

Code No. : B03/201

Unit-IV

4. (A) Define the terms Bosons and Fermions. 2
(B) What is hadrons ? 2
(C) Explain the conservation laws related to the elementary particles. 4

Or

Discuss the symmetry properties.

- (D) Discuss the Quark model with explanation of flavour, charm and colour. 12

Or

Describe types of interaction between elementary particles.



Roll No.

Total No. of Sections : 4

Total No. of Printed Pages : 4

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III Semester Examination

M.Sc.
PHYSICS
Paper II

[Nuclear and Practical Physics]

Time : Three Hours]

[Maximum Marks : 80

[Min. Passing Marks : 16

Note : Part A and B of each question in each unit consists of Very Short Answer Type Questions which are to be answered in one or two sentences. Part C (Short Answer Type) of each question will be answered 200-250 words. Part D (Long Answer Type) of each question should be answered within the word limit 400-450.

Unit-I

1. (A) What does the spectroscopic notation 3D_1 and 3S_1 indicates ? 2
(B) What is exchange forces ? 2
(C) Discuss Reciprocity theorem. 4

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Or

Describe effective range theory.

(D) Explain in brief Meson theory of nuclear forces.

12

Or

Describe Breit Wigner one level formula.

Unit-II

2. (A) Why are the atomic magic number different from the nuclear magic number ? **2**

(B) Define angular momentum. **2**

(C) Discuss magnetic moments and Schmidt lines. **4**

Or

Explain magic number and its stability property.

(D) Write postulates of liquid drop model and explain Bohr Wheeler theory of fission. **12**

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Or

Explain briefly collective model with vibrational states and rotational states.

Unit-III

3. (A) How does the neutrinos and antineutrinos differ from photons ? **2**

(B) The B-decay interaction has :

(a) a long range

(b) short range

(c) externally short range. **2**

(C) Describe parity selection rule. **4**

Or

Define shape of β spectrum.

(D) Explain the Fermi theory of β decay. **12**

Or

Discuss briefly two component theory of neutrino decay.