

INTERMEDIATE PUBLIC EXAMINATION

Sr. PHYSICS 2018 MODEL PAPER (English Version)

TIME: 3 HOURS

MAX. MARKS: 60

SECTION – A

Note: 1. Answer All questions.

10 × 2 = 20

2. Each question carries 2 marks.

3. All are Very short answer type questions.

1. The maximum intensity at bright fringe is 4 times that of either wave. Does this violate energy conservation? If not why?
2. Write any two applications of Polarization of light.
3. When is couple acting on a bar magnet in a uniform magnetic field (i) maximum (ii) minimum.
4. The potential at the origin is zero due to electric field $\vec{E} = 20 \hat{i} + 30 \hat{j} \text{ N-C}^{-1}$. Find the potential at point P(2m, 2m).
5. How do you convert a moving coil galvanometer into a voltmeter?
6. The flux through a coil changes by 200 weber in 10 seconds. What is the induced emf?
7. Define threshold frequency and work function.
8. What is p-n junction diode? Define depletion layer.
9. Draw circuit symbols for n - p - n, p - n - p transistors.
10. What is skywave propagation.

SECTION - B

Note: 1) Answer any Six questions.

6 × 4 = 24

2) Each question carries 4 marks.

3) All are Short answer type questions.

11. Explain the working of simple microscope and find an expression for its magnifying power.
12. Explain Tan A and Tan B positions of a deflection magnetometer.
13. Derive an expression for equivalent capacitance when a number of capacitors are connected in series.
14. What are Peltier and Thomson effects? Define their coefficients.

15. Two conductors each of length 12 m lie parallel to each other in air. The distance between two conductors is 15×10^{-2} m and current in each conductor is 300 A. Determine the force in newton tending to pull the conductors together.
16. State and explain Biot-Savart's Law.
17. Describe Thomson's experiment to determine e/m of an electron with relevant theory.
18. Explain avalanche breakdown in a diode and zener breakdown in a zener diode.

SECTION - C

Note: 1) Answer any Two questions.

2 × 8 = 16

2) Each question carries 8 marks.

3) All are Long answer type questions.

19. a) What is Doppler effect? Find an expression for the apparent frequency heard when the source is in motion and listener is at rest. What is the limitation of Doppler effect?
- b) A fire engine with its bell ringing with a frequency of 200 Hz is moving with a velocity of 54 kmph towards an observer at rest near a hut on fire. What is the apparent frequency of sound heard by the observer? (Velocity of sound in air = 300 m/s.)
20. Explain the principle of Meter Bridge. Describe an experiment for the determination of unknown resistance of a wire.
21. Explain the principle and working of a nuclear reactor with the help of a neat labelled diagram.