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**NY—253—2023**

**FACULTY OF SCIENCE**

**M.Sc. (Second Year) (Third Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2023**

**(New/CBCS Pattern)**

**PHYSICS**

**Paper—PH-304(B)**

**(Materials Science)**

**(Tuesday, 12-12-2023)**

**Time : 2.00 p.m. to 5.00 p.m.**

*Time—3 Hours*

*Maximum Marks—75*

*N.B. :— (i) All questions are compulsory.*

*(ii) Figures to the right indicate full marks.*

1. Explain the term 'glasses'. How many methods are used to fabricate glass products ? Discuss each of them in brief. 15

*Or*

- (a) What is the composition of a concrete material ? What are the key properties of concrete ? 8
- (b) On what basis the concrete is classified ? Discuss any *one* type of classification in detail. 7
2. What is a timber ? Discuss the main types of defects that occur in timber in detail. 15

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Or

- (a) Explain the concepts of soft and hard magnetic materials based on M-H loop. 8
- (b) Discuss types of magnetic materials with suitable examples. 7
3. Explain the term 'Polarizability'. Discuss various types of polarization mechanisms in detail. 15

Or

- (a) Explain in detail the importance of depolarization field. 8
- (b) Obtain an expression for dielectric constant of a material placed in an electric field. 7
4. Discuss in detail polyol method used to synthesize nanoparticles. 15

Or

- (a) What is gel ? State the functions of gel. 7
- (b) Discuss in detail various types of gel technique used to synthesize crystalline material. 8
5. Write short notes on any *three* of the following : 15
- (a) Properties of timber
- (b) Abrasive ceramics
- (c) Magnetic susceptibility
- (d) Piezoelectric material.

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