SHRI RAMSWAROOP MEMORIAL UNIVERSITY

End Semester Examination (2021-22)-Odd Semester

M.Sc.(Physics) – II Year (III Sem)	
Course Name: Nuclear Physics	**Code: MPH3002**
Time: 02 Hours	**Max Marks: 60**

University Roll No.															
(To be filled by the Student)															

Note: Please read instructions carefully:

a) *The question paper has 03 sections and it is compulsory to attempt all sections.*

b) *All questions of Section A are compulsory; questions in Section B and C contain choice.*

Section A: Very Short Answer type Questions **Attempt all the questions.**		**BL**	**CLO**	**Marks (10)**
1.	Find g.s. parity and angular momentum of 15O and 17O.	[BL3]	CLO1	02
2.	Mention important g.s. properties of deuteron.	[BL2]	CLO2	02
3.	Explain Parity-violation in beta decay.	[BL2]	CLO3	02
4.	Distinguish between baryons and mesons with suitable examples.	[BL4]	CLO4	02
5.	Briefly mention working principle of scintillation detector.	[BL2]	CLO5	02
Section B: Short Answer Type Questions **Attempt any 03 out of 05 questions.**		**BL**	**CLO**	**Marks (30)**
1.	Give the explanation of existence of magic numbers through shell model.	[BL4]	CLO1	10
2.	Elaborate the quantum mechanical description of α-particle decay.	[BL4]	CLO3	10
3.	Discuss spin-dependence of nuclear forces n-p scattering.	[BL4]	CLO2	10
4.	Discuss the role of colors in Quark.	[BL4]	CLO4	10
5.	Explain the basic features of compound nucleus theory.	[BL4]	CLO2	10
Section C: Long Answer Type Questions **Attempt any 01 out of 04 questions**		**BL**	**CLO**	**Marks (20)**
1.	Derive Breit- Wigner dispersion formula and discuss its significance.	[BL4]	CLO2	20
2.	Electric quadrupole moment and magnetic moment provides vital informations about nucleus - Discuss it in detail.	[BL4]	CLO1	20
3.	Draw schematic diagram and explain working of Spark Chambers along with its application.	[BL4]	CLO5	20
4.	Discuss Fermi theory of beta decay and derive an expression of total transition probability.	[BL4]	CLO3	20
