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VA—07—2024

FACULTY OF SCIENCE

B.Sc. (Third Year) (Sixth Semester) EXAMINATION

NOVEMBER/DECEMBER, 2024

(CBCS/New Pattern)

PHYSICS

Paper–XIV

(Atomic, Molecular and Nuclear Physics)

(Saturday, 30-11-2024)　　　　　　　　　　**Time : 10.00 a.m. to 12.00 noon**

Time—2 Hours　　　　　　　　　　　　　　　　　*Maximum Marks*—40

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

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

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

1.　Explain normal Zeeman effect. Obtain an expression for Zeeman shift. 15

Or

(*a*)　Explain theory of pure rotational spectra.　　　　　　　　　8

(*b*)　What is Raman effect ? Give its experimental study.　　　　7

2.　State conservation laws and obtain an expression for Q-value of nuclear

　reaction.　　　　　　　　　　　　　　　　　　　　　15

P.T.O.

Or

(*a*) With a neat well labelled diagram explain construction and working of Van de Graff generator. 8

(*b*) Explain construction and working of cyclotron. 7

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

(*a*) j-j coupling

(*b*) Regions of electromagnetic spectra

(*c*) Betatron

(*d*) Thermo-nuclear reactor.