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Question Paper Code : 59419

B.E./B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

Electronics and Communication Engineering

15UEC919 - NANOELECTRONICS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Microwaves or Radar waves can provide useful information about materials when employed under _____ conditions in the absence of an applied magnetic field. CO1 R
(a) Resonant (b) Nonresonant (c) Super molecular (d) Narrowband
2. The particles having a radius of about _____, can be considered to be nanoparticles. CO2- R
(a) $\geq 100 \text{ \AA}$ (b) $\leq 100 \text{ \AA}$ (c) $\geq 1000 \text{ \AA}$ (d) $\leq 1000 \text{ \AA}$
3. Many OFETs are now designed based on the thin-film transistor (TFT) model, which allows the devices to use _____ materials in their design. CO3- R
(a) Less conductive (b) Highly conductive (c) More energy (d) More power
4. In below, which is not a nanofiller? CO4- R
(a) Silica (b) Clay (c) Silicon (d) Carbon blacks
5. Quantum dots are also referred to _____. CO5- R
(a) Solar cells (b) Artificial atoms (c) Self-assembled monolayers (d) Nanowires

PART – B (5 x 3= 15 Marks)

6. Compare Crystallography and Microscopy. CO1-U
7. How carbon nanotube based interconnects is used in computer chips? CO2-U

8. What is OLED and mention its applications. CO3-U
9. Mention the common characteristics and functionalities in relation to typical product forms for Nanotextiles (from low to high). CO4-U
10. What are quantum dots? CO5 R

PART – C (5 x 16= 80 Marks)

11. (a) Explain in detail about Transmission Electron Microscopy. CO1- U (16)
- Or
- (b) Explain in detail about Photoemission and X-ray spectroscopy. CO1- U (16)
12. (a) Explain various properties of Carbon Nanotubes. CO2-U (16)
- Or
- (b) (i) Discuss briefly about synthesis methods of nanoparticles. CO2-U (10)
- (ii) Explain “Semiconducting Nanoparticles”. CO2-U (6)
13. (a) Explain in detail about OFETs. CO3- U (16)
- Or
- (b) What is sensor and explain in detail about its types and applications. CO3- U (16)
14. (a) Explain in detail about photolithography in product design and development process of Nanodevices. CO4-U (16)
- Or
- (b) Explain in detail about any three nano product forms. CO4-U (16)
15. (a) Explain in detail about Photonic band Gap Antenna. CO5- U (16)
- Or
- (b) What is solar cell? Explain the types of solar cell. CO5- U (16)