

M.SC.(Physics) Semester - 2 (CBCS) Examination
May/June-2021 (NEW COURSE)
Atomic and Molecular Physics

Time: 1:30 Hours**Marks: 42****Instructions:**

1. Figures to the right indicate marks.
 2. There are five questions in the question paper.
 3. Answer any three of the following questions.
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Que-1 Answer The Following Questions. (14)

- A.** Discuss in detail: Building up principle.
- B.** Discuss in detail: The energies of atomic orbitals for hydrogen atom spectrum.

Que-2 Answer The Following Questions. (14)

- A.** Discuss the explanation of Zeeman Effect on the basis of vector atom model.
- B.** Discuss the magnetic moment of electron due to its orbital and spin motion.

Que-3 Answer The Following Questions. (14)

- A.** Discuss interaction of radiation with rotating molecule in detail with necessary diagram.
- B.** Discuss: Rotational spectra of rigid diatomic molecules.

Que-4 Answer The Following Questions. (14)

- A.** Discuss with block diagram: The working of a microwave spectrometer.
- B.** Discuss: The first order Stark effect of symmetric tops for the $J = 1, K = 1 \rightarrow J = 2, K = 1$ transition and Stark effect of the $J = 0 \rightarrow J = 1$ transition of a linear molecule.

Que-5 Answer The Following Questions. (14)

- A.** Write a note on IR Spectrophotometer.
- B.** Write a note on Diatomic vibrating rotator.
