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**Reg. No. :**

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**Question Paper Code: 59419**

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

Elective

Electronics and Communication Engineering

15UEC919 - NANOELECTRONICS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

PART A - (10x 1 = 10 Marks)

1. Kind of electron microscope which is used to study internal structure of cells is CO1- R
  - (a) scanning electron microscope
  - (b) Transmission electron microscope
  - (c) light microscope
  - (d) Compound microscope
  
2. X-ray diffraction fails to detect the presence of substances: CO1- U
  - (a) comprising elements with two or more isotopes.
  - (b) comprising less than 5 percent of a mixture.
  - (c) containing a magnetic field.
  - (d) containing a high concentration of carbon.
  
3. Carbon has \_\_\_\_\_ valence electrons? CO2- R
  - (a) 2
  - (b) 3
  - (c) 4
  - (d) 1

4. In a nanotube, carbon atoms are arranged in the shape of \_\_\_\_\_ CO2- U  
 (a) hollow cylinder (b) a geodesic dome (c) a crystal (d) flat layers
5. The width of a typical DNA molecule is \_\_\_\_\_ nm. CO3- R  
 (a) 1 (b) 2 (c) 5 (d) 10
6. Which ratio is constant for DNA? CO3- R  
 (a) A+G/T+C (b) A+C/T+G (c) A+C/U+G (d) A+U/C+G
7. The full form of STM is. CO4- U  
 (a) Scanning Tunneling Microscope (b) Scientific Technical Microscope  
 (c) Systematic Technical Microscope (d) Super Tensile Microscope
8. What does 'F' stand for in AFM? CO4- R  
 (a) fine (b) front (c) force (d) flux
9. Nano particles of which atom are used to control collateral damage due to explosion? CO5- A  
 (a) Copper (b) Aluminium (c) Carbon (d) Lead
10. The size of a quantum dot is \_\_\_\_\_ nm. CO5- R  
 (a) 5 (b) 10 (c) 50 (d) 100

PART – B (5 x 2= 10Marks)

11. What is the working principle of Raman Spectroscopy. CO1- U
12. Mention The Techniques To Synthesize Carbon Nanotubes & Its Types CO2- U
13. What are the advantages of OLEDs over flat panel displays? CO3- U
14. Write the typical process of photolithography. CO4- U

15. How quantum dots works? CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Explain the importance of considering higher angle( $2\theta$ ) reflections while analyzing the XRD patterns. CO1-U (16)

Or

(b) Explain in detail about Raman Spectroscopy with its sampling techniques? CO1 -U (16)

17. (a) Discuss about the types of nanotubes? CO2 -App (16)

Or

(b) Discuss in detail about different properties of individual nano particles? CO2 -App (16)

18. (a) What are Nanosensors? What are the methods to produce nanosensors? CO3- U (16)

Or

(b) What is OLED? Explain the working principles of OLED with neat sketches? CO3- U (16)

19. (a) Explain in detail about Photolithography? CO4-U (16)

Or

(b) Discuss in detail about nano product forms? CO4 -U (16)

20. (a) (i) Write short notes on CVD? CO5- U (8)

(ii) Briefly discuss about Microstrip Patch Antenna? CO5- U (8)

Or

(b) Describe in detail about Giant and Colossal magneto resistance. CO5- U (16)

