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III

Total No. of Questions - 21

Total No. of Printed Pages - 2

Regd. No.

Part - III

PHYSICS, Paper - II

(English Version)

Time : 3 hours *Max. Marks : 60*

SECTION A

Note : i) Answer **all** questions. $10 \times 2 = 20$

ii) Each question carries **two** marks.

iii) All are **very short answer** type questions

1. What are Fraunhofer lines? What is their importance?

2. Write any two applications of interference

3. The maximum torque acting on a magnet in a field of induction 0.2 tesla is 10 N-m. What is its magnetic moment?

4. Three capacitors of capacitances 4μF, 6μF and 8μF are connected in parallel.
   i) What is the ratio of charges?
   ii) What is the ratio of potential differences?

5. Write two differences between emf and potential difference (pd).

6. How many electrons flow through a wire, when 1A current passes for 1 millisecond?

7. State Moseley's law. What is its importance?

8. What is the role of a moderator in a nuclear reactor?

9. What are radioisotopes? Write any one use of radioisotopes.

10. Define modulation. Why is it necessary?.

SECTION B

Note : i) Answer **any six** of the following questions. $6 \times 4 = 24$

ii) Each question carries **four** marks.

iii) All are **short answer** type questions.

11. Describe the construction and working of an optical fiber. State its uses.

12. Derive an expression for magnetic induction at a point on the axial line of a bar magnet.

13. Define intensity of electric field (E) and the potential difference (V) between two points. Derive the relation between them.

14. Derive the balancing condition of a Wheatstone bridge.

15. What are Peltier and Thomson effects? Define their coefficients.

16. The resistance of a moving coil galvanometer is 5 Ohms. The maximum current it can measure is 0.015A. How would you convert it into :

i) An ammeter to measure 1.5 A?

ii) A voltmeter to measure 1.5 V?

17. Define the photoelectric effect. Write the laws of the photoelectric effect.

18. Distinguish between nuclear fusion and nuclear fission.

SECTION C

Note : i) Answer **any two** of the following questions. $2 \times 8 = 16$

ii) Each question carries **eight** marks.

iii) All are **long answer** type questions.

19. What is the Doppler effect? Find an expression for the apparent frequency heard when the source is in motion and the listener is at rest. The third overtone produced by a vibrating string 2m long is 1200 Hz. What is the velocity of propagation of the wave?

20. Obtain an expression for the torque on a loop placed in a uniform magnetic field. Describe the construction and working of a moving coil galvanometer.

21. What is rectification? Explain the working of a full-wave rectifier with a diagram. What is a zener diode? How will a zener diode be connected in a circuit generally?