

QP CODE:104018

Reg.No:

First Year B.Sc (MRT) Degree Supplementary Examinations –

November 2015

Atomic and Nuclear Physics

Time: 3 Hours

Total Marks: 100

- Answer all Questions.
- Draw Diagrams wherever necessary.

Essay

(2x20=40)

1. Explain Stern Gerlach experiment and indicate the importance of the results obtained. What is Zeeman effect. Describe the quantum mechanical explanation for normal Zeeman Effect
2. What is photoelectric effect. Explain how the photo electric effect can studied on the basis of Einstein equation, states its laws. What is the effect (i) intensity (ii) frequency of incident light on photo electric current

Short notes:

(8x5=40)

3. With a diagram explain Thomason apparatus for measuring e/m of an electron
4. What is Electromagnetic spectrum. Discuss its types and uses.
5. Describe Rutherford atom model. What are the draw backs and how Bohr's suggest to improve it.
6. Describe the different types of radioactivity.
7. Explain neutrino hypothesis
8. Describe briefly about the cosmic rays and explain the quark model. Explain about n-p and n-r reactions with examples
9. Larmour frequency and theory of NMR
10. The half life of radium is 1600 years, after how many years 1 kg sample of radium will reduce to 1 gm

Answer briefly:

(10x2=20)

11. Define the binding energy of nucleus, draw the curve between the mass number and binding energy per nucleon
12. Brief about uncertainty principle
13. Explain shortly about nuclear isomerism
14. What are application of short and long lived isotopes. Give examples
15. What is the De-Broglie wavelength of 5 kg object moving with speed of 3m/sec
16. States postulates of Bohr's theory of hydrogen atom.
17. Derive the relation between a.m.u. and energy
18. Define Leptons and Baryons
19. Define quark
20. Explain briefly about ritz combination principle
