2020

CHEMISTRY — HONOURS — PRACTICAL

Paper : CC-11P

(Physical Chemistry)

Full Marks : 30

The figures in the margin indicate full marks.

(All calculations can be done using calculator)

1. Write a FORTRAN program to determine the area under the distribution curve, average and the RMS speed of a gas at a given temperature obeying Maxwell's distribution of molecular speed in 3 dimensions using Simpson's $^1/_3$ rule.

(a) Write down the theory using the following points :

(i) Principle of Simpson's $^1/_3$ rule and its derivation.

(ii) Algorithm for Simpson's $^1/_3$ rule.

(iii) Derivation of the average and the RMS speed from Maxwell's distribution of molecular speed in 3 dimensions. 4+2+4

(b) Write down the FORTRAN program (in your answer script) to determine the area under the curve, average and the RMS speed of O_2 gas at 300 K. 14

(c) Write down the results. What happens if the gas is changed to N_2? 3+3

———————