Reg. No. : | | | | | | | | | | |

Question Paper Code: 31478

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

Seventh Semester

Electronics and Communication Engineering

01UEC921 - NANO ELECTRONICS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define nanotechnology.
2. Show a closed packed sphere, mark the ‘octahedral site’ and write its radius equation.
3. Give the nuclear fusion reaction equation when deuterium fragments collide.
4. Define nanoparticle.
5. List out the applications of carbon nanotubes.
6. Give the modes of vibration of carbon nanotubes.
7. List out the properties of nano materials used for designing nano sensor.
8. Write short notes on OLEDS.
9. List out the applications of nano ferrite material.
10. Classify the transistors used in nano technology.

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Explain the infrared and Raman spectroscopy in detail. (8)

(ii) Differentiate transmission electron microscopy and scanning microscopy. (8)

Or

(b) Analyze the energy bands of insulators, semiconductors and conductor. Discuss about its reciprocal space, gaps, effective masses and fermi surface. (16)

12. (a) (i) Compare the valance band of bulk metal, large metal cluster and small metal cluster. (8)

(ii) Discuss on semi conducting nano particles. (8)

Or

(b) (i) Describe the rare gas and molecular clusters with neat sketch. (8)

(ii) Write short notes on

(1) RF plasma (2) Thermolysis (8)

13. (a) Illustrate the carbon molecules and carbon clusters with neat sketch. (16)

Or

(b) Explain carbon nano tubes and its properties in detail. (16)

14. (a) (i) List out the types of sensors and explain it. (8)

(ii) Explain nanowire FET in detail. (8)

Or

(b) Classify the family tree of FET and describe the MOSFET in detail. (16)

15. (a) Explain quantum dots and nano particles in detail. (16)

Or

(b) (i) Explain the deposition of thin films by CVD. (8)

(ii) Describe in details about microstip patch antenna used for nano satellite application. (8)

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