

Exam. Code : 103206

Subject Code : 8042

B.A./B.Sc. 6th Semester (Old Syllabus 2018-19)

PHYSICS

Paper—B (Radiation & Particle Physics)

Time Allowed—2 Hours] [Maximum Marks—35

Note :— Attempt any *four* questions. All questions carry equal marks.

1. Derive Bohr's formula for the energy loss of a heavy charged particle in a matter and explain the modification done by Bethe and Bloch.
2. Discuss three modes of interaction of gamma radiation photons with matter and differentiate by their related cross sections also.
3. Discuss the resolution and efficiency of radiation detector. What is difference between self and external quenching for GM counter ?
4. Discuss the principle, construction and working of scintillation detector. What are the important characteristics of good scintillator ?
5. Discuss the principle, construction and working of cyclotron. State its important limitations.
6. Discuss the construction and working of Linear accelerator (LINAC). What is the main disadvantage of this setup ?
7. What are strange particles ? Give Quark contents and isotopic spin of proton, neutron and pions.
8. What are the fundamental interactions of the elementary particles ? Compare their important characteristics.