Manonmaniam Sundaranar University,

Directorate of Distance & Continuing Education,

Tirunelveli - 627 012 Tamilnadu, India

OPEN AND DISTANCE LEARNING (ODL) PROGRAMMES

(FOR THOSE WHO JOINED THE PROGRAMMES FROM THE ACADEMIC YEAR 2023–2024)

NUCLEAR AND PARTICLE PHYSICS .- **SPHM41**

1. Explain the role of **spin-orbit coupling** in the shell model. Why is it necessary to explain the observed magic numbers?

OR

1. **b. Describe how the Q-value of a nuclear reaction is calculated and what it represents.**

2. a. Discuss in detail about the Fermi-theory of beta decay and compare the results with experimental observation

OR

b. Differentiate between leptons, baryons, and mesons in the classification of elementary particles.

Assignment Questions

Electromagnetic Theory SPHM42

1. a. Starting from the Maxwell's equation obtain the wave equation for the propagation of electromagnetic wave in a symmetric planar wave guide

   Or

   b. Using the multiple expansion technique, obtain an expression for electric potential due to a charge distribution at a far away point.

2. a. Deduce the expressions for electric and magnetic fields of an oscillating electric dipole.

   Or

   b. Prove that Coulombs gauge is a transverse gauge.

Assignment Question No: SOLID WASTE MANAGEMENT -SPHS41

1) (A) Explain the different types of solid waste with suitable examples. Discuss the importance of the Resource Conservation and Recovery Act (RCRA) in managing hazardous and municipal solid waste.

(OR)

(B) Describe the physical and chemical characteristics of solid waste. How do these characteristics influence the selection of a suitable solid waste management method?

2) (A) Write a detailed note on composting as a solid waste disposal technique. Explain the
landfilling procedure and the role of transportation in effective SWM.

(OR)

(B) Discuss the relationship between solid waste management, climate change, and marine
litter. How can sustainable SWM contribute to economic and environmental development?