KUMARAGURU college of technology
character is life

Register Number: …….

B.TECH DEGREE EXAMINATIONS: APRIL/MAY 2016

(Regulation 2013)

Sixth Semester

BIOTECHNOLOGY

U13BTE201**:** Nanobiotechnology

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

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The prefix “nano” comes from a
   a) French word meaning billion
   b) Greek word meaning dwarf
   c) Spanish word meaning particle
   d) Latin word meaning invisible
2. The historical statement “There is plenty of rooms at the bottom” was made by…….
3. What is a bucky ball?
   a) A carbon molecule (C60)
   b) Plastic explosives nanoparticle (C4)
   c) Concrete nanoparticle with a Compressive strength of 20 nanonewtons
   d) Gold Nanopartile
4. One of the method for characterization of nanoparticles is…….
5. Which of the following drug delivery systems comprises a hydrophobic core and a hydrophilic surface?
   a) Liposomes
   b) Micelles
   c) Reverse micelles
   d) endosomes
6. ……nature of lipids enables their self-assembly in aqueous solutions.
7. Biochips are made up of
   a) Semi conductor molecules inserted into the protein framework
   b) Conducting molecules inserted into protein frame work
   c) Non-conducting molecules inserted into the protein framework
   d) Silicon wafers
8. The number of magnetite crystals present in magnetosomes are……
9. Which of the following statements is not true
   a) Gold at the nanoscale is red
   b) Copper at the nanoscale is transparent
   c) Silicon at the nanoscale is an insulator
   d) Aluminium at the nanoscale is highly combustible
10. Nano-biochips are made of……..

PART B (10 x 2 = 20 Marks)
(Answer not more than 40 words)

11. Define self-assembly of molecules?
12. Why surface modifications are done in microfluidic devices?
13. What is basic difference between quantum dots and nanoparticles?
14. Why gold nanoparticles are frequently used in the synthesis of nano-bio assemblies?
15. Define and classify nano-structured materials?
16. Write a note on nano-biofusion?
17. Name the nanoscale magnetic iron minerals present in bacteria?
18. Write the importance of S-layer?
19. Why is nanotechnology an important tool for cancer research?
20. What are micelles and how are they formed?

PART C (5 x 14 = 70 Marks)
(Answer not more than 400 words)

Q.No. 21 is Compulsory

21. Explain how targeted drug delivery is achieved using nanoparticles?

22. (a) Outline the historical development of nanomaterials?

(OR)

(b) Explain the synthesis and characterization of nanoscale materials?

23. (a) List the methods for producing carbon nanotubes and explain any one of the method with a neat sketch

(OR)

(b) What are the functionalized metal nanoparticles? Describe the advantages and applications of functionalized metal nanoparticles?

24. (a) Compare the tools for measuring nanostructures? Explain any one of the tool in detail?

(OR)

(b) With suitable examples explain the role of nanomolecules in biosystems.

25. (a) What are magnetosomes and how it is prepared? List four the applications of magnetosomes in medicine?

(OR)

(b) Nanoparticles can be used as non-viral transfection agents. Justify the statement with suitable examples.

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