This question paper contains **2** printed pages]

GA—11—2023

FACULTY OF SCIENCE

B.Sc. (Sixth Semester) EXAMINATION

APRIL/MAY, 2023

(New/CBCS Pattern)

PHYSICS

Paper XIV

(Atomic Molecular and Nuclear Physics)

(Monday, 24-04-2023) **Time : 10.00 a.m. to 12.00 noon**

Time— Two Hours *Maximum Marks*—40

N.B. :— (*i*) *All* questions are compulsory.

(*ii*) Figures to the right indicate full marks.

(*iii*) Symbols carry usual meaning unless and otherwise stated.

1. Explain what are principal, orbital and magnetic quantum numbers. Discuss space quantization of vector atom model. 15

Or

(*a*) Draw well labelled energy level diagram that explains rotational spectra of diatomic molecules. 8

(*b*) Discuss Raman effect in detail. 7

2. Explain the working and Van de Graff generator with the help of a suitable diagram. Give the relative advantages of Van de Graff generators. 15

Or

(*a*) Describe the conservation laws in nuclear reactions. 8

(*b*) Explain energy release in nuclear fission. 7

P.T.O.

3. Write short notes on (any *two*) : 10

(*a*) Stark effect

(*b*) L-S coupling

(*c*) Betatron

(*d*) Neutron cycle.