

M.Sc Physics - 4th Semester

(2721)

Paper: Phy-551 Particle Physics

Time Allowed: 2 hrs.

Max. Marks: 100

Note: There are EIGHT questions of equal marks. Candidates are required to attempt any FOUR questions.

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 muons.
2. (a) What is the experimental evidence for the existence of two type of neutrino?
(b) Discuss the classification and various properties like mass, life-times, spin, parity and decay modes of hyperons.
3. Explain CP violation and subsequently, describe conservation of CPT.
4. (a) What are quarks and describe quark model for particle structure.
(b) Explain quarks structure of baryons and mesons.
5. (a) How can one classify weak interaction?
(b) Describe parity violation in A-decay.
6. (a) Discuss Cabibo's theory for weak decays of strange particles.
(b) Explain V-A theory of weak interactions.
7. Describe spontaneous symmetry breaking and hence. Higgs mechanism in particle physics.
8. Explain Klein-Gordon- Dirac- and Proca-Lagrangian in Relativistic Field theory.

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