



G.T.N. ARTS COLLEGE (Autonomous)

Even Semester (2021 – 2022)

OBE Regulation – 2020

Continuous Internal Assessment – II

Programme: **M. Sc**

Semester: **IV**

Class: **II M. Sc. PHYSICS**

Course Title: **Nuclear And Particle Physics**

Course Code: **20PPHC42**

Max. Marks: **45**

Course Outcomes (COs):

CO1	interpret the basic concept of Nucleus and Q –Equation
CO2	analyze the behavior of Radioactive Materials
CO3	identify the Nuclear properties and behavior in various Model
CO4	interpret the concepts about Nuclear Energy and Force
CO5	identify the Elementary particles and its nature

Q. No.	Section – A Answer ALL the questions (6×1=6)	COs	K- Level
1	The target nuclei can be represented by _____. a) Yb) Z c) Bd) X	CO1	K1
2	The projectile losses nucleus to the target is called _____. a) scattering b) compound nuclear reaction c) strippingreaction d) Pickup reaction	CO1	K1
3	The analytical relationship between the kinetic energy of the projectile and outgoing particle and the nuclear disintegration energy is called _____. a) nuclear reaction b) Q-Equation c) emission d) decay	CO1	K1
4	Who is the father of nuclear physics? a) Rutherford b)Newton c) Thomson d) Einstein	CO1	K1
5	Beta ray emits _____. a) electron b)helium c) neutron d) particle	CO1	K1

6	Unstable nuclei convert in to stable is known as _____. a) radioactivity b) emission c) stripping reaction d) pickup reaction	CO1	K1
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Q. No.	Section – B Answer ALL the questions (5×3=15)	COs	K-Level
7	A List out the types of nuclear reactions with example.	CO1	K2
	(OR)		
	B Explain the balance of mass and energy in nuclear reactions.	CO1	K2
8	A Derive the Q–Equation.	CO1	K2
	(OR)		
	B Derivesolution to the Q – Equation.	CO1	K2
9	A Outline the measurement of nuclear radius.	CO1	K2
	(OR)		
	B Define the range of alpha particles.	CO1	K2
10	A Discuss the continuous beta ray spectrum.	CO1	K2
	(OR)		
	B Define gamma ray emission.	CO1	K2
11	A Discuss the statistical nature of radioactivity.	CO2	K3
	(OR)		
	B Define the radioactivity.	CO2	K3

Q. No.	Section – C Answer any THREE questions (3×8=12)	COs	K-Level
12	Explain the Rutherford scattering and estimation of the nuclear size with neat diagram.	CO1	K2
13	Explain the centre of mass frame in nuclear physics with necessary diagram.	CO1	K2
14	Explain in detail about the discovery of the neutron.	CO1	K2
15	List out the properties of radioactivity.	CO2	K3
16	Derive the expression for law of radioactive decay.	CO2	K3

Course teacher

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