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Question Paper Code: 59773

B.E./B.Tech. DEGREE EXAMINATION, MAY 2022

Open Elective

Civil Engineering

15UME973 - SYNTHESIS OF NANO MATERIALS

(Common to CSE, ECE, EEE, EIE, IT, Chemical & BME Engineering)

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Question

PART A - (10 x 1 = 10 Marks)

- Mechanical alloying is done at. CO1- R
(a) solid state (b) liquid state (c) vapour state (d) none
- Ball mill is similar to CO1- R
(a) milling (b) grinding (c) shaping (d) drilling
- Self assembled mono layer is a CO2 -R
(a) Top-down approach (b) bottom-up approach
(c) both (d) None
- Porous silicon is abbreviated as CO2- R
(a) PS (b) pSi (c) both a & b (d) none
- Which method is did not comes under micro lithography CO3- R
(a) Photolithography (b) Soft lithography (c) micromachining (d) matrix isolation
- The beam size in e-beam writing CO3- R
(a) 1nm (b) 10nm (c) 100nm (d) none
- Silver halide was first used as an CO4 -R
(a) magnetic material (b) conductive material
(c) resistor (d) imaging material

8. Smart glass is related with CO4- R
 (a) Illumination (b) Absorption (c) Transmission (d) Reflection
9. Scattered electrons is used in ? CO5- R
 (a) TEM (b) SEM (c) X-ray (d) AFM
10. Spectroscopy involves with CO5- R
 (a) Magnetic wave (b) Electromagnetic wave (c) Electron (d) None

PART – B (5 x 2= 10Marks)

11. Compare mechanical alloying with mechanical milling. CO1- R
12. Differentiate monolayers with molecules CO2 -R
13. Define – vapor deposition method of synthesis CO3 -R
14. Mention any two applications of carbon nano tubes (CNT). CO4 -R
15. What is optical spectroscopy of metal? CO5 -R

PART – C (5 x 16= 80Marks)

16. (a) Apply the any two of bulk synthesis methods elaborately with neat sketch. CO1 -App (16)
 Or
 (b) With neat sketch, analysis the various method of mechanical milling. CO1 -App (16)
17. (a) With neat diagram explain the emulsion polymerization technique. CO2- App (16)
 Or
 (b) Sketch and describe the template synthesis method. CO2- App (16)
18. (a) Briefly explain any one method of epitaxial growth techniques CO3- Ana (16)
 Or
 (b) With the help of neat sketch explain the principle of operation pulsed lase deposition CO3 -Ana (16)
19. (a) Explain with the help of neat sketches, the principle and working of Nano sponges. CO4 -U (16)
 Or
 (b) Discuss the various approaches of smart glass tubes? CO4 -U (16)

20. (a) Explain elaborately about the x-ray characterization CO5- U (16)
Or
- (b) Explain with sketch of Electron microscopy techniques CO5- U (16)

