KUMARAGURU
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character is life

Register Number: ………………..

B.TECH DEGREE EXAMINATIONS: MAY 2015

(Regulation 2009)

Sixth Semester

BIOTECHNOLOGY

BTY204: Nanobiotechnology

Time: Three Hours   **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Who is credited with the famous speech "there is a plenty room at the bottom" which is related to nanotechnology?

    a) Norio Taniguchi   b) Eric Drexler

    c) Richard Feynman   d) Sumio Iijima

2. Which one of the following is not a characteristic of a buckyball

    a) No two pentagons share an edge   b) Resembles soccer ball

    c) Diameter is more than 10nm   d) A carbon molecule C60

3. What exactly is a quantum dot?

    a) Tip of ATM   b) Unexplained spots in SEM image

    c) End point of XRD pattern   d) A semiconductor nanostructure that confines the motion of conduction band electrons

4. What is graphene?

    a) A one atom thick sheet of carbon b) A software to measure and represent nanoparticles

    c) A new material made from carbon nanotube d) A thin film made from fullerenes

5. Which one of the following is not molecular tag?

    a) Dentrimers   b) Nanoprobes

    c) Quantum dot   d) A nanoarrays

6. Gold nanoparticles are considered as good carrier for drug deliver because

    a) Reacts quickly with drug   b) Stability is high

    c) Gold is inert inside the body   d) Mix easily body solution

7. Major role of cyanophycin in bacteria is

    a) Storage of proteins
    b) Storage of carbohyrate
    c) Harvest light energy
    d) Storage of lipid

8. Diameter of carbon nanotube (CNT) is

    a) 1.3 nm
    b) 13nm
    c) 100 nm
    d) 1000nm

9. Which one of the following is not a characteristic feature of nanomicellar drug carrier?

    a) ease in preparation
    b) small sizes (10–100 nm)
    c) ability to solubilize water-insoluble drugs
    d) Long self life

10. Transduction method in nanobiosensors is

    a) Surface plasma resonance
    b) Chemiluminescence
    c) Fluorescence
    d) Any one of the above

PART B (10 x 2 = 20 Marks)

11. Analyse the reasons for superior function of nanomaterial than their bulky materials.

12. List out the methods for nanoparticle characterization.

13. What are nanowires and give their suitable applications?

14. State the significance of nanoprores in the DNA sequencing method.

15. What are nanorobotes?

16. How are nanoparticles coupled with peptides?

17. State the role of iron oxide nanoparticles in disease diagnosis and treatment.

18. How are S layer proteins can be reassembled to produce new materials?

19. What is micellar nanocarrier?

20. List the possible application of nanobiochips.

PART C (5 x 14 = 70 Marks)

21. a) (i) Classify various types of nanostructures with neat illustrations. (7)

    (ii) Discuss the following suitability of nanoscale characterization methods (7)
    AFM

(OR)

    b) (i) Explain the steps involved in SOL-GEL method of nanoparticle synthesis. (7)

    (ii) Explain the top down method of nanoparticle synthesis and note on its (7) advantages.

22. a) (i) Demonstrate the steps involved in green synthesis method of silver (10) nanoparticles.

     (ii) Compare green synthesis method of nanoparticles and chemical mediated (4) synthesis.

(OR)

   b) Describe the steps in synthesis, characterization and any one application of silica nanoparticles

23. a) Describe the steps in preparation of DNA based assembly of metal nano particles, characterization and their applications.

(OR)

   b) Discuss the self assembly nanostructures of lipids with suitable illustrations.

24. a) Discuss the properties and application of PHA nanostructure surface for protein-protein interaction studies.

(OR)

   b) (i) What are magenetostatic bacteria? Describe the characteristic feature of (10) magnetosomes produced by bacteria.

     (ii) Discuss the possible application of magnetosomes in the medical field. (4)

25. a) (i) Why is nanostructure materials considered as better materials for biosensor (7) applications?

     (ii) Explain the composition of nanobiosensor with suitable illustration. (7)

(OR)

   b) (i) Explain the application of nanoparticles for anticancer treatment. (7)

     (ii) How is protein targeting achieved with nanoparticles? (7)

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