STATISTICAL MECHANICS

Full Marks : 70

Time : 3 hours

Answer any **six** questions including **Q. No. 1**
which is compulsory

The figures in the right-hand margin indicate marks

1. Which statistics is followed by the followings :

   2×10

   (*i*) Electron, ideal gas molecule, phonon, ^{3}He gas.

   (*ii*) Show the validity of equipartition theory for
   one dimensional harmonic oscillator with
   energy given by

   $$E = p^2/2m + 1/2k_0x^2$$

   (*iii*) Write down density matrix for a system
   having probabilities P_1, P_2 and P_3 with corre-
   sponding state Ψ_1, Ψ_2 and Ψ_3.