಉತ್ತರ ಪತ್ರಿಕೆಯ ನಕಲನ್ನು ಒಂದು ವರ್ಷ ಕಾಲ ಸುರಕ್ಷಿತವಾಗಿ ಇಡಿ.

ಸೂಚನೆ: ಕನ್ನಡ ಆವೃತ್ತಿಯ ಪ್ರಶ್ನೆಗಳಲ್ಲಿ ಉತ್ತರಿಸುವ ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಕನ್ನಡದಲ್ಲಿ ಮುದ್ರಿತವಾಗಿರುವ ಪ್ರಶ್ನೆಗಳ ಬಗ್ಗೆ ಏನಾದರೂ ಸಂದೇಹವಿದ್ದಲ್ಲಿ ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಯ ಪ್ರಶ್ನೆಪತ್ರಿಕೆಯನ್ನು ನೋಡಬಹುದು. ಏನಾದರೂ ವ್ಯತ್ಯಾಸ ಕಂಡುಬಂದಲ್ಲಿ ಇಂಗ್ಲೀಷ್ ಆವೃತ್ತಿಯನ್ನು ಅಂತಿಮ ಎಂದು ಪರಿಗಣಿಸಲಾಗುವುದು.

P   **C-3**

1. Which one of the following nuclei has shorter mean life ?


(A) B

(B) Same for all

(C) A

(D) C

2. The conductivity of semiconductor increases with increase in temperature because

(A) relaxation time increases

(B) number density of current carriers increases, relaxation time decreases but effect of decrease in relaxation time is much less than increase in number density

(C) number density of charge carriers increases

(D) both number density of charge carriers and relaxation time increase

3. For a transistor amplifier, the voltage gain

(A) is high at high and low frequencies and constant in the middle frequency range

(B) constant at high frequencies and low at low frequencies

(C) remains constant for all frequencies

(D) is low at high and low frequencies and constant at mid frequencies

4. In the following circuit, what are P and Q ?
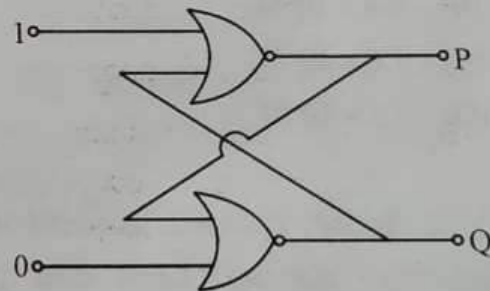
(A) $P = 1, Q = 0$

(B) $P = 1, Q = 1$

(C) $P = 0, Q = 0$

(D) $P = 0, Q = 1$

Space For Rough Work

5. An antenna uses electromagnetic waves of frequency 5 MHz. For proper working, the size of the antenna should be

(A) 300 m

(B) 3 km

(C) 15 m

(D) 15 km

6. A magnetic needle has a magnetic moment of 5×10^{-2} Am^2 and moment of inertia 8×10^{-6} kgm^2. It has a period of oscillation of 2s in a magnetic field $\vec{B}$. The magnitude of magnetic field is approximately

(A) 0.4×10^{-4}T

(B) 0.8×10^{-4}T

(C) 1.6×10^{-4}T

(D) 3.2×10^{-4}T

7. A toroid has 500 turns per metre length. If it carries a current of 2A, the magnetic energy density inside the toroid is

(A) 0.314 J/m^3

(B) 3.14 J/m^3

(C) 0.628 J/m^3

(D) 6.28 J/m^3

8. Consider the situation given in figure. The wire AB is slid on the fixed rails with a constant velocity. If the wire AB is replaced by a semicircular wire, the magnitude of the induced current will
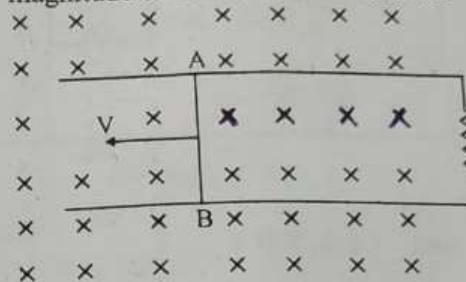
(A) remain same

(B) increase or decrease depending on whether the semicircle bulges towards the resistance or away from it

(C) increase

(D) decrease

9. The frequency of an alternating current is 50 Hz. What is the minimum time taken by current to reach its peak value from rms value ?

