

Exam.Code:1034

Sub. Code: 7882

2021

M. E. (Bio-Technology)

Third Semester

Elective – III

ME-BIO-301 (a): Nano-Biotechnology and Nano-Devices

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Write brief notes on following:

- a) Lab on a chip
- b) Sol-gel process
- c) Nanodiamonds
- d) PEGylation and drug delivery
- e) Bio-conjugation.

(5x2)

UNIT – I

- II. What is a nanovector? What are the top down approaches for nanomaterials? Briefly explain with examples. (10)
- III. What is photodynamic therapy? Briefly explain the role of nanoparticles in biomedical applications giving specific examples. Write a brief note on bioassay. (10)
- IV. What is surface functionalization? Why it is significant? Explain how cells response to the nanoparticles. Briefly explain with examples various surface modification methods used in bio-conjugation to mitigate the issue of cellular response. (10)

UNIT – II

- V. What is DNA molecular therapy? What are the advantages of Q-dots in bio-imaging application? What is protein nano-array? Briefly explain. (10)
- VI. What are the requirements for a surface enhanced Raman scattering (SERS) active nanoparticles? Explain how SPR is useful to design biosensors. Write a brief note on virus based nanoparticles and assemblies. (10)

P.T.O.

(2)

- VII. What are carbon nanotubes? How they are prepared? Explain the significance of scaffold in nanotechnology. Write a brief note on DNA programmed assembly of nanoparticles. (10)

x-x-x