QP CODE: 104018 **Reg. No: ……..**

First Year B.Sc (MRT) Degree Regular/Supplementary Examinations March 2022
Atomic and Nuclear Physics

Time: 3 Hours **Total Marks: 100**

- ***Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space***
- ***Answer all parts of a single question together • Leave sufficient space between answers***
- ***Draw table/diagrams/flow charts wherever necessary***

Essays: **(2x20=40)**

1. State and explain the assumption of Bohr's theory, postulates, and evaluate with respect to merits and demerits
2. Explain the Rutherford model on the basis of his experiment on alpha scattering.

Short notes: **(8x5=40)**

3. Discuss Somerfield's atom model
4. Elementary particles.
5. Discuss the Aston's mass spectrograph.
6. ϒ decay and various process involved in ϒ decay.
7. Meson theory of nuclear forces,
8. Discuss properties of artificial and natural radioactivity.
9. Explain Nuclear fission and Nuclear Fusion with example
10. Discuss the production of Auger electrons

Answer briefly: **(10x2=20)**

11. Define radioactive equilibrium and types of radioactive equilibrium.
12. Electromagnetic spectrum.
13. Ritz combination principle
14. Define half-life of radioactive substance. Derive the expression of half-life.
15. State De-Broglie's Theory
16. What is Zeeman Effect
17. What is stopping potential in Photoelectric Effect.
18. Mention few short lived isotopes and its uses.
19. State the properties of nucleus.
20. Properties of electrons.

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