Exam.Code:0912
Sub. Code: 33392

2015

B.E. (Biotechnology) Eighth Semester

BIO-815(A): Nanobiotechnology

Time allowed: 3 Hours | Max. Marks: 50

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

x-x-x

1. Answer the following:

   a) Define focal adhesion plaque.

   b) Draw a well labelled diagram of myosin motor.

   c) What are bio-inks?

   d) Explain thermal oxidation of silicon.

   e) Define plasmon.

   f) Define inside out signaling.

   g) Differentiate between single walled and mutli walled carbon nanotubes.

   h) Define inosculation.

   i) How are the molecules transferred to substrate in scanning probe lithography?

   j) Define evanescent wave. (10x1)

UNIT-I

2 a) Explain fabrication of DNA nanostructure in two and three dimension for therapeutic application. (5)

b) Discuss the properties of carbon nanotubes. How can these be exploited for biomedical applications? (5)

3. Explain the generation of functional tissue employing three main components of tissue engineering. (10)

4 a) How will you create nanoscale featured surface? Explain the process of formation of focal adhesion plaque when the cell interacts with this surface. (5)

b) Elucidate nanoshell mediated plasmonicphotothermal therapy. How is it better than conventional strategies employed for cancer treatment? (5)

P.T.O.

UNIT - II

5 a) Explain the design, manufacturing and programming of a nanorobot for a controlled actuation and target identification in biological system. (5)

b) Describe nanopump fabrication using silicon on insulator wafer. (5)

6. Explain various solid state nanopore fabrication techniques. Give applications of nanopores. (10)

7 a) Explain the process for creation of linear track to control the movement of molecular motor driven filaments. (5)

b) Discuss designing, construction and application of FRET based nanosensor for real time monitoring of analyte flux at cellular level. (5)

x-x-x