Roll No.: .....

Total No. of Questions : 5] [Total No. of Printed Pages : 1

W-3252(A)

M.Sc. (Fourth Semester) Examination, (Second Chance) June-2020

PHYSICS

Paper - 401

Nuclear Physics

Time : Three Hours

Maximum Marks : 85

Minimum Pass Marks : 29

Note : Attempt **all** questions.

Q.1. a) If in a spontaneous α - decay of $^{232}_{92}U$ at rest, the total energy released in the reaction is 250 MeV. What amount of energy is carried by the α - particle?

b) Give the selection rules for α - decay.

Q.2. Discuss coherent scattering of neutron by protons and scattering by ortho and para hydrogen.

Q.3. Explain nuclear fission and fusion reaction from liquid drop model.

Q.4. Explain how Gamma photon is emitted during Gamma decay? Also explain nuclear isomerism.

Q.5. a) Explain the nuclear reaction $^{63}Cu(p,n)^{63}Zn$ and $^{60}Ni(\alpha,n)^{63}Zn$, $^{63}Cu(p,2n)^{62}Zn$ and $^{60}Ni(p,2n)^{62}Zn$ in terms of scattering cross - section, proton and α - particle energy.

b) Explain conservation of nuclear reactions.