Roll No.....

Total No. of Section : 03
Total No. of Printed Pages : 03

Code No. : 03/201(B)

Third Semester Examination, Dec. 2017

M.Sc. - PHYSICS

Paper - II

NUCLEAR & PARTICLE PHYSICS

Time : 3 Hrs. **Max.Marks : 80**

Note : Section 'A' consists of 10 very short answer type questions, all of which are compulsory and should be attempted first. Section 'B' consists of four short answer type questions with internal options. Section 'C' consists of four long answer type questions with internal choice.

Section - 'A'

Answer the following very short-answer-type questions in one or two sentences : (2x10=20)

Q.1 What are stripping and pick up reaction?

Q.2 Write Breil Wigner one level formula.

Q.3 What do you mean by magnetic and angular moment?

Q.4 Explain spin orbit coupling.

Q.5 Define magic number.

Q.6 What are parity selection rules?

Q.7 What is nuclear decay? Give its types.

Q.8 Write main cause of beta decay.

Q.9 What are flavours?

Q.10 Give classification of hadrons.

P.T.O.

Section - 'B'

Answer the following short-answer-type questions with word limit 200-250 : (5x4=20)

Q.1 Explain exchange forces.

OR

Discuss reciprocity theorem.

Q.2 Explain spin orbit coupling model.

OR

What is meant by Schmidt lines?

Q.3 Discuss parity selection rule for Fermi's theory of B-decay.

OR

Explain nuclear isomerism.

Q.4 Discuss symmetry and conservation laws.

OR

Explain classification of Hadrons.

Section - 'C'

Answer the following long-answer-type questions with word limit 400-450 : (10x4=40)

Q.1 Explain effective range theory of neutron proton sattering at low energy.

OR

Derive formula for partial wave analysis of nuclear reaction cross section.

Q.2 What do you mean by nuclear fission? Discuss Bohr wheelar theory of nuclear fission.

OR

Explain collective model of Bohr and Mottelson.

Q.3 What is Fermi theory of B-decay? Give experimental verification of Fermi theory of B-decay.

OR

Discuss gamma decay-multipole transitions in nuclei.

Q.4 Give elementary idea of CPT invarience. What are Leptons? Discuss its types.

OR

What do you mean by elementary particles ? Explain types of interaction between elementary particles.

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