Total No. of Questions : 5]

SEAT No. :

P1023

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T.Y.B.Sc. (Regular)

PHYSICS

PHY - 354 : Atomic and Molecular Physics

(2019 Pattern) (Semester - V) (Paper - IV) (35124)

Time : 2 Hours] *[Max. Marks : 35*

Instructions to the candidates:

1) *Question 1 is compulsory.*
2) *Attempt any three questions from question 2,3,4,5.*
3) *Questions 2 to 5 carries equal marks.*
4) *Use of calculator and log table is allowed.*

Q1) Attempt any five. **[5]**

a) Write electronic configuration of carbon atom.

b) Define Normal Zeeman effect.

c) What are possible values of M_l for l=3?

d) Define equivalent electrons.

e) What is mean by reduced mass of a system?

f) What is mean by orthohelium?

Q2) a) With help of neat diagram, explain four spectral series in sodium atom. **[6]**

b) Explain classical theory of Raman effect. **[4]**

Q3) a) Explain the four quantum numbers in detail. **[6]**

b) Determine term symbols for ground state of Hydrogen and Lithium atoms. **[4]**

P.T.O.

Q4) a) Derive expression for rotational energy levels of rigid diatomic molecule. Hence draw allowed rotational energy levels of a rigid diatomic molecule. **[6]**

b) Find out singlet and triplet terms in p-p configuration. **[4]**

Q5) Attempt any four. **[10]**

a) Write note on Paulli's Exclusion principle.

b) Compare Normal and Anamolous Zeeman effect.

c) Write Applications of Raman Spectroscopy.

d) Write applications of UV - VIS Spectroscopy.

e) Write postulates of Bohr's theory.

f) Write note on Fluoressence.