Gopyright Reserved Time 3 Hours समय — तीन घंटा H4F D(H-II) PH(4) Full Marks: 75 अधिकतम अंक — 75

# 2021

#### INSTRUCTION

Candidates are required to give their answer in their own words as far as practicable. Answer any six questions, selecting at least one from A, two form Group B and three questions from Group- C.

#### Group - A

- Obtain the boundary conditions for electric field at the surface of separation between two dielectrics. Use these relations to analyse the refraction of electric lines of forces.
- Define hysteresis loop. Derive expression for energy loss per cycle of magnetization.

  Group B
- 3. Describe growth and decay of current in CR circuit.
- 4. Give construction and action of Owen's bridge.
- Explain series and parallel resonance circuits. Give expression for power in AC circuit.
  - Explain the principle of production of a rotating magnetic field by a single phase A.C. supply.

#### Group - C

- Derive mass formula on the basis of liquid drop model.
- 8. Give a brief outline of Fermi's theory of beta decay.
- 9. Give construction and action of synchrocyclotron.
- 10. Describe the cascade theory of cosmic rays and its main conclusion.
- 11. What is a quark? Explain quark model of particle.
- 12. Write notes on any two:
  - (a) Neutrino and anti- neutrino.
  - (b) Difference between nuclear fission and nuclear fusion.
  - (c) Strangeness
  - (d) Chain reaction.

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**Rachel S Tattersall** 

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