**Instructions**

1. **The test contains two questions**

Q1: Eight solid plastic cubes, each 3.00 cm on each edge, are glued together to form each one of the objects (i, ii, iii, and iv) shown in Figure.

(a) If each objectcarries charge with a uniform density of 400 nC/m3 throughout its volume, what is the charge of each object?

(b) If each object is given charge with a uniform density of 15.0 nC/m2 everywhere on its exposed surface,

what is the charge on each object?

(c) If charge is placed only on the edges where perpendicular surfaces meet, with a uniform density of 80.0 pC/m, what is the charge of each object? 15 Marks



Q2: Two identical beads each have a mass *m* and charge *q*. When placed in a hemispherical bowl of radius *R* with frictionless, nonconducting walls, the beads move, and at equilibrium they are a distance *R* apart.

Determine the charge on each bead. 15 Marks