(A) 2.5×10^{-3}s

(B) 10×10^{-3}s

(C) 5×10^{-3}s

(D) 0.02s

Space For Rough Work

10. The readings of ammeter and voltmeter in the following circuit are respectively

220 V, 50 Hz
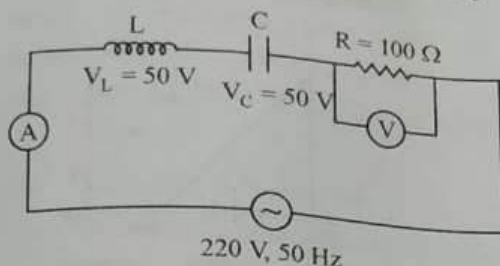
(A) 1.5 A, 100 V

(B) 2.2 A, 220 V

(C) 1.2 A, 120 V

(D) 2.7 A, 220 V

11. Two metal plates are separated by 2 cm. The potentials of the plates are -10 V and $+30$ V. The electric field between the two plates is

(A) 1000 V/m

(B) 3000 V/m

(C) 500 V/m

(D) 2000 V/m

12. The equivalent capacitance between A and B is.
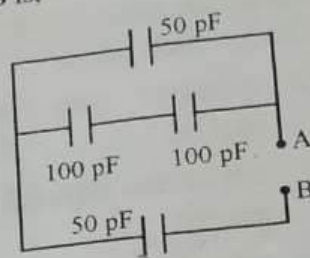
(A) $\dfrac{100}{3}$ pF

(B) 300 pF

(C) 50 pF

(D) 150 pF

13. A capacitor of capacitance C charged by an amount Q is connected in parallel with an uncharged capacitor of capacitance 2C. The final charges on the capacitors are

(A) $\dfrac{Q}{4}, \dfrac{3Q}{4}$

(B) $\dfrac{Q}{5}, \dfrac{4Q}{5}$

(C) $\dfrac{Q}{2}, \dfrac{Q}{2}$

(D) $\dfrac{Q}{3}, \dfrac{2Q}{3}$

Space For Rough Work

14. Though the electron drift velocity is small and electron charge is very small, a conductor can carry an appreciably large current because

(A) drift velocity of electron is very large

(B) relaxation time is small

(C) electron number density is very large

(D) electron number density depends on temperature

15. Masses of three wires of copper are in the ratio 1:3:5 and their lengths are in the ratio 5:3:1. The ratio of their electrical resistance are

(A) 5:3:1

(B) 125:15:1

(C) 1:3:5

(D) 1:15:125

16. If P, Q and R are physical quantities having different dimensions, which of the following combinations can never be a meaningful quantity ?

(A) $PQ - R$

(B) $\dfrac{PR - Q^2}{R}$

(C) $\dfrac{P - Q}{R}$

(D) $\dfrac{PQ}{R}$

17. The given graph shows the variation of velocity (v) with position (x) for a particle moving along a straight line
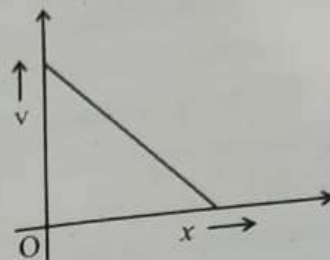
Which of the following graph shows the variation of acceleration (a) with position (x) ?

(A)

(B)

(C)

(D)
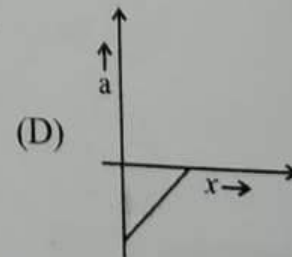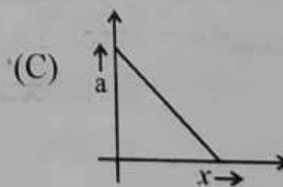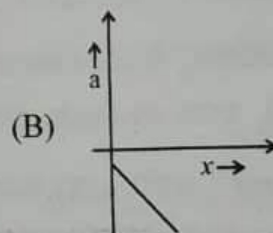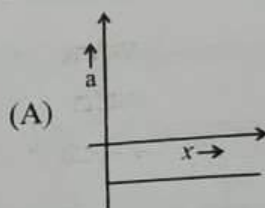
Space For Rough Work

