

SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN  
(AUTONOMOUS)

(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)  
Chromepet, Chennai - 600 044.

M.Sc. Physics - END SEMESTER EXAMINATIONS APRIL - 2024

SEMESTER - IV

**22PPHET4005 - Materials Science**

Total Duration : 2 Hrs. 30 Mins.

Total Marks : 60

### Section B

Answer any **SIX** questions ( $6 \times 5 = 30$  Marks)

1. Give the structural features of ceramics.
2. Briefly explain the applications of polymers.
3. Discuss the temperature and frequency effects on dielectric materials.
4. Describe about the purification of electronic materials.
5. Write a short note on commercial composite materials.
6. Give an account on Elastomers in polymers.
7. Give a brief account on electrical polarisation.
8. Discuss the key concepts in photolithography.

### Section C

I - Answer any **TWO** questions ( $2 \times 10 = 20$  Marks)

9. Explain the mechanical and electrical properties of ceramics.
10. Summarize the characteristics of fibre reinforced composites and polymer matrix composites.
11. Narrate the mechanical, electrical, optical and chemical properties of polymers.
12. Explain in detail piezoelectric, pyroelectric and ferroelectric materials.

II - Compulsory question ( $1 \times 10 = 10$  Marks)

13. Elaborate the process of doping, epitaxial growth and metallization in the manufacturing of electronic components and circuits.

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