IPE Telangana 2023 Physics Paper II

(May)

Section – A

Answer ALL questions **10 x 2 = 20**

1. Mention the basic methods of modulation.
2. Define 'Power' of a convex lens. What is its unit?
3. Draw the circuit symbols of p-n-p and n-p-n transistors.
4. Distinguish between ammeter and voltmeter.
5. What is 'work function'?
6. Magnetic lines form closed loops. Why?
7. Write down Einstein's photoelectric equation.
8. Define magnetic declination.
9. Define power factor. On what factors does power factor depend?
10. The charging current of a capacitor is 0.6A. What is the displacement current across its plates?

Section –B

Answer ANY SIX questions **6 x 4 = 24**

11. State and explain Coulomb's law in electricity.
12. What are the limitations of Bohr's theory of hydrogen atom?
13. With a neat labeled diagram explain the formation of image in a simple microscope.
14. Derive an expression for the capacitance of a parallel plate capacitor.
15. Distinguish between half wave and full wave rectifiers.
16. Derive an expression for the magnetic dipole moment of a revolving electron.
17. Explain Doppler effect in light. Distinguish between red shift an blue shift.
18. Obtain the expression for the emf induced across a conductor which is moved in a uniform magnetic field perpendicular to the plane of motion.

Section –C

Answer ANY TWO questions **2 x 8 = 16**

19. How are stationary waves formed in closed pipes? Explain the various modes of vibrations and obtain relations for their frequencies.
    A closed organ pipe 70 cm long is sounded. If the velocity of sound is 331 ms^{-1}, what is the fundamental frequency of vibration of the air column?
20. What is radioactivity? State the law of radioactive decay. Show that radioactive decay is exponential in nature.
    The half-life radium is 1600 years. How much time does 1 g of radium take to reduce to 0.125 g.
21. State Kirchhoff's laws for an electrical network.
    Using these laws deduce the condition for balance in a Wheatstone Bridge.

Note:

- The questions are obtained from internet and from the students from their interaction for paper discussion after the examination.
- The questions are given here only for ready reference for the students for preparation for upcoming examinations