2ND YEAR MOST PHYSICS IMPORTANT QUESTIONS

GUNSHOT QUESTIONS -2026

LONG ANSWER QUESTIONS

QUESTION NO:19

1. (a) Explain the formation of stationary wave in an air column enclosed in open pipe. Derive the equations for the frequencies of the harmonics produced.
   (b) A Pipe30cm long is open at both ends. Find the fundamental frequency. Velocity of sound in air is 330m/s.
2. (a) How are stationary waves formed in closed pipes? Explain the various modes of vibrations and obtain relations for their frequencies.
   (b) A closed organ pipe 70cm long is sounded. If the velocity of sound is 331m/s, what is the fundamental frequency of vibration of the air column?

QUESTION NO:20

1. (a) State Kirchhoff's laws for electrical network. Using these laws deduce the condition for balancing in a Wheatstone bridge.
   (b) The four resistors 20 Ω, 40 Ω,(20 + *x*) Ω,80 Ω, S respectively from a wheat stone bridge, find the value of ' *x* ' if bridge is balanced.
2. (a) State the working principle of potentiometer explains with the help of circuit diagram.
   How the emf of two primary cells are compared by using the potentiometer.
   (b) In a potentiometer arrangement a cell of emf 1.25V gives a balance point at 35.0cm length of the wire. If the cell is replaced by another cell and the balance point shifts to 63.0 cm what is the emf of the second cell?
3. (a) State the working principle of potentiometer explains with the help of circuit diagram how the potentiometer is used to determine the internal resistance of the given primary cell.
   (b) A battery of emf 2.5 V and internal resistance r is connected in series with a resistor of 45 ohm through an ammeter of resistance 1 ohm. The ammeter reads a current of 50mA. Draw the circuit diagram and calculate the value of *r*.

QUESTION NO:21

1. (a) Explain the principle and working of a nuclear reactor with the help of a labelled diagram. Find the energy equivalent of one atomic mass unit in joules.
   (b) Calculate the energy equivalent of 1g of substance.
2. (a) What is radioactivity? State the law of radioactive decay. Show that radioactive decay is exponential in nature.
   (b) The half-life of radium is 1600 years. How much time does 1 g of radium take to reduce to 0.125g?

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GUNSHOT QUESTIONS -2026

SHORT ANSWER QUESTIONS:

QUESTION NO:11

1) Define critical angle. Explain total internal reflection using a neat diagram?
2) Explain the formation of a rainbow?
3) Explain the formation of mirage?
4) With a neat, labelled diagram explain the formation of image in a simple microscope?
5) Why does the setting sun appear red?

QUESTION NO:12

1. Explain Doppler effect in light. Distinguish between red shift, and blue shift?
2. How do you determine the resolving power of your eye?
3. Does the principle of conservation of energy hold for interference and diffraction phenomena? Explain briefly?
4. Derive the expression for the intensity at a point where interference of light occurs. Arrive at conditions for maximum and zero intensity.

QUESTION NO:13

1. Derive an expression for the intensity of electric field at a point on the
   (a). axial line. (b). equatorial line of a dipole.
2. State and explain Coulomb's inverse square law in electricity.
3. State Gauss's law in electrostatics and its importance.
4. Derive an equation for the couple acting on a electric dipole in a uniform electric field.

QUESTION NO:14

1. (a) Explain series combination of capacitors. Derive the formula for equivalent capacitance in series combination.
   (b). Explain parallel combination of capacitors. Derive the formula for equivalent capacitance in parallel combination.
2. Derive an expression for the capacitance of a parallel plate capacitor.
3. Derive an expression for the electric potential due to point charge.

QUESTION NO:15

1. State and explain Biot-Savart law.
2. Derive an expression for the magnetic dipole moment of a revolving electron?
3. A current of 10A passes through two very long wires held parallel to each other and separated by a distance of 1m. What is the force per unit length between them?

QUESTION NO:16

1. Describe the ways in which Eddy currents are used to advantage.
2. Obtain an expression for the emf induced across a conductor which is moved in a uniform magnetic field which is perpendicular to the plane of motion.
3. The current in a circuit falls from 5A to 0A in 0.1s. If an average emf of 200V is induced, give an estimate of the self-inductance of the circuit.

