

M.Sc.(Physics) (CBCS Pattern) Semester - IV  
**PSCPHYT15.2 - Optional Paper-VII : Nanoscience and Nanotechnology -II**

P. Pages : 2

Time : Three Hours



**GUG/S/23/11416**

Max. Marks : 80

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**Either :-**

1. a) What are OLEDs? 4  
b) Explain the advantages of OLED over CFLs and LEDs. 4  
c) Describe the principle and application of phototherapy lamps. 8

**OR**

- e) Explain X-ray imaging and identification of phases in materials. 8  
f) What is luminescence? Explain the different types of luminescence. 8

**Either :-**

2. a) Explain effect of bulk nano structuring of magnetic properties. 8  
b) Explain ferromagnetism and superparamagnetism in terms of Nanomagnetic. 8

**OR**

- e) Explain the terms.  
i) Magneto optics 4  
ii) Spintronics 4  
f) Explain the use of nanomagnets in data storage. 8

**Either :-**

3. a) Discuss nanowire Field effect transistor in detail. 8  
b) Explain the terms: 8  
i) Carbon nanotube transistor.      ii) FINFETs.

**OR**

- e) Explain in details on Memory Devices. 8  
f) Draw a schematic Diagram of single electron transistor and explain its working. 8

**Either :-**

4. a) What are nanocomposites? Describe tribology of polymer Nanocomposites. **8**
- b) Discuss properties of fullerene & its applications. **8**

**OR**

- e) Discuss the properties and applications of Graphene. **8**
- f) Describe the properties of polymer nanocomposites. **8**
5. Attempt **all** the following:
- i) What is optical stimulated luminescence (OSL)? **4**
- ii) What is nano spore confinement? Explain it. **4**
- iii) What is quantum tunneling? Explain. **4**
- iv) Explain ceramic nano materials. **4**

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