18. The trajectory of a projectile projected from origin is given by the equation $y = x - \dfrac{2x^2}{5}$. The initial velocity of the projectile is

(A) 5 ms^{-1}

(B) $\dfrac{5}{2} \text{ ms}^{-1}$

(C) $\dfrac{2}{5} \text{ ms}^{-1}$

(D) 25 ms^{-1}

19. An object with mass 5 kg is acted upon by a force, $\vec{F} = (-3\hat{i} + 4\hat{j}) \text{ N}$. If its initial velocity at $t = 0$ is $\vec{v} = (6\hat{i} - 12\hat{j}) \text{ ms}^{-1}$, the time at which it will just have a velocity along y-axis is

(A) 10 s

(B) 15 s

(C) 5 s

(D) 2 s

20. During inelastic collision between two objects, which of the following quantity always remains conserved ?

(A) Total mechanical energy

(B) Speed of each body

(C) Total kinetic energy

(D) Total linear momentum

21. In Rutherford experiment, for head-on collision of α-particles with a gold nucleus, the impact parameter is

(A) of the order of 10^{-14} m

(B) of the order of 10^{-6} m

(C) zero

(D) of the order of 10^{-10} m

22. Frequency of revolution of an electron revolving in n^{th} orbit of H-atom is proportional to

(A) n

(B) $\dfrac{1}{n^3}$

(C) $\dfrac{1}{n^2}$

(D) n independent of n

Space For Rough Work

23. A hydrogen atom in ground state absorbs 10.2 eV of energy. The orbital angular momentum of the electron is increased by

(A) 2.11×10^{-34} Js

(B) 4.22×10^{-34} Js

(C) 1.05×10^{-34} Js

(D) 3.16×10^{-34} Js

24. The end product of decay of $_{90}Th^{232}$ is $_{82}Pb^{208}$. The number of α and β particles emitted are respectively

(A) 6, 4

(B) 4, 6

(C) 3, 3

(D) 6, 0

25. Two protons are kept at a separation of 10 nm. Let F_n and F_e be the nuclear force and the electromagnetic force between them

(A) $F_e \gg F_n$

(B) F_e and F_n differ only slightly

(C) $F_e = F_n$

(D) $F_e \ll F_n$

26. Two particles which are initially at rest move towards each other under the action of their mutual attraction. If their speeds are v and 2v at any instant, then the speed of center of mass of the system is,

(A) Zero

(B) v

(C) 2v

(D) 1.5 v

27. A particle is moving uniformly along a straight line as shown in the figure. During the motion of the particle from A to B, the angular momentum of the particle about 'O'
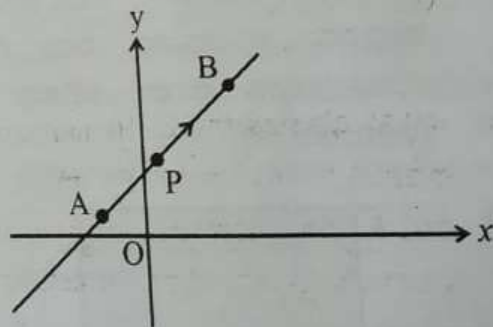
(A) decreases

(B) first increases then decreases

(C) increases

(D) remains constant

Space For Rough Work

28. A satellite is orbiting close to the earth and has a kinetic energy K. The minimum extra kinetic energy required by it to just overcome the gravitation pull of the earth is
   (A) 2K
   (B) $2\sqrt{2}K$
   (C) K
   (D) $\sqrt{3}K$

29. A wire is stretched such that its volume remains constant. The Poission's ratio of the material of the wire is
   (A) −0.50
   (B) −0.25
   (C) 0.50
   (D) 0.25

30. A cylindrical container containing water has a small hole at height of H = 8 cm from the bottom and at a depth of 2 cm from the top surface of the liquid. The maximum horizontal distance travelled by the water before it hits the ground (x) is
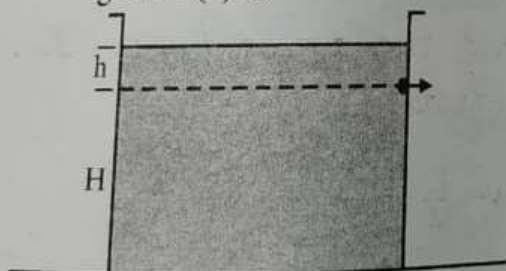
   (A) $4\sqrt{2}$ cm
   (B) 6 cm
   (C) 8 cm
   (D) 4 cm

