Reg No   :   ....

Name   :   ....

B.Sc DEGREE (CBCS) REGULAR / REAPPEARANCE EXAMINATIONS, MARCH 2023

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

17996625

Time: 3 Hours

Max. Marks : 80

Part A

*Answer any **ten** questions.*

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

1. What is meant by a composite?

2. What is the difference between hardness and toughness?

3. What do you mean by malleability of solids?

4. How does the heat capacity of solids vary with temperature?

5. Define ferromagnetism.

6. What is photoconductivity?

7. What do you mean by photovoltaic effect?

8. What are the applications of liquid crystals?

9. What are smectic liquid crystals?

10. Define Photo fragmentation.

11. What is Carbon Nanotube?

12. What is Debye-Scherrer formula?

(10×2=20)

13. Describe the structure property relationship of materials.

14. What are the classifications of physical properties based on the nature of relationship between physical quantities?

15. Discuss different types of point defects.

16. What are the differences between dielectric strength and dielectric constant?

17. Describe different types of absorption processes.

18. What are the general features of liquid crystals?

19. Describe the photoelectric effect with a figure.

20. Discuss the partial confinement and energy dependence curves in quantum nanostructures.

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

$(6×5=30)$

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. Explain in detail the colour centres and the methods to produce the generation of colour centres.

25. What are nanomaterials? Describe briefly properties of metal nanoclusters and molecular clusters.

$(2×15=30)$