

Exam.Code:0912
Sub. Code: 7024

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1059
B.E. (Biotechnology) Eighth Semester
BIO-815(a): Nano Biotechnology

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. Attempt the following:-

- a) Define inside out signaling.
- b) Differentiate between single walled and mutii walled carbon nanotubes.
- c) Define inosculation.
- d) How are the molecules transferred to substrate in scanning probe lithography.
- e) Define evanescent wave.
- f) What are the major components of nanoemulsion system.
- g) What is stochastic sensing?
- h) Define forster distance.
- i) What is a positive photoresist?
- j) What are convergent dendrimers? (10x1)

UNIT - I

- II. a) Explain fabrication of DNA nanostructure in two and three dimension for therapeutic application.
- b) Discuss the properties of carbon nanotubes. How can these be exploited for biomedical applications. (5,5)
- III. Explain the generation of functional tissue employing three main components of tissue engineering. (10)
- IV. a) How will you create nanoscale featured surface. Explain the process of formation of focal adhesion plaque when the cell interacts with this surface.
- b) Elucidate nanoshell mediated plasmonic photothermal therapy. How is it better than conventional strategies employed for cancer treatment? (5,5)

P.T.O.

(2)

UNIT - II

- V. a) Explain the basic principle, working and applications of SERS based nanosensors.
b) Describe how convergence of diverse technologies has enabled the fabrication of nanorobots for therapeutic and diagnostic application. (5,5)
- VI. Write short note on the following:-
a) Temporal and spatial control of molecular motors.
b) MEMS based nanopump. (5,5)
- VII. Describe different techniques for synthesis of biotic and abiotic pores. Give applications of nanopores. (10)

x-x-x