

Subject:	Physics
Set Name:	V1_Set01
Code:	322
Exam Date:	17-04-2026
SLOT:	1

Question ID	13426
Question Type	MCQ
Question	What is the magnitude of electrical force between an electron and a proton when they are $2\text{ \AA}$ apart? 1. $5.75 \times 10^{-9}\text{ N}$ 2. $2.3 \times 10^{-8}\text{ N}$ 3. $5.75 \times 10^{-10}\text{ N}$ 4. $2.3 \times 10^{-9}\text{ N}$

Question ID	12154
Question Type	MCQ
Question	An electrical dipole of dipole moment $\vec{p}$, is placed in an uniform electric field $\vec{E}$. What is the angle between $\vec{p}$ and $\vec{E}$ such that the torque acting on the dipole is maximum? 1. 0° 2. 60° 3. 90° 4. 180°

Question ID	12156
Question Type	MCQ
Question	What is the dimensional formula of Resistivity (ρ)? 1. $[M^{-1} L^{-3} T^3 A^2]$ 2. $[ML T^{-3} A^{-1}]$ 3. $[ML^3 T^{-4} A^{-1}]$ 4. $[ML^3 T^{-3} A^{-2}]$

Question ID	12158
Question Type	MCQ
	Two charges $+10\text{ }\mu\text{C}$ and $+20\text{ }\mu\text{C}$ are placed at a separation of 2 cm. The electric potential due to these charges at the middle point of the line joining them is

Question	9 MV 18 MV 27 MV 36 MV
Options	
A	1
B	2
C	3
D	4

Question ID	12160
Question Type	MCQ
Question	Kirchhoff's junction rule is a reflection of_____. - conservation of current density vector - conservation of charge - accumulation of charge at the junction - the fact that there is no accumulation of charges at the junction
Options	
A	1
B	2
C	3
D	4

Question ID	12162
Question Type	MCQ
Question	A constant voltage is applied between the two ends of a uniform metallic wire. Due to this, heat is developed in it. The heat developed will be double, if ____ - both length and radius of the wire are doubled. - both length and radius of the wire are halved. - the radius of the wire is doubled. - the length of the wire is doubled.
Options	
A	1
B	2
C	3
D	4

Question ID	12164
Question Type	MCQ
Question	Biot-Savart's law indicates that an electron moving with velocity $(\vec{v})$ produces a magnetic field $(\vec{B})$ such that - magnetic field is perpendicular to its velocity. - magnetic field is parallel to its velocity. - it obeys inverse cube law. - it is along the line joining the electron and point of observation.
Options	

A	1
B	2
C	3
D	4

Question ID	12199
Question Type	MCQ
Question	A galvanometer is converted into a voltmeter of certain range by connecting a resistance of $980\ \Omega$ in series with it. When a resistance $470\ \Omega$ is connected in series, the range is halved. The resistance of the given galvanometer is: 1. $20\ \Omega$ 2. $30\ \Omega$ 3. $40\ \Omega$ 4. $60\ \Omega$
Options	
A	1
B	2
C	3
D	4

Question ID	12200
Question Type	MCQ
Question	A solenoid has a core of a material with relative magnetic permeability 600. The windings of the solenoid are insulated from the core and carry a current of 4 A. If the number of turns in the solenoid is 1000 per metre, then magnetisation is approximately: 1. $8.2 \times 10^5\ \text{A/m}$ 2. $4.1 \times 10^6\ \text{A/m}$ 3. $4.8 \times 10^5\ \text{A/m}$ 4. $2.4 \times 10^6\ \text{A/m}$
Options	
A	1
B	2
C	3
D	4

Question ID	12201
Question Type	MCQ
Question	The magnetic field $\vec{B}$ due to a current carrying circular loop of radius 12 cm at its centre is $0.50 \times 10^{-4}\ \text{T}$. The magnetic field due to this loop at a point on its axis at a distance of 5.0 cm from the centre is: 1. $3.9 \times 10^{-5}\ \text{T}$ 2. $3.9 \times 10^{-6}\ \text{T}$ 3. $6.4 \times 10^{-5}\ \text{T}$ 4. $6.4 \times 10^{-6}\ \text{T}$
Options	
A	1
B	2
C	3
D	4

Question ID	12202
Question Type	MCQ
	An electron after being accelerated through a potential difference of $10^4\ \text{V}$ enters

into a uniform magnetic field of 0.04 T perpendicular to its direction of motion.
The radius of curvature of its trajectory is:

