

**A-1187**

Total Pages : 3

Roll No. ....

**MSCPH-552**

**M.Sc. Physics (MSCPH)**

**Material Science**

Examination February, 2026

Time : 2:00 Hrs.

Max. Marks : 70

*Note :-* This paper is of Seventy (70) marks divided into Two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given therein. *Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**(Long Answer Type Questions) (2×19=38)**

*Note :-* Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any *two* (02) questions only.

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( 1 )

P.T.O.

1. Distinguish between smart materials and nano-materials clearly explain that which one is prefer more and why ?
2. Explain addition and condensation polymerizations, discuss their physical properties.
3. What is doping techniques as semiconductors ? In nano-material discuss physical vapour deposition (PVD) processes.
4. Illustrate Differential Thermal Analysis (DTA) and Differential Scanning Calorimetry (DSC) are used as tools for the structure analysis.
5. Describe Tunnelling Electron Microscope (TEM) and Scanning Electron Microscope (SEM) techniques used of microscopic level.

### **Section–B**

**(Short Answer Type Questions) (4×8=32)**

**Note** :- Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What are the basic and important difference between polymer and composite materials ?

2. Explain self healing mechanism by creep.
3. Discuss the terms used in ceramics such as porosity and flexural strength.
4. What do you understand by polymer recycling process ?  
Is this process play any role in pollution.
5. In this film preparation of nano-materials discuss the terms “top down” and “bottom up” approach used in it.
6. Illustrate in brief low energy electron diffraction used as tool for the structure analysis.
7. Explain with their suitable diagram of electron microscope.
8. Distinguish Mossbauer spectroscopy and positron annihilation spectroscopy.

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