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Question Paper Code: 59419

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Elective

Electronics and Communication Engineering

15UEC919– Nano Electronics

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Nanotechnology refers to the fabrication and application of entities whose feature sizes are in which of the following ranges : CO1- U
(a) 0.1 nm-10 nm (b) 1 nm-100 nm (c) 100 nm-1000 nm (d) 1000-10000nm
2. This method is applicable for high melting point elements and transition metals CO2- U
(a) Laser ablation (b) plasma technique
(c) sol gel technique (d) none of the above
3. Nano materials are used in CO3- U
(a) Drug delivery systems (b) Anti-corrosion barrier coatings
(c) UV protection gels (d) all of the above
4. In a _____ the primary value of the product lies with its technology or its functional capability to accomplish some specific task CO4- U
(a) User-driven product (b) Technology-driven product
(c) Platform products (d) Process-intensive products
5. CVD means CO5- U
(a) Chemical vibrational deposition (b) Chemical vapour deposition
(c) Chemical deposition (d) none of the above

PART – B (5 x 3= 15 Marks)

6. Explain the significance of high resolution imaging in nano material characterization CO1- U
7. List out some demerits of CNT in electronics industry CO2- U
8. Explain vibrational properties CO3- U
9. Write down the modular flowchart design approaches. CO4- U
10. Give some advantages & disadvantages of X-RAY lithography CO5- U

PART – C (5 x 16= 80 Marks)

11. (a) Explain the working of XRD analyzer and how it can be used to analyze a crystal CO1- App (16)
Or
(b) Explain with neat diagram different types of specimen interactions taking place in a sample during SEM CO1- App (16)
12. (a) Explain the principle of carbon nano tube transistors and its three different types. CO2- U (16)
Or
(b) Explain the device structure and working of CNT. CO2 -U (16)
13. (a) Design the nano MOSFET by applying Si nano wire as a metal oxide and describe the working principle and advantage of Si nano wire MOSFET over the conventional MOSFET. CO3- App (16)
Or
(b) Design the OFET sthat suits nano crystal technology CO3- App (16)
14. (a) Design the nano thin film by applying photolithography techniques and apply the wet etching, photo resist and diffusion process during the photolithography CO4- App (16)
Or
(b) Analyze in detail about environments and systems of assemblies in nano technology. CO4- App (16)
15. (a) Explain how photoluminescence properties of nano materials are used in quantum dots.. CO5- App (16)
Or
(b) Illustrate the Fabrication of the nano thin films for the organic solar cell by CVD method. CO5- App (16)