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Total No. of Pages : 02

Total No. of Questions : 09

M.Sc (Physics) (Sem.-3) NUCLEAR PHYSICS Subject Code : MSPH-532-21 M.Code : 92536 Date of Examination : 14-12-22

Time: 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

- 1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
- 2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
- 3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

- 1. Answer briefly :
 - a. What is nuclear binding energy?
 - b. Discuss hyperfine structure of nucleus.
 - c. Write expression for dipole moment of deutron.
 - d. What is Geiger Nuttal law?
 - e. Define half-life and give expression.
 - f. What is internal conversion?
 - g. What are magic numbers?
 - h. What do you understand by cross section?
 - i. Briefly discuss direct reactions.
 - j. What is a compound nucleus?

SECTION-B

- 2. Discuss in detail the wave mechanical properties of nuclei.
- 3. Explain the ground and excited states of deutron.
- 4. Describe the electron capture phenomenon.
- 5. Explain in detail the nuclear vibration spectra.
- 6. State and derive Breit-Wigner dispersion formula.

SECTION-C

7.	a) Describe the method to measure nuclear radii.	(5)
	b) Explain the meson theory of nuclear forces.	(5)
8.	a) Discuss fermi theory of beta decay.	(6)
	b) Differentiate between nuclear fusion and fission processes.	(4)
9.	Explain in detail the shell model of nucleus.	(10)

NOTE : Disclosure of Identity by writing Mobile No. or Marking of passing request on any paper of Answer Sheet will lead to UMC against the Student.