QP CODE:104018 **Reg. No: ……..**

First Year B.Sc (MRT) Degree Supplementary Examinations March 2018

Atomic and Nuclear Physics

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

- Answer all Questions.
- Draw Diagrams wherever necessary.

Essay **(2x20=40)**

1. Describe the construction and working of nuclear reactor
2. Explain the production, properties of cathode rays in Thomson's model. Interpret the e/m ratio of electron by Thomson experiment.

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

3. Explain about natural and artificial radioactivity.
4. Discuss Somerfield's atom model.
5. Derive an expression for an half life of radioactive substance in terms of decay. Mention the relation between mean life and decay constant. What is the SI unit of activity
6. State four distinguish properties of β and ϒ.
7. Explain the limitation of Bohr's atom model.
8. What is β decay. Explain the various process involved in β decay.
9. Distinguish between isotope and isobar with an example. What is isotone.
10. State the laws of photoelectric emission

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

11. Define radioisotope with an example.
12. State the properties of neutrons.
13. Express 16mg mass into equivalent energy in electron volt
14. What do you mean by Q value of a nuclear reaction
15. State the postulates of Bohr's theory of hydrogen atom.
16. Define the specific charge of electron, what is the value of e/m of cathode rays.
17. Define excitation and ionization potential.
18. What are different types of mesons
19. What is Zeemen effect
20. State De-Broglie's theory.

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