

COMBINED COMPETITIVE EXAMINATION (MAIN)

PHYSICS

Paper—II

Time : 3 hours

Full Marks : 200

Note : (1) The figures in the right-hand margin indicate full marks for the questions.

(2) Attempt **five** questions in all.

(3) Question No. 1 is compulsory.

1. Answer any ten of the following :

4×10=40

- (a) Write Coulomb's law in vector form.
- (b) How is the Coulomb force between two charges affected by the presence of a third charge?
- (c) Electric lines of force never cross. Why?
- (d) Two point charges of q and $4q$ coulombs are fixed at a distance of 12 cm from each other. Sketch the lines of force and locate the neutral point, if any.
- (e) A spherical rubber balloon carries a charge that is uniformly distributed over its surface. As the balloon is blown up, how does \vec{E} vary for points (i) inside the balloon, (ii) on the surface of the balloon and (iii) outside the balloon?

