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D 100640 (Pages : 2) Name.....

Reg. No.....

SIXTH SEMESTER U.G. (CBCSS-UG) DEGREE EXAMINATION, MARCH 2024

Physics

PHY6B14 (EL3)—MATERIALS SCIENCE

(2019 Admission onwards)

Time : Two Hours Maximum : 60 Marks

The symbols used in this question paper have their usual meanings.

Section A - Short Answer type.

Answer **all** *questions in two or three sentences, each correct answer carries a maximum of 2 marks.*

1. Give two examples for HCP crystal structure.
2. Explain Ionic bonding.
3. What are Allotropes ? Give one Example
4. What is glass ceramics ? What are the properties ?
5. What is meant by (a) Lattice (b) Unit cell ?
6. Explain Polymorphism.
7. Write down Fick's first law of diffusion and explain the terms involved.
8. Explain carbon nanotubes.
9. Explain hydrogen bonding in water
10. What are amorphous solids ?
11. Explain Grain and Grain boundary
12. What are the two types of diffusion in solids ?

(Ceiling 20 marks)

Section B - Paragraph / Problem type

Answer **all** *questions in a paragraph of about half a page to one page, each correct answer carries a maximum of 5 marks.*

13. Describe Laue's experiments and point out its significance.
14. What is stress-strain behavior of ceramics ?
15. Write a short note on Electron microscopy.

Turn over

16. Explain the factors effecting diffusion.

17. Explain different forms of carbon, classification of carbon and their applications.

18. Find the equilibrium concentration of vacancies in aluminium and nickel at OK, 300

19. What are composites ? Explain its properties.

Section C - Essay type

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Essays - Answer in about two pages, any **one** *question.*
Answer carries 10 *marks.*

20. Explain the principle and working of Transmission Electron Microscope.

21. What are surface defects in Solids ? Explain in detail the different types of surface de

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