(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 154852 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. VIII) THEORY EXAMINATION 2013-14

NANOBIOTECHNOLOGY

Time : 3 Hours *Total Marks : 100*

Note : Attempt **all** questions as directed. All questions carry equal marks.

1. Write short notes on any **four** of the following :
   (a) Uses of carbon nanotube
   (b) Properties of nanoparticles
   (c) Electron beam lithography
   (d) Important systems for bioproduction of nanoparticles
   (e) Nanopores and their significance
   (f) Macromolecular assembly.
2. Attempt any **two** of the following :
   (a) Compare the features of any two nanomaterials injected in living systems. Describe their possible mode of action there in.
   (b) Write a note on biological applications of nanomaterials. Discuss its diagnostic value.
   (c) Virus nanaoparticles do contribute to biological studies. Critically assess the statement with the help of suitable example.

3. Attempt any **two** of the following :

(a) What is quantum dot ? How does it contribute to nanobiotechnology ?

(b) What is enzyme immobilization on nanoparticles ? Briefly describe with the help of suitable example and diagram.

(c) What is sustained drug delivery ? How can nanomaterials be used for the same. With the help of examples substantiate your answer.

4. Attempt any **two** of the following :

(a) What are the classes of polymers which are required in biomedical science ? Describe the properties of any such class.

(b) Differentiate between the biopolymers which can be used in ophthalmologic and orthopedic areas . What are their salient features ?

(c) Describe the parameters on which a biopolymer needs to be characterized. What are the factors which govern the properties of biopolymer ?

5. Attempt any **two** of the following :

(a) What are biosensors ? How do they function ? How does nanotechnology support designing the biosensors ?

(b) Write a note on immunotechnology and its role in popularizing nanomaterials.

(c) Describe the theory behind microelectronic devices to be used as sensor. How does it differ from that of macroelectronic devices ?