

Roll No. ....

Total Pages : 3

**717/MH**

**C-2050**

**NUCLEAR AND PARTICLE PHYSICS**

Paper-C

Semester - VI

Time Allowed : 2 Hours]

[Maximum Marks : 30

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

1. Derive Bethe Blocks's formula for energy loss of charged particles in matter.
2. Show that Compton shift depends on angle of scattering and is independent of the wavelength of incident photon.

3. Describe the principle and working of betatron.
4. (i) What is the principle of synchrotron ?  
(ii) What are the limitations of cyclotron ?
5. Write note on :  
(i) Lepton Number           (ii) Hyper-charge
6. What are quarks ? Give the quark structure of nucleous and mesous.
7. Explain the principle and working of an ionisation chamber.
8. What is the principle and working of scintillation counter ? Give its block diagram.
9. Attempt any five :  
(i) Why electrons can't be accelerated in a cyclotron ?

- (ii) Dead time and recovery time of G.M. counter.
- (iii) Drawbacks of linear accelerator.
- (iv) Pair production
- (v) Law of conservation of iso-spin
- (vi) Bremsstrahlung
- (vii) Decay process of K-mesons