

[A-38]

No. Of Printed Pages: 2

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Sardar Patel University
MSc Integrated Biotechnology Examination -Semester 10
PS10CIGIB3: Nanobiotechnology and Applications
Saturday 2nd April, 2016
10:30 am to 1:30 pm

Note:

Total Marks: 70

1. Figures to the right indicate marks.
2. Draw neat and labelled diagram, wherever necessary.

Q.1 Multiple choice questions

[08]

- 1 While converting bulk material to nano material enhanced properties are because of
 - a) surface area to volume ratio increases
 - b) surface area to volume ratio decrease
 - c) surface area to volume ratio remains constant
 - d) none of these
- 2 Which of following molecule can be used as nano road?
 - a) protein b) Lipid c) DNA d) carbohydrate
- 3 Following is not present in fullerene C₆₀.
 - a) a number of five membered ring isolated by six member rings
 - b) rugby ball shape
 - c) atoms contained within are said endohedral
 - d) also known as buckyball
- 4 During Plasma arcing, raw material is _____
 - a) evaporated b) converted to ionized gas
 - c) flamed d) charged
- 5 Diameter of ATPase is _____
 - a) 10nm b) 14nm c) 12nm d) 16nm
- 6 The monolayer of lipid attaches itself to gold surface via _____ group.
 - a) hydrogen group b) methyl group
 - c) thiol group d) ethyl group
- 7 Which strategy allows atoms to directly bind in to covalent molecules of desired shape?
 - a) sequential covalent synthesis
 - b) covalent polymerization
 - c) self organizing synthesis
 - d) self assembly
- 8 Which of the following are used in molecular computing?
 - a) Nanowires b) Nanodots c) Nanoroads d) Nanotubes

Q.2 Attempt any seven

[14]

- 1 Briefly narrate significance of reduction in size with respect to bulk property.
- 2 What do you mean by quantum well, quantum wire and quantum dots?
- 3 Briefly describe method of plasma arching to produce nanomaterials.

- 4 Give principle of AFM.
 - 5 Write advantages of protein based 3D memory over conventional storage.
 - 6 What is role of bacteriorhodopsine and gramicidine proteins?
 - 7 Give applications of HTPs platforms.
 - 8 Briefly narrate role of chaperone.
 - 9 Give applications of nanotechnology in biomedical field.
- Q.3** A Describe properties of nanoparticles along with the role of size in it. [06]
B Narrate the natural information derived nanomachinery to build nanomachine using appropriate example. [06]
- OR
- B What are quantumdots? Describe the formation of Quntumdots in detail. [06]
- Q.4** A Give detailed account on sol-gel method. [06]
B Write short note on chemical vapour deposition method. [06]
- OR
- B Write a short note on Deep UV Lithography. [06]
- Q.5** A Narrate the construction and functioning of gramicidine based ion channel sensor. [06]
B Narrate construction and functioning of light addressable potentiometric sensor. [06]
- OR
- B Write a note on Lipids as structural principle of nano-machine construction [06]
- Q.6** A Discuss self organization by taking suitable biomolecules as examples. [06]
B What are biomaterials? Describe properties of biomaterials for their application in implants and prosthesis. [06]
- OR
- B Describe the roles of dispersion and repulsive forces, hydrogen bonds and electrostatic interactions as raw materials in biomolecular structure and stability. [06]

ALL THE BEST