31. A transparent medium shows relation between i and r as shown. If the speed of light in vacuum is c the Brewster angle for the medium is
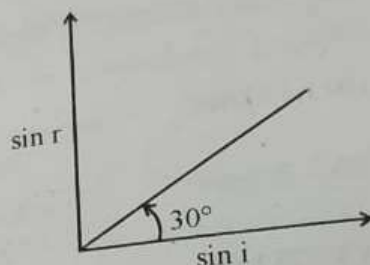
   (A) 45°
   (B) 90°
   (C) 30°
   (D) 60°

32. In Young's double slit experiment, using monochromatic light of wavelength λ, the intensity of light at a point on the screen where path difference is λ is K units. The intensity of light at a point where path difference is $\frac{\lambda}{3}$ is

   (A) $\frac{K}{4}$
   (B) 2K
   (C) K
   (D) 4K

Space For Rough Work

33. Due to Doppler's effect the shift in wavelength observed is 0.1 Å for a star producing wavelength 6000 Å. Velocity of recession of the star will be

(A) 10 km/s

(B) 20 km/s

(C) 25 km/s

(D) 5 km/s

34. An electron is moving with an initial velocity $\vec{V} = V_0\hat{i}$ and is in a uniform magnetic field $\vec{B} = B_0\hat{j}$. Then its de Broglie wavelength

(A) increases with time

(B) increase and decreases periodically

(C) remains constant

(D) decreases with time

35. Light of certain frequency and intensity incident on a photosensitive material causes photoelectric effect. If both the frequency and intensity are doubled, the photoelectric saturation current becomes

(A) doubled

(B) unchanged

(C) quadrupled

(D) halved

36. A certain charge 2Q is divided at first into two parts q_1 and q_2. Later the charges are placed at a certain distance. If the force of interaction between two charges is maximum then

$$\frac{Q}{q_1} = \underline{\hspace{2cm}}.$$

(A) 2

(B) 0.5

(C) 4

(D) 1

Space For Rough Work

37. A particle of mass m and charge q is placed at rest in uniform electric field E and then released. The kinetic energy attained by the particle after moving a distance y is

(A) qE^2y

(B) q^2Ey

(C) qEy^2

(D) qEy

38. An electric dipole is kept in non-uniform electric field. It generally experiences

(A) A force but not a torque

(B) Neither a force nor a torque

(C) A force and torque

(D) A torque but not a force

39. The figure gives the electric potential V as a function of distance through four regions on x-axis. Which of the following is true for the magnitude of the electric field E in these regions ?
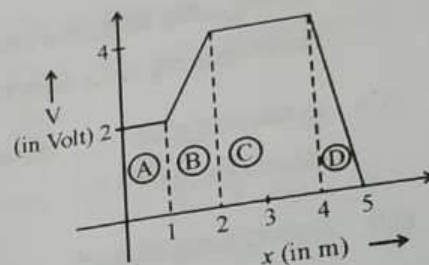
(A) $E_A = E_C$ and $E_B < E_D$

(B) $E_A < E_B < E_C < E_D$

(C) $E_A > E_B > E_C > E_D$

(D) $E_B = E_D$ and $E_A < E_C$

40. A system of two charges separated by a certain distance apart stores electrical potential energy. If the distance between them is increased, the potential energy of the system,

(A) decreases in any case

(B) remains the same

(C) increases in any case

(D) may increase or decrease

Space For Rough Work

41. In a cyclotron a charged particle

(A) speeds up between the dees because of the magnetic field.

(B) slows down within a dee and speeds up between dees

(C) undergoes acceleration all the time

(D) speeds up in dee

42. The number of turns in a coil of Galvanometer is tripled, then

(A) Voltage sensitivity remains constant and current sensitivity increases 3 times

(B) Both voltage and current sensitivity decreases by 33%

(C) Voltage sensitivity increases 3 times and current sensitivity remains constant

(D) Both voltage and current sensitivity remains constant

43. A circular current loop of magnetic moment M is in an arbitrary orientation in an external uniform magnetic field $\vec{B}$. The work done to rotate the loop by 30° about an axis perpendicular to its plane is

(A) $\sqrt{3}\dfrac{MB}{2}$

(B) Zero

(C) MB

(D) $\dfrac{MB}{2}$

44. In a permanent magnet at room temperature

(A) the individual molecules have non zero magnetic moment which are all perfectly aligned.

