Himachal Pradesh Model Paper

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Class:-XII **Model Test Paper** **Subject:- Physics**

Himachal Pradesh Board School Education, Dharamshala

Time:- 3hrs **Max. Marks:-60**

SPECIAL INSTRUCTION

1.	**All the questions are compulsory.**
2.	**30% extra internal choice is being given in the questions.**
3.	**Answers should be brief and to the point.**
4.	**Marks allotted to each questions are indicated against it.**
5.	**Question No: (1-12) are M.C.Qs carrying 1 Marks each.** **Question No: (13-18) are short answer type carrying 2 Marks each.** **Question No: (19-26) are carrying 3 Marks each.** **Question No: (27-29) are long answer type carrying 4 Marks each.**

Q.No.1 Which law asserts that electric field lines cannot form closed path?

a) Coulomb's Law b) Conservation Law (1)

c)Gauss Law d) Superposition Law

Q.No.2 If the radius of Copper is doubled, what will be the effect on its specific resistance?

a) Remain same b) Will Increase (1)

c)Will Decrease d) Cannot say

Q.No.3 What is the resistance of an ideal ammeter and voltmeter?

a) 0,0 b) ∞, 0 (1)

c)0, ∞ d) ∞ , ∞

Q.No.4 For the current in LCR circuit to be maximum.

a) $R= X_L + X_C$ b) $X_L=X_C$ (1)

c) $X_C=0$ d) $X_C=0$

Q.No.5 What is the common characteristic of all the E.M. waves?

a) Intensity b) Frequency (1)

c)Wavelength d) Speed

Q.No.6 Myopia is due to?

a) Older age b) Change in focal length (1)

c)Shortening of eye ball d) elongation in eye ball

Q.No.7 What would happen if the velocity of revolving electron become zero in an atom?

a) it will lose its mass b) it will lose its charge (1)

c) it will play off the atom d) it will fuse with the nucleus

Q.No.8 In a nuclear reactor cadmium radius.

a) generate the neutrons b) slow down the neutrons (1)

c) accelerate the neutrons d) absorbs the neutrons

Q.No.9 Choose the correct relation between the transistor parameter α and β. (1)

a) $\beta=1-\alpha/\alpha$ b) $\beta=\alpha/1-\alpha$

c) $\beta=1+\alpha/\alpha$ d) $\beta=\alpha/1+\alpha$

Q.No.10 A device which converts one form of energy into another form is known as.

a) Transmitter b) Receiver (1)

c) Amplifier d) Transducer

Q.No.11 The least distance of distinct vision for a normal human eye is____

a) 25m b) 0.25m (1)

c) 1m d) 2.5m

Q.No.12 Hugen's wave theory of light could not explain____

a) diffraction b) interference (1)

c) photoelectric effect d) polarisation

Q.No.13 What is meant by quantization of charge? Can a body have a charge of $0.8\text{x}10^{-19}$ C? (2)

Q.No.14 What are eddy current. How can they be minimized? (2)

Q.No.15 State and explain Maxwell modification of Ampere's circuital Law.

OR (2)

What are E.M. waves? What is the source of E.M. waves?

Q.No.16 Derive an expression for de-broglie wavelength of an electron accelerated from rest through a potential difference V and hence prove that $\boldsymbol{\lambda}= 12.27/\sqrt{\mathbf{V}}$ Å. (2)

Q.No.17 Write the truth table and logic symbol for "NOR" gate.

OR (2)

Explain the working of full wave rectifier with diagram

Q.No.18 An object of size 3.00cm is placed 14cm in front of a concave lens of focal length 21cm. Describe the image produced by the lens. What happens if the object is moved farther from the lens? (2)

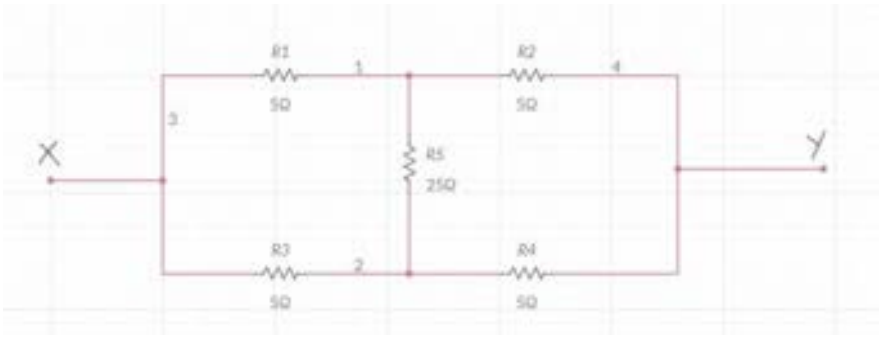
OR

Derive mirror formula for a concave mirror when real image is formed?

Q.No.19 State the working principle of potentiometer, with the help of circuit diagram, describe the method to find the internal resistance of cells. (3)

Q.No.20 a) State Kirchoff's Law in electricity.

b) Calculate equivalent resistance between X and Y (3)



Q.No.21 State Ampere's circuital law. Using this law find an expression for magnetic field due to a long straight conductor carrying current I.

OR (3)

a) State Biot-Savart Law.
b) A long straight wire carries a current of 35A. What is the magnitude of the field? At a point 20cm from the wire.

Q.No.22 What are magnetic lines of force? Explain why magnetic lines of force cannot intersect each other. (3)

Q.No.23 a) What do you understand by total Internal Reflection? Write essential conditions for it.

b) A tank is filled with water to a height of 12.5cm. The apparent depth of a needle lying at the bottom of tank is measured by a microscope to be 9.4cm. What is the refraction index of water? (3)

Q.No.24 State postulates of Bohr's model of H atom, on the basis of this find radius of Hydrogen atom in the inner most orbit.

OR (3)

Define Mass defect. Calculate the binding energy per nucleons of $_{26}Fe^{56}$, Given mass of $_{26}Fe^{56}$ is 55.934949amu, mass of neutron is 1.008665amu, mass of proton is 1.007825amu.

Q.No.25 With the help of a circuit diagram, explain the working of CE-npn transistor as an amplifier.

OR (3)

Explain forward and reverse biasing. How is a Zener diode fabricated to work as voltage regular.

Q.No.26 Discuss the different modes of propagation of E.M. waves. (3)

Q.No.27 What is electric dipole and dipole moment? Drive an expression for electric field intensity at any point on the axial line of an electric dipole.

OR (4)

Define electrical capacitance. Drive an expression for the capacitance of a parallel plate capacitor filled with dielectric slab.

Q.No.28 What is an A.C Generator? With the heil of a labelled diagram, explain the principle, construction and working of an A.C generator. (4)

Q.No.29 What do you mean by diffraction of light? Explain diffraction at a single slit and deduce an expression for width of central maxima.

OR (4)

What is a astronomical telescope? Explain its principle with ray diagram and derive an expression for its magnifying power when the final image is formed at infinity.

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