

Printed Pages – 4

Roll No. :

300803(47)

B. E. (Eighth Semester) Examination, Nov.-Dec. 2021

(New Scheme)

**(AEI, Bio Tech, Chem., Civil, CSE, Elect. EEE, EI,
ET&T, IT, Mech., Mining, Metallurgy,
Mechatronics, Prod., Automobile Branch)**

NANO TECHNOLOGY

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Part (a) of each unit is compulsory, each carries 2 marks and any two from part (b), (c) & (d), each carries 7 marks.

Unit-I

1. (a) What are nanomaterials? 2
- (b) Describe the change in chemical and physical properties of nanometerial from their bulk counter parts. 7

300803(47)

PTO

[2]

- (c) Explain the physical properties of nanomaterials. 7
(d) Write notes on history of nanoparticles. 7

Unit-II

2. (a) Range of nanoparticle 2
(i) 1 – 100 nm
(ii) 10 – 1000 nm
(iii) 70 – 80 nm
(iv) 50 – 80 nm
(b) Describe the E-beam Lithography technique for the preparation of nanomaterial with clean diagram. 7
(c) Explain sol-gel technique for the synthesis of nanomaterials. 7
(d) Describe the dip-pen Lithography technique with clean diagram. 7

Unit-III

3. (a) X-ray diffraction is : 2
(i) Optical characterization
(ii) Structural characterization

300803(47)

[3]

- (iii) Chemical characterization
(iv) Morphological characterization
(b) Explain the working of SEM with clean diagram. 7
(c) Explain about the SPM technique for characteristics of material. 7
(d) Describe the MOLDI TOF theory. 7

Unit-IV

4. (a) Define 1 D nano particles. 2
(b) Explain the application of nano particles in agriculture and water treatment. 7
(c) Explain the use of nanomaterials in drug delivery system. 7
(d) Write notes on emerging trends in application of nanomaterials and nanotechnology. 7

Unit-V

5. (a) What is top down approach? 2
(b) Explain the use of ZnO for sun barrier products. 7

300803(47)

PTO

[4]

(c) Explain the application of nanomaterials in ceramics and nanometric powders. 7

(d) Write note on application of nanomaterials in electricity production system. 7