(B) domains are all perfectly aligned.

(C) magnetic moment of each molecule is zero.

(D) domains are partially aligned.

Space For Rough Work

45. Coersivity of a magnet where the ferromagnet gets completely demagnetized is 3×10^3 Am^{-1}. The minimum current required to be passed in a solenoid having 1000 turns per metre, so that the magnet gets completely demagnetized when placed inside the solenoid is

(A) 60 mA

(B) 6A

(C) 30 mA

(D) 3A

46. An inductor of inductance L and resistor R are joined together in series and connected by a source of frequency ω. The power dissipated in the circuit is

(A) $\dfrac{V^2R}{R^2 + \omega^2L^2}$

(B) $\dfrac{V^2R}{\sqrt{R^2 + \omega^2L^2}}$

(C) $\dfrac{R^2 + \omega^2L^2}{V}$

(D) $\dfrac{V}{R^2 + \omega^2L^2}$

47. An electromagnetic wave is travelling in x-direction with electric field vector given by,

$\vec{E_y} = E_0 \sin(kx - \omega t)\ \hat{j}$. The correct expression for magnetic field vector is

(A) $\vec{B_z} = E_0C \sin(kx - \omega t)\ \hat{k}$

(B) $\vec{B_z} = \dfrac{E_0}{C} \sin(kx - \omega t)\ \hat{k}$

(C) $\vec{B_y} = E_0C \sin(kx - \omega t)\ \hat{j}$

(D) $\vec{B_y} = \dfrac{E_0}{C} \sin(kx - \omega t)\ \hat{j}$

48. The phenomenon involved in the reflection of radio-waves by ionosphere is similar to

(A) total internal reflection of light in air during a mirage

(B) scattering of light by air particles

(C) reflection of light by plane mirror

(D) dispersion of light by water molecules during the formation of a rainbow

Space For Rough Work

49. A point object is moving uniformly towards the pole of a concave mirror of focal length 25 cm along its axis as shown below. The speed of the object is 1 ms^{-1}. At t = 0, the distance of the object from the mirror is 50 cm. The average velocity of the image formed by the mirror between time t = 0 and t = 0.25 s is :
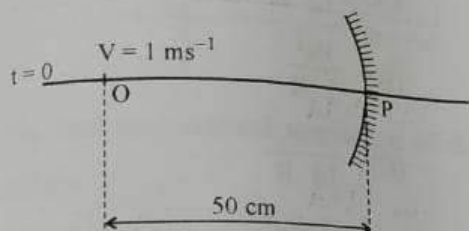
(A) 20 cm s^{-1}

(B) Infinity

(C) 40 cm s^{-1}

(D) Zero

50. A certain prism is found to produce a minimum deviation of 38°. It produces a deviation of 44° when the angle of incidence is either 42° or 62°. What is the angle of incidence when it is undergoing minimum deviation?

(A) 40°

(B) 60°

(C) 30°

(D) 49°

51. In the given circuit, the current through 2Ω resistor is
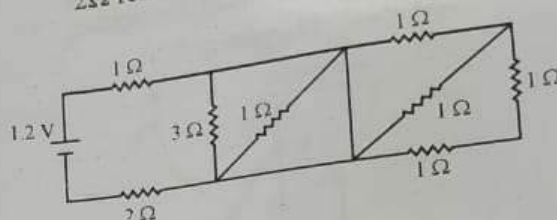
(A) 0.3A

(B) 0.1A

(C) 0.2A

(D) 0.4A

52. Kirchhoff's junction rule is a reflection of

(A) Conservation of energy

(B) Conservation of charges

(C) Conservation of current density vector

(D) Conservation of momentum

Space For Rough Work

53. The variation of terminal potential difference (V) with current flowing through a cell is as shown
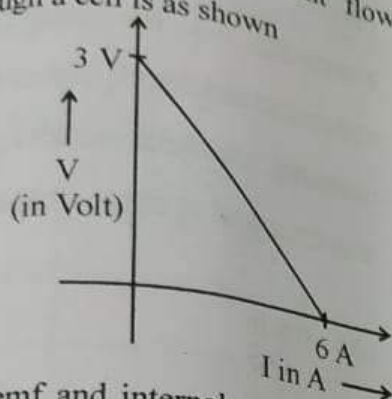
The emf and internal resistance of the cell are

