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**Question Paper Code : 59419**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2019

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. Infrared absorption and Raman scattering wavelength is \_\_\_\_\_ CO1- R  
(a) 0.78-300  $\mu\text{m}$       (b) 0.78-200 nm      (c) 0.98-100  $\mu\text{m}$       (d) 0.78-300 mm
2. The Strength and hardness of nanostructured material \_\_\_with \_\_\_\_\_in size CO2- R  
(a) Increases, increases      (b) Increases, decreases  
(c) Decreases, decreases      (d) None of the above
3. What is full form of OLED? CO3- R  
(a) Organic Light Emitted Diode      (b) Organic Light Emitting Diode  
(c) Organ Light Emitting Diode      (d) Organicism Light Emitting Diode
4. In photolithography process \_\_\_\_\_ light is used. CO4- R  
(a) Yellow      (b) Green      (c) Blue      (d) Red
5. Nano materials are used in \_\_\_\_\_ CO5- R  
(a) Drug delivery systems      (b) Anti-corrosion barrier coatings  
(c) UV protection gels      (d) All of the above

PART – B (5 x 3= 15 Marks)

6. Describe about transmission electron microscopy. CO1- R
7. List out the applications of carbon nanotube. CO2- R
8. How OFETs work? CO3- R

9. How the material selection process is done with pictorial chart? CO4- R
10. Define chemical vapor deposition. CO5- R

PART – C (5 x 16= 80 Marks)

11. (a) Discuss the operation and application of Raman spectroscopy. CO1- U (16)
- Or
- (b) Describe any types of microscopy technique with neat sketch. CO1- U (16)
12. (a) Summarize the semiconducting and optical nanoparticles. CO2- U (16)
- Or
- (b) Discuss any two methods carbon nanotubes with neat sketch. CO2- U (16)
13. (a) Express the drain current equation operation and its characteristics of N-channel MOSFET. CO3- U (16)
- Or
- (b) Summarize the sensor types and its applications. CO3- U (16)
14. (a) Explain in detail about environments and systems of assemblies in nano technology. CO4- U (16)
- Or
- (b) Explain in detail about design and development process in relation to materials context. CO4- U (16)
15. (a) Discuss in detail about photonic band gap antenna. CO5- U (16)
- Or
- (b) Describe the types of solar cell with neat sketch. CO5- U (16)