Exam. Code : 209004
Subject Code : 4902

M.Sc. Physics 4th Semester

REACTOR PHYSICS

Paper: Phy-563

Time Allowed—2 Hours] [Maximum Marks—100

Note :— There are **Eight** questions of equal marks. Candidates are required to attempt any **Four** questions.

1. (a) What is the range of energies of thermal and fast neutrons ?
   (b) Obtain the solution of diffusion equation for a point source in an infinite medium.
2. Discuss thermal neutron diffusion and then obtain steady state equation.
3. What do you mean by moderation of neutrons ? Discuss slowing down density and slowing down time.
4. What is fast neutron diffusion ? Obtain the solution of Fermi age equation for a point source of fast neutrons in an infinite medium.
5. Explain neutron cycle and while deriving the four factor formula discuss the critical size of a nuclear reactor.

6. What is the difference between homogeneous and heterogeneous nuclear reactors ? Discuss heterogeneous reactors.
7. (a) What is the need of a breeder reactor ?
   (b) Discuss dual purpose reactors.
8. Name the factors on which the reactivity of a nuclear reactor depends. Discuss the effect of fission product poisoning.