B.Sc. DEGREE EXAMINATION,NOVEMBER 2019
III Year V Semester
Nuclear Physics

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. What are magic numbers?
2. Find the radius of ${}_6C^{12}$ nucleus.
3. Define radioactivity.
4. Mention any three properties of alpha rays.
5. What is the Principle of Synchrocyclotron.
6. What is a particle accelerator? Give two examples.
7. What is the efficiency of GM counter.
8. What is ionization chamber?
9. What are secondary cosmic rays?
10. What is meant by pair production?
11. What is nuclear parity?
12. What do you mean by antimatter?

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. Give an account of shell model.
14. Write the law of successive disintegration and explain secular and transient equilibrium.
15. Briefly explain the construction and working of protonsynchrotron.
16. Explain the working of scintillation counter.
17. Explain the four fundamental interaction between the elementary particles.
18. Write down the properties of Beta rays.
19. Explain how the intensity of cosmic rays varies with altitude and latitude.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Explain Fermi gas model of the nucleus.
21. State laws of radio active disintegration and derive the expression for half life and mean life period.
22. Explain the principle and working of a cyclotron.
23. Explain the principle and working of Wilson cloud chamber. What are its merits and demerits?
24. Discuss the classification of elementary particles with its Quantum number.

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