- Question**
1. 8.43 mm
 2. 8.43 cm
 3. 8.43 μm
 4. 84.3 m

Options

- | | |
|----------|---|
| A | 1 |
| B | 2 |
| C | 3 |
| D | 4 |

Question ID 12203

Question Type MCQ

Question Two conducting circular loops of radii R_1 and R_2 are placed in the same plane with their centers coinciding. Assuming $R_2 \ll R_1$, the mutual inductance between them is

1. $\frac{\mu_0 \pi R_2}{4R_1^2}$
2. $\frac{\mu_0 \pi R_1}{2R_2^2}$
3. $\frac{\mu_0 \pi R_1^2}{4R_2}$
4. $\frac{\mu_0 \pi R_2^2}{2R_1}$

Options

- | | |
|----------|---|
| A | 1 |
| B | 2 |
| C | 3 |
| D | 4 |

Question ID 12204

Question Type MCQ

Question A small piece of metal wire is dragged across the gap between the pole pieces of a magnet in 0.5 seconds. The magnetic flux between pole pieces is 8×10^{-4} Wb. The e.m.f. induced in the wire is

1. 1.6×10^{-3} V
2. 1.1×10^{-3} V
3. 2.3×10^{-3} V
4. 3.2×10^{-3} V

Options

- | | |
|----------|---|
| A | 1 |
| B | 2 |
| C | 3 |
| D | 4 |

Question ID 12205

Question Type MCQ

Question A radio wave of wavelength 300 m can be transmitted by a transmission station. A condenser of capacity 2.4 μF is available. The inductance of the required coil for resonance at the frequency of the radio wave is

Question	$1.055 \times 10^{-8} \text{ H}$ $1.245 \times 10^{-7} \text{ H}$ $1.152 \times 10^{-6} \text{ H}$ $2.416 \times 10^{-6} \text{ H}$
Options	
A	1
B	2
C	3
D	4

Question ID	12206
Question Type	MCQ

Question

Match the **LIST-I** with **LIST-II**

LIST-I (Law)		LIST-II (Integral Form)	
A.	Gauss's Law for electricity	I.	$\oint \vec{E} \cdot d\vec{A} = \frac{Q}{\epsilon_0}$
B.	Gauss's Law for magnetism	II.	$\oint \vec{B} \cdot d\vec{l} = \mu_0 i_c + \mu_0 \epsilon_0 \frac{d\phi_E}{dt}$
C.	Faraday's Law	III.	$\oint \vec{E} \cdot d\vec{l} = -\frac{d\phi_B}{dt}$
D.	Ampere-Maxwell Law	IV.	$\oint \vec{B} \cdot d\vec{A} = 0$

Choose the **correct** answer from the options given below:

1. A-IV, B-III, C-I, D-II
2. A-I, B-IV, C-II, D-III
3. A-I, B-IV, C-III, D-II
4. A-IV, B-II, C-III, D-I

Options

A	1
B	2
C	3
D	4

Question ID	12207
Question Type	MCQ

Question	Electromagnetic waves travel in a medium at a speed of 2×10^8 m/s. The relative magnetic permeability of the medium is 1.0. The relative dielectric permittivity of the medium is: 1.75 1.98 2.25 2.50
Options	
A	1
B	2
C	3
D	4

Question ID	12208
Question Type	MCQ

	Match the LIST-I with LIST-II
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Question	LIST-I (Physical Phenomenon)		LIST-II (Explanation)	
	A.	Mirage	I.	Different colors have different speeds
	B.	Blue sky	II.	Bending of light at corners
	C.	Dispersion	III.	Total internal reflection
	D.	Diffraction	IV.	Rayleigh scattering

Choose the **correct** answer from the options given below:

1. A-IV, B-I, C-III, D-II
2. A-II, B-III, C-IV, D-I
3. A-III, B-IV, C-I, D-II
4. A-III, B-IV, C-II, D-I

Options	
A	1
B	2
C	3
D	4

Question ID	12209
Question Type	MCQ

Arrange the following media in the ascending order of the velocity of light in them:

- A. Air
- B. Water
- C. Crown glass
- D. Diamond

Choose the **correct** answer from the options given below:

1. A, B, C, D
2. D, C, B, A
3. C, D, A, B
4. A, B, D, C

Options	
A	1
B	2
C	3
D	4

Question ID	12210
Question Type	MCQ

The diffraction pattern of a monochromatic light is observed for a small pinhole. What will happen to diffraction pattern (in terms of size and intensity), when the size of the pinhole is increased?

