No. of Printed Pages : **2**

21BSC6C13PHL

B.Sc. VI Semester Degree Examination, Sept./Oct. - 2024

PHYSICS

DSC-3 - 07 : Elements of Condensed Matter and Nuclear Physics

(NEP)

Time : 2 Hours | Maximum Marks : 60

Note : *(i) Answer **all** the sections.*

(ii) Non-programmed scientific calculators are allowed.

SECTION - A

I. Answer the following questions. **10x1=10**

1. (a) What is Space Lattice ?

(b) State Moseley's Law.

(c) What are Phonons ?

(d) What is Critical Magnetic Field ?

(e) Define Magnetic Induction.

(f) Give an example for Hard Magnetic Material.

(g) State Radioactive Decay Law.

(h) Define Half Life of Radioactive Element.

(i) What is Pair Production ?

(j) What is Accelerator ?

SECTION - B

II. Answer **any four** of the following. **4x5=20**

2. Explain the procedure to find miller indices with example.

3. With neat diagram explain construction and working of Bragg's X-ray Spectrometer.

4. With neat diagram explain B-H Curve.

5. State and explain meissner effect.

6. Explain the general properties of Nuclei.

7. Explain Gamma ray interaction through photoelectric effect.

P.T.O.

SECTION - C

III. Answer **any three** of the following. **10x3=30**

8. Derive an expression for Electrical and Thermal Conductivity of metals. **10**

9. Give the necessary theory of Para Magnetic Material. **10**

10. (a) Explain Gamow's Theory of Alpha Decay. **5+5**

(b) With neat diagram explain Binary Energy-Curve.

11. (a) Explain construction and working of G-M Counter. **6+4**

(b) Write a note on semi-conductor detectors.

12. (a) Explain Energy Kinematics of Beta Decay. **5+5**

(b) With neat diagram explain construction and working of synchrotron.

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