

QP CODE: 104018

Reg. No:

**First Year B.Sc (MRT) Degree Supplementary Examinations
March 2019**

Atomic and Nuclear Physics

Time: 3 Hours

Total Marks: 100

- Answer all Questions.
- Draw Diagrams wherever necessary.

Essays:

(2x20=40)

1. Describe the construction and working of Aston spectrograph with necessary theory. State its limitations.
2. Explain vector model in detail. Enumerate Stern Gerlach experiment and results obtained by it.

Short notes:

(8x5=40)

3. Rods used in nuclear reactor.
4. States and explain important features of nuclear forces.
5. States of properties of electromagnetic waves.
6. Explain Larmour precession.
7. Discuss about successive disintegration of radioactive atoms.
8. Discuss the neutron bombardment in the production of artificial radioactive element with example.
9. A radioactive element Ir-192 activity 10 curie having half life of 74 days. Calculate its activity after 100 days.
10. Explain Ritz combination principle.

Answer briefly:

(10x2=20)

11. What is $E=mc^2$
12. Define threshold energy of projectile in nuclear reactions.
13. Bohr magnetron
14. Brief saturation and short range of nuclear force.
15. Energy released per fission of U^{235} is 200mev. Calculate the energy released during fission of 1gm of U^{235} .
16. Define mass number and atomic number.
17. Properties of γ rays.
18. State any two applications of radioactivity.
19. Define mass defect and binding energy.
20. Compute mass of 1 curie of C^{14} . The half-life of C^{14} is 5700 years.
