QP CODE: 25020371

25020371

Reg No : .....

Name : .....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE / MERCY CHANCE EXAMINATIONS, FEBRUARY 2025

Sixth Semester

CHOICE BASED CORE COURSE - PH6CBT02 - MATERIAL SCIENCE

Common for B.Sc Physics Model I, B.Sc Physics Model II Applied Electronics, B.Sc Physics Model II Computer Applications & B.Sc Physics Model III Electronic Equipment Maintenance

2017 Admission Onwards

EB5B1CB7

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

*Each question carries **2** marks.*

1. What do you mean by fusiblity of materials?
2. Differentiate between stiffness and impact strength.
3. What is the difference between toughness and hardness?
4. What do you mean by phonons?
5. What do you mean by dielecric constant?
6. What do you meant by exciton absorption?
7. How can we express the photoconductivity of solids?
8. How are display devices classified?Explain.
9. What are cholesteric liquid crystals?
10. What are structural magic numbers?
11. What do you mean by Columbic Explosion?
12. Mention any two applications of quantum nanostructures.

(10×2=20)

Part B

*Answer any **six** questions.*

*Each question carries **5** marks.*

13. Differentiate between metallic and semiconductor properties.

14. Describe the structure property relationship of materials.

15. Discuss different types of point defects.

16. Differentiate between paramagnetism and diamagetism.

17. Explain how a numerical display is created using LCD.

18. What are called shape memory alloys?

19. Discuss on different types of colour centres inn solids.

20. Write a note on the vibrational and mechanical properties of carbon nanotubes. Also mention its applications.

21. Describe the principle and working of Atomic Force microscope.

(6×5=30)

Part C

*Answer any **two** questions.*

*Each question carries **15** marks.*

22. Discuss on bulk and interfacial defects in crystals.

23. What are the diffusion mechanisms of solid? Describe Fick's first and second laws of diffusion.

24. What is photovoltaic effect? Prove that the photovoltage varies logarithmically with photocurrent.

25. (i) Describe the principle , construction, working and characterization mechanism of Tunneling Electron Microscope (ii) What are the advantagees and disadvantages of Tunneling Electron Microscope

(2×15=30)