(A) 3V, 0.5Ω

(B) 6V, 0.5Ω

(C) 3V, 2Ω

(D) 6V, 2Ω

54. In a potentiometer experiment, the balancing point with a cell is at a length 240 cm. On shunting the cell with a resistance of 2Ω, the balancing length becomes 120 cm. The internal resistance of the cell is

(A) 2Ω

(B) 0.5Ω

(C) 4Ω

(D) 1Ω

55. The magnetic field at the centre 'O' in the given figure is
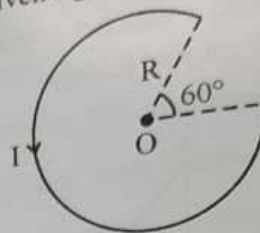
(A) $\dfrac{5}{12}\dfrac{\mu_0 I}{R}$

(B) $\dfrac{\mu_0 I}{12R}$

(C) $\dfrac{7}{14}\dfrac{\mu_0 I}{R}$

(D) $\dfrac{3}{10}\dfrac{\mu_0 I}{R}$

56. An aluminium sphere is dipped into water. Which of the following is true ?

(A) Buoyancy will be more in water at 0 °C than that in water at 4 °C

(B) Buoyancy may be more or less in water at 4 °C depending on the radius of the sphere

(C) Buoyancy will be less in water at 0 °C than that in water at 4 °C

(D) Buoyancy in water at 0 °C will be same as that in water at 4 °C

57. A thermodynamic system undergoes a cyclic process ABC as shown in the diagram. The work done by the system per cycle is

400 ----- A
↑
$P(N/m^2)$
100 ----- B
              C
        5
              10
   V → (in m³)
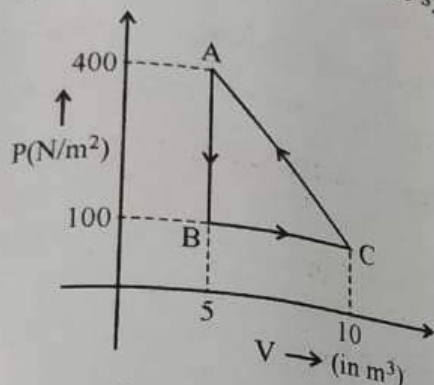
(A) – 1250 J

(B) 1250 J

(C) 750 J

(D) – 750 J

58. One mole of O_2 gas is heated at constant pressure starting at 27 °C. How much energy must be added to the gas as heat to double its volume ?

(A) 450 R

(B) 1050 R

(C) Zero

(D) 750 R

59. A piston is performing S.H.M. in the vertical direction with a frequency of 0.5 Hz. A block of 10 kg is placed on the piston. The maximum amplitude of the system such that the block remains in contact with the piston is

(A) 0.5 m

(B) 0.1m

(C) 1 m

(D) 1.5 m

60. The equation of a stationary wave is

$$y = 2 \sin\left(\frac{\pi x}{15}\right) \cos(48\pi t).$$ The distance between a node and its next antinode is

(A) 1.5 units

(B) 30 units

(C) 7.5 units

(D) 22.5 units

Space For Rough Work

COMMON ENTRANCE TEST - 2019

ANSWER KEYS - PHYSICS

Qnno	A1
1	1
2	2
3	4
4	3
5	3
6	1
7	4
8	3
9	3
10	1
11	1
12	3
13	2
14	2
15	3
16	1
17	4
18	1
19	2
20	2
21	3
22	2
23	3
24	1
25	2
26	G
27	1
28	2
29	2
30	4
31	2
32	3
33	1
34	2
35	1
36	2
37	4
38	2
39	4
40	3
41	1
42	3
43	4
44	1
45	1
46	3
47	4
48	2
49	2
50	2
51	3
52	2
53	3
54	1
55	4
56	3
57	3
58	1
59	2
60	3

Note:
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1. G - Indicates One GRACE MARK Awarded for the Question Number.
2. Value more than four indicates multiple answers are correct.