QP CODE: 104018 **Reg. No: ……..**

First Year B.Sc (MRT) Degree Regular/Supplementary Examinations March 2023

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. Discuss in detail Bohr atom model. Mention its merits and demerits
2. Explain the various modes of radioactive decay. Give examples for each

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

3. J J Thomson's method of determining e/m of the electron
4. Discuss the Aston's mass spectrograph
5. Discuss vector atom model
6. Explain De Broglie's concept of matter waves
7. Discuss the production of Auger electrons
8. Radioactive series
9. Discuss Sommerfeld's atom model
10. Discuss the general properties of atomic nucleus

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

11. What is the use of a mass spectrograph
12. Explain Ritz combination principle
13. What is L-S coupling
14. Explain photoelectric Effect
15. Distinguish between phase velocity and group velocity
16. Define binding energy of nucleus
17. Distinguish between natural and artificial radioactivity
18. What are the properties of α- rays
19. Write any two uses of γ- ray
20. What are quantum numbers

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