

QP CODE: 104018

Reg. No:

**First Year B.Sc (MRT) Degree Regular/Supplementary Examinations
August 2019**

Atomic and Nuclear Physics

Time: 3 Hours

Total Marks: 100

- Answer all Questions.
- Draw Diagrams wherever necessary.

Essays:

(2x20=40)

1. What is radioactivity. Mention the types of decay in detail and explain radioactive decay law by deriving the formula.
2. Explain Ritz combination principle

Short notes:

(8x5=40)

3. Write briefly rods used in nuclear reactor.
4. Discuss the Milliken's experiment.
5. Explain the limitation of Bohr's atom model
6. A radioactive substance has half-life of 5 years. Calculate the fraction of atoms of this substance would decay in 15 years.
7. Discuss the neutron bombardment in the production of artificial radioactive element with example.
8. What is electron emission. Explain the various types of electron emission
9. Write the properties of cosmic rays.
10. Discuss nuclear reactions (α, p), (α, n)

Answer briefly:

(10x2=20)

11. The idea of meson theory.
12. What is Zeeman effect
13. What is atomic mass unit. Express it in Kg
14. Why does electron revolve around the nucleus. Write its energy
15. Energy released per fission of U^{235} is 200mev. Calculate the energy released during fission of 1gm of U^{235} .
16. Brief saturation and short range of nuclear force.
17. Define and explain binding energy
18. Write what do electromagnetic waves consists of.
19. Properties of Gamma ray
20. Explain the properties of artificial radioactive isotopes
