



PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

SAMPLE PAPER-07 (SOLVED)

Part I

1. Which charge configuration produces a uniform electric field?

A. point charge

B. infinite uniform line charge

C. uniformly charged infinite plane

D. uniformly charged

Answer: c



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2. The work done in carrying a charge 'a' once round a circle of radius 'a' with a charge Q at its centre is

A. $\frac{Q_1 Q_2}{4\pi\epsilon_0 R^2}$

B. zero

C. $\frac{Q_1 Q_2}{4\pi\epsilon_0 R}$

D. infinite

Answer: b



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3. The internal resistance of a 2.1 V cell which gives a current of 0.2A through a resistance of 10Ω is

A. 0.2Ω

B. 0.5Ω

C. 0.8Ω

D. 1.0Ω

Answer: b



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4. An electron moves straight inside a charged parallel plate capacitor of uniform charge density σ . The time taken by the electron to

cross the parallel plate capacitor when the plates of the capacitor are kept constant magnetic field of induction \vec{B} is



A. $\epsilon_0 \frac{elB}{\sigma}$

B. $\epsilon_0 \frac{lB}{l\sigma}$

C. $\epsilon_0 \frac{lB}{e\sigma}$

D. $\epsilon_0 \frac{lB}{\sigma}$

Answer: d



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5. In a series resonant RLC circuit, the voltage across 100Ω resistor is 40 V. The resonant frequency ω is 250 rad/s . If the value of C is $4\text{ }\mu\text{F}$, then the voltage across L is

- A. 600 V
- B. 4000 V
- C. 400 V
- D. IV

Answer: c



6. During the propagation of electromagnetic waves in a medium:

A. electric energy density is double of the magnetic energy density

B. electric energy density is half of the magnetic energy density

C. electric energy density is equal to the magnetic energy density

D. both electric and magnetic energy densities are zero

Answer: c



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7. First diffraction minimum due to a single slit of width 1.0×10^{-5} cm is at 30° . Then wavelength of light used is,

A. 400 A

B. 500 Å

C. 600 Å

D. 700 Å

Answer: b



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8. The sky would appear red instead of blue if

A. atmospheric particles scatter blue light

more than red light

B. atmospheric particles scatter all colours
equally

C. atmospheric particle scatter red light
more than blue light

D. the sun was much hotter

Answer: c



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9. Kinetic energy of emitted electron depends upon

A. frequency

B. intensity

C. nature of atmosphere surrounding the electron

D. none of these

Answer: a



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10. The ratio between the first three orbits of hydrogen atom is

A. 1 : 2 : 3

B. 2 : 4 : 6

C. 1 : 4 : 9

D. 1 : 3 : 5

Answer: c



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11. Bohr's theory of hydrogen atom did not explain fully

A. diameter of H-atom

B. emission spectra

C. ionisation energy

D. the fine structure of even hydrogen spectrum

Answer: d



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12. If a half-wave rectified voltage is fed to a load resistor , which part of a cycle the load current will flow ?

A. $0^\circ - 90^\circ$

B. $90^\circ - 180^\circ$

C. $0^\circ - 180^\circ$

D. $0^\circ - 360^\circ$

Answer: c



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13. Diamond is very hard because

- A. it is covalent solid
- B. it has large cohesive energy
- C. high melting point
- D. insoluble in all solvents

Answer: b



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14. The internationally accepted frequency deviation for the purpose of FM broadcasts.

A. 75 kHz

B. 68 kHz

C. 80 kHz

D. 70 kHz

Answer: a



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15. The blue print for making ultra durable synthetic material is mimicked from

A. Lotus leaf

B. Morpho butterfly

C. Parrot fish

D. Peacock feather

Answer: c



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1. Define 'electric flux



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2. Determine the number of electrons flowing per second through a conductor, when a current of 32A flows through it.



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3. Define magnetic flux.



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4. Give any one definition of power factor.



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5. State the laws of reflection.



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6. Why do metals have a large number of free electrons?



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7. The radius of the 5^{th} orbit of hydrogen atom is 13.25\AA . Calculate the wavelength of the electron in the 5^{th} orbit.



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8. Draw the output waveform of a full wave rectifier.



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9. Explain centre frequency or resting frequency in frequency modulation.



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1. What is corona discharge?



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2. What is electric power and electric energy ?



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3. A bar magnet having a magnetic moment

\vec{M} is cut into four pieces i.e., first cut in two

pieces along the axis of the magnet and each

piece is further cut into two pieces. Compute the magnetic moment of each piece .



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4. The current in an inductive circuit is given by $0.3 \sin(200t - 40^\circ)$ A. Write the equation for the voltage across it if the inductance is 40 mH.



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5. Write down the integral form of modified Ampere's circuital law.



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6. Two light sources have intensity of light as I_0 , What is the intensity at a point where the two light waves have a phase difference of $\pi / 3$?



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7. Write the properties of cathode rays.



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8. Distinguish between wireline and wireless communication.



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9. What is the difference between Nano materials and Bulk materials?





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Part Iv Answer All The Questions

1. Calculate the electric field due to a dipole on its equatorial plane. (OR) Electric field due to an electric dipole at a point on the equatorial plane



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2. How the emf of two cells are compared using potentiometer ?



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3. Discuss the working of cyclotron in detail.



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4. Give the uses of Foucault current.



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5. Write down the properties of electromagnetic waves.



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6. Explain the Young's double slit experimental setup and obtain the equation for path difference.



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7. Give the construction and working of photo emissive cell.



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8. Explain the J.J. Thomson experiment to determine the specific charge of electron.



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9. What is a LED? Give the principle of operation with a diagram.



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10. Give the applications of ICT in mining and agriculture sectors.



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