QP CODE: 104025 **Reg. No: ……..**

First Year B.Sc Radio Therapy Technology Degree Regular Examinations October 2024

Paper IV - General and Nuclear Physics

(2023 Scheme)

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

- ***Answer all questions to the point neatly and legibly • Do not leave any blank pages between answers • Indicate the question number correctly for the answer in the margin space***
- ***Answer all parts of a single question together • Leave sufficient space between answers***
- ***Draw table/diagrams/flow charts wherever necessary***

Essays: **(2x15=30)**

1. Explain in details about the various measuring instruments used in an X-ray circuit
2. Explain in detail of, working of Moving coil Galvanometer

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

3. What is standard deviation and variance of a data set. How they related
4. Explain Star and Delta AC circuit connections
5. A transformer has 600 turns on the primary windings and 20 turns of the secondary windings. Determine the secondary voltage if the secondary circuit is open and the primary voltage is 140 V
6. Explain alpha, beta and gamma decay with examples
7. Briefly explain Doppler effect
8. What is half-life of a radioactive substance and derive the equation
9. What are the properties of complex numbers
10. What do you mean by doping state the necessary condition for doping and methods of doping

Answer briefly: **(10x3=30)**

11. Explain fundamentals of a scalar and a vector quantity with example
12. What are the types of magnetic materials
13. Explain Ohm’s law and its application
14. What is exponential law of radioactive decay
15. What is internal conversion
16. Explain briefly about P-N junction diode
17. Explain about electromagnetic spectrum
18. Explain fluorescence and phosphorescence
19. Mention one assumption of DE Broglie’s relation
20. A100Hz AC is flowing in 15mH coil. Find its reactance

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