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Y—104—2019

FACULTY OF SCIENCE

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

NOVEMBER/DECEMBER, 2019

(CGPA Pattern)

PHYSICS (PHY-304)

Paper XIV

(Atomic, Molecular and Nuclear Physics)

(Thursday, 19-12-2019) **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*) Symbols have their usual meanings.

1. Attempt any four : 8

(*a*) Give the permissible values of orbital quantum number and magnetic spin quantum number.

(*b*) State the intensity rule.

(*c*) Draw the well labelled diagram of electromagnetic spectra.

(*d*) Define nuclear fission.

(*e*) State inelastic scattering in nuclear reactions.

(*f*) What is conservation of nucleons in nuclear reaction.

2. (*a*) Explain Pauli's exclusion principle in detail. 8

(*b*) Give the theory of rotation-vibration spectra.

Or

(*x*) Explain vector atom model. 8

(*y*) Explain experimental study of Raman effect.

P.T.O.

3. (*a*) Explain fission products. 8

(*b*) Discuss energy production in stars.

Or

(*x*) Explain chain reacting system. 8

(*y*) Give different kinds of nuclear reactions.

4. (*a*) Explain normal Zeeman effect. 8

Or

(*b*) Obtain Q-value of nuclear reaction.

5. Write notes on any *two* : 8

(*a*) Controlled thermonuclear reactions

(*b*) L-S coupling

(*c*) Discovery of Nuclear Fission

(*d*) Stark effect.