QP CODE: 25804517

25804517

Reg No : .....

Name : .....

INTEGRATED M.Sc DEGREE EXAMINATION, OCTOBER 2025

Ninth Semester

INTEGRATED MSC BASIC SCIENCE-PHYSICS

ELECTIVE - IPH9ELC1 - ADVANCED MATERIALS SCIENCE

2021 ADMISSION ONWARDS

08C7C2A8

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What are the major raw materials used in cement production?
2. Name the type of fracture commonly observed in ceramics.
3. What are linear polymers?
4. What are elastomers?
5. Write a short note on fracture of polymers.
6. What are the extraordinary characteristics of Ultra-high-molecular-weight polyethylene ?
7. What are fiber-reinforced composites?
8. Write any two applications of carbon-carbon composites.
9. How electrical conductivity is related with resistivity?
10. Name the different regions of the Electromagnetic Spectrum on the basis of their Waveleght or Frequency Order.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Describe the factors influencing plastic deformation in crystalline materials.
12. Explain the mechanical and optical properties of glasses.
13. Discuss vulcanization in polymers.
14. Briefly discuss crystallization in polymers.

15. What are Carbon Fiber–Reinforced Polymer (CFRP) Composites? Also discuss the different applications of CFRP?

16. What are Sandwich panels? Also discuss its properties and applications.

17. What are the main two classification of Hard Magnetic Materials?

18. Draw and explain in detail about Step-index Optical fiber design and Graded-index Optical fiber design.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Examine in detail the composition, preparation, and properties of glasses, glass-ceramics, clay products, refractories, and abrasives, highlighting their technological importance.

20. What are polymers? Discuss different polymer types, their characteristics and applications.

21. What are Particle-Reinforced Composites? Discuss different classifications in detail.

22. What is the Influence of Temperature on Magnetic Behaviour? Also define about Domains and Hysterisis.

(2×5=10 weightage)