- A. the size decreases
- B. the intensity increases
- C. the size increases
- D. the intensity decreases

Choose the **correct** answer from the options given below:

1. A and B Only
2. B and C Only
3. C and D Only
4. A and D Only

Options	
A	1

B	2
C	3
D	4

Question ID	12211
Question Type	MCQ
Question	Two beams of light having intensities I and 4 I interfere to produce a fringe pattern on a screen. The phase difference between the beams is $\frac{\pi}{2}$ at point 'A' and π at point 'B' on the screen. The difference between the resultant intensities at point A and B is:
Options	
A	1
B	2
C	3
D	4

Question ID	12212
Question Type	MCQ
Question	A radiation of energy E falls normally on a perfectly reflecting surface. The momentum transferred to the surface is: [Here c is velocity of light in vacuum.]
Options	
A	1
B	2
C	3
D	4

Question ID	12213
Question Type	MCQ
Question	The following particles are moving with same velocity. Arrange them in the ascending order of their de-Broglie wavelengths. A. Proton B. Electron C. Neutron D. Alpha-particle Choose the correct answer from the options given below:
	1. B, A, C, D 2. D, A, C, B 3. D, C, B, A 4. D, C, A, B

Options	
A	1
B	2
C	3
D	4

Question ID	12214
Question Type	MCQ
Question	Arrange the following nuclei in ascending order of their binding energy per nucleon: A. ${}^4\text{He}$ B. ${}^6\text{Li}$ C. ${}^{12}\text{C}$ D. ${}^{14}\text{N}$ Choose the correct answer from the options given below: 1. A, B, C, D 2. D, C, B, A 3. B, A, D, C 4. B, A, C, D
Options	
A	1
B	2
C	3
D	4

Question ID	12215
Question Type	MCQ
Question	What is the density of nuclear matter? 1. $2.8 \times 10^{-17} \text{ kg.m}^{-3}$ 2. $2.6 \times 10^{-19} \text{ kg.m}^{-3}$ 3. $2.6 \times 10^{21} \text{ kg.m}^{-3}$ 4. $2.3 \times 10^{17} \text{ kg.m}^{-3}$
Options	
A	1
B	2
C	3
D	4

Question ID

12216

Question Type

MCQ

Question

Match the **LIST-I** with **LIST-II**

LIST-I		LIST-II	
A.	Nuclear Fission	I.	Combining two light nuclei to form a heavy nucleus.
B.	Nuclear Fusion	II.	Electromagnetic radiation from transition between nuclear energy levels.
C.	β - particle	III.	High energy electron from a nucleus.
D.	γ - radiation	IV.	Splitting of a heavy nucleus into light nuclei.

Choose the **correct** answer from the options given below:

1. A-I, B-II, C-III, D-IV

2. A-II, B-III, C-IV, D-I

3. A-IV, B-I, C-II, D-III

3. A-IV, B-I, C-II, D-III
4. A-IV, B-I, C-III, D-II

Options	
A	1
B	2
C	3
D	4

Question ID 12217
Question Type MCQ

Question	
The wavelength of the second line (n=4 to n=2) of the Balmer series in the hydrogen spectrum is $4861\overset{\circ}{\text{A}}$. The wavelength of the first line (n=3 to n=2) of Balmer series is approximately:	
1. $3650\overset{\circ}{\text{A}}$ 2. $5243\overset{\circ}{\text{A}}$ 3. $6172\overset{\circ}{\text{A}}$ 4. $6562\overset{\circ}{\text{A}}$	
Options	
A	1
B	2
C	3
D	4

Question ID 12218
Question Type MCQ

Question	
A pure semiconductor has equal electron and holes concentration of $6 \times 10^8 \text{ m}^{-3}$. On doping with certain impurity, electron concentration increases to $9 \times 10^{12} \text{ m}^{-3}$. The new concentration of holes is	
1. $4 \times 10^8 \text{ m}^{-3}$ 2. $4 \times 10^6 \text{ m}^{-3}$ 3. $4 \times 10^4 \text{ m}^{-3}$ 4. $4 \times 10^3 \text{ m}^{-3}$	
Options	
A	1
B	2
C	3
D	4

Question ID 12219
Question Type MCQ

Question	
A p-type semiconductor has acceptor level at 57 meV above the valence band. The maximum wavelength of light that can create a hole is: [Given : Planck's constant(h) = $6.63 \times 10^{-34} \text{ Js}$]	
1. $1.92 \times 10^{-5} \text{ m}$ 2. $2.18 \times 10^{-5} \text{ m}$ 3. $3.28 \times 10^{-5} \text{ m}$ 4. $4.49 \times 10^{-6} \text{ m}$	
Options	
A	1
B	2
C	3
D	4