

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 $\frac{1}{3}$ rule.
 - (a) Write down the theory using the following points :
 - (i) Principle of Simpson's $\frac{1}{3}$ rule and its derivation.
 - (ii) Algorithm for Simpson's $\frac{1}{3}$ 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 O₂ gas at 300 K. 14
 - (c) Write down the results. What happens if the gas is changed to N₂? 3+3
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