

Exam. Code : 209004
Subject Code : 4820

M.Sc. Physics 4th Semester (Batch 2020-22)

PARTICLE PHYSICS

Paper : PHY-551

Time Allowed—3 Hours] [Maximum Marks—100

Note :- Attempt FIVE questions in all, selecting at least ONE question from each Section. The fifth question may be attempted from any Section. All questions carry equal marks.

SECTION—A

1. Describe the historical events leading to discovery of muons. Also, discuss method of determination of mass, life time, decay mode, spin and parity of pions.
2. (a) Describe production, detection and properties of resonance particles.
(b) Write a note on production, detection, life-time, mass, spin, parity etc. of Kaons.

SECTION—B

3. (a) What is τ - θ problem ?
(b) Explain CPT conservation.

4. (a) Why quarks are said to be building blocks of Universe ?
- (b) Describe the quark structure of nucleons and mesons.

SECTION—C

5. (a) Explain the experimental verification of parity violation of beta decay.
 - (b) Discuss lepton-polarization in beta decay.
6. Describe Fermi theory of beta decay.

SECTION—D

7. (a) Describe Feynmann Rules for Lagrangians in Relativistic Field Theory.
 - (b) Can one formulate gauge theory to accommodate massive gauge fields ?
8. Describe Standard model in Particle Physics.