QUESTION NO:17

1. What are the limitations of Bohr's theory of hydrogen atom?
2. Explain the different types of spectral series.
3. Write a short note on de-Broglie's explanation of Bohr's second postulate of quantization.
4. Describe Rutherford's Atom model? What are the drawbacks of this model

QUESTION NO:18

1. Distinguish between half-wave and full-wave rectifiers.
2. What is rectification? Explain the working of a full-wave rectifier.
3. Describe how a semiconductor diode is used as a Half wave rectifier.
4. Define NAND and NOR gates. Give their truth tables. or Write truth tables of Universal Logic gates.
5. Which gates are called universal gates.

2ND YEAR MOST PHYSICS IMPORTANT QUESTIONS

GUNSHOT QUESTIONS -2026

VERY SHORT QUESTIONS:

QUESTION NO:1

1) A small, angled prism of 4^0 deviates a ray through 2.48^0. Find the refractive index of the prism.
2) What is dispersion? Which colour gets relatively more dispersed?
3) (a) What is myopia? How can it be corrected?
   (b)What is hypermetropia? How can it be corrected?
4) Define 'power' of a convex lens. What is its unit?
5) What are the laws of reflection through curved mirrors?

QUESTION NO:2

1. Distinguish between ammeter and voltmeter?
2. How do you convert a moving coil galvanometer into a) an ammeter? b) a volt meter?
3. What is the importance of Oersted's experiment?
4. What is principle of moving coil galvanometer?
5. A circular coil of radius 'r' having 'N' turns carries a current 'i'. What is its magnetic moment?
6. (a) What is the force on a conductor of length 'L' carrying current 'i' placed in a magnetic field of induction B? When does it become maximum?
   (b) What is the force on a charged particle of a charge 'q' moving with velocity 'v' placed in a uniform magnetic field of induction B? When does it become maximum?

QUESTION NO:3

1. Define magnetic inclination (or) angle of dip. 2.Define magnetic declination.
2. Magnetic lines of force form continuous closed loops.
3. What is the magnetic moment associated with a solenoid.
4. a) What direction compass needle points at poles? Which needle to be used at poles?
   b) What happens to compass needles at the Earths pole?

QUESTION NO:4

1. Classify the following materials with regards to magnetism:
   i) Manganese, ii) Cobalt, iii) Nickel iv) Bismuth, v) Oxygen, vi) Copper
2. What are the units of Magnetic moment, Magnetic induction and Magnetic field?
3. What do you understand by the "magnetization" of a sample?
4. What is the magnetic moment associated with a solenoid? 5) State Gauss law for Magnetism?

QUESTION NO:5

1. A transformer converts 200V ac into 2000V ac. Calculate the number of turns in the secondary if the primary has 10 turns.
2. What is the phenomenon involved in the working of a transformer?
3. Write the expression for the reactance of (i) an inductor (ii) a capacitor.
4. What type of transformer is used in a 6V bed lamp?
5. Define power factor. On which factors doe's power factor depends? 6.What is transformer ratio?
6. What is meant by wattles component of current?

QUESTION NO:6

1. Give two uses of infrared rays? Which animal can detect infrared waves?
2. What are the applications of microwaves?
3. Microwaves are used in Radars why?
4. If the wavelength of electromagnetic radiation is doubled what happens to the energy of photon?
5. What is the principle of production of electromagnetic waves?
6. How are Microwaves produced?

QUESTION NO:7

1. What is "Photo electric effect"?
2. What important fact did Millikan's experiment establish?
3. What is 'Work function"? 4.What are "cathode rays"?
4. How is the De-Broglie wavelength associated with an electron accelerated through a potential difference of 100 volts?

QUESTION NO:8

1. Write down Einstein's photo electric equation.
2. Write down De Broglie's relation and explain the terms their in.
3. State Heisenberg's Uncertainty principle?
4. Give examples of "Photosensitive substances" why they are called so?
5. An electron, an α particle and a proton have the same kinetic energy. Which of these particles has the shortest De Broglie wavelength?

QUESTION NO:9

1. Draw the circuit symbols for p-n-p and n-p-n transistors.
2. (a) What is an n-type semiconductor? What are the majority and minority charge carriers in them?
   (b) What is a p-type semiconductor? What are the majority and minority charge carriers in them?
3. What are intrinsic and extrinsic semiconductors?
4. Which gates are called universal gates?
5. What is a p-n junction diode? Define depletion layer.
6. In which bias can a Zener diode be used as voltage regulator?

QUESTION NO:10

1. Define modulation. Why is it necessary? Mention the basic methods of modulation.
2. What are the basic blocks of communication system?
3. What is sky wave propagation?
4. Which type of communication is employed in Mobile Phones?
5. Mention the frequency range of speech signals.