

MODEL PAPER-2

Time : 3Hrs.

PHYSICS

Max. Marks: 60

SECTION - A

Answer all questions.

Each question carries 2 marks.

All are very short answer type questions.

10 × 2 = 20 Marks.

1. The sequence of bands marked on a carbon resistor are: Red, Red, Red, Silver. What is its resistance and tolerance?
2. Distinguish between ammeter and voltmeter.
3. The focal length of concave lens is 30cm. Where should an object be placed so that its image is $\frac{1}{10}$ of its size.
4. Mention the various parts of the ionosphere.
5. Which gates are called universal gates?
6. What is transformer ratio?
7. The dielectric strength of air is 3×10^6 V/m at certain pressure. A parallel plate capacitor with air in between the plates has a plate separation of 1 cm can you charge the capacitor to 3×10^6 V?
8. What is the ratio of speed of infrared rays and ultraviolet rays in vacuum?
9. What is the important fact did Millikan's experiment establish?
10. Neutrons cannot produce ionization. Why?

SECTION - B

Answer any six questions.

Each question carries 4 marks.

All are short answer type questions.

6 × 4 = 24 Marks.

11. Derive an expression for the potential energy of an electric dipole placed in a uniform electric field.
12. Derive an expression for the effective resistance when three resistors are connected in (i) series (ii) parallel.
13. Define focal length of a concave mirror. Prove that the radius of curvature of concave mirror is double its focal length?
14. Does the principle of conservation of energy hold for interference and diffraction phenomena? Explain briefly.
15. State Gauss's law in electrostatics and explain its importance.
16. Compare the properties of Para, Dia and Ferromagnetic substances.
17. 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.
18. Distinguish between excitation potential and ionization potential.

SECTION - C

Answer any two of the following.

Each question carries 8 marks.

All are long answer type questions.

8 × 2 = 16 Marks.

19. Explain the formation of stationary waves in an air column enclosed in open pipe. Derive the equations for the frequencies of harmonics produced.

Two organ pipes of length 65 cm and 70 cm respectively are sounded simultaneously. How many beats per second will be produced between the fundamental frequencies of the two pipes? (Velocity of sound = 330 m/s).

20. Obtain an expression for the torque on a current loop placed in a uniform magnetic field. Describe the construction and working of a moving coil galvanometer.
21. What is radioactivity? State the law of radioactive decay. Show that radioactive decay is exponential in nature.

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