Nanobiotechnology VTU CBCS Question Paper Set 2018

USN | | | | | | | | | | |

10NT661

Sixth Semester B.E. Degree Examination, June/July 2017
Nanobiotechnology

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. Explain briefly the types of Nucleic acids. **(10 Marks)**
b. Write a short note on information driven nano assembly. **(10 Marks)**

2 a. What is Self Assembly? Explain the design principles used in natural bionanomachines for self assembly. **(10 Marks)**
b. Write a brief note on Point group symmetries and their function in bionanomachines. **(06 Marks)**
c. Write a note on Quasi symmetrical complexes. **(04 Marks)**

3 a. Write a note on hydrophobic effects in biological molecules. **(04 Marks)**
b. Explain about the functions of lipids. **(06 Marks)**
c. Explain briefly about natural nanobiomachineries and their actions. **(10 Marks)**

4 a. Describe nanosensors and its applications. **(06 Marks)**
b. Explain about the electron transfer in biomolecular systems. **(10 Marks)**
c. Write a short note on effect of biosensors in biological and physiochemical techniques. **(04 Marks)**

PART – B

5 a. Explain the biomolecule manipulation in bioelectronics. **(10 Marks)**
b. Explain in detail about the semi conducting property of DNA. **(10 Marks)**

6 a. Explain briefly about nano medicine and nano surgery. **(10 Marks)**
b. Explain briefly the different drug delivery vehicles. **(10 Marks)**

7 a. Write a short note on the timetable of nano biotechnology. **(06 Marks)**
b. Explain briefly about the limitations and solutions of molecular nano technology. **(04 Marks)**
c. Write a note on general nano scale assembler. **(10 Marks)**

8 a. Explain the concept of nano toxicology. **(10 Marks)**
b. Explain about micro array and nano biochip. **(10 Marks)**

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PART – A

1 a. Distinguish between bionanotechnology and nanobiotechnology **(08 Marks)**
b. Write a short note on the light dependent chemical reactions in biological system. **(06 Marks)**
c. Write short note on biomaterials. **(06 Marks)**

2 a. Explain about the four hierarchical strategies of construction of nanomachines. **(08 Marks)**
b. Discuss about biomolecular structure and stability. **(12 Marks)**

3 a. Why gravity and inertia are negligible at nanoscale? **(06 Marks)**
b. Explain about atomic granularity of nanomachines. **(04 Marks)**
c. Explain about protein based nanomachines. **(10 Marks)**

4 a. Write a short note on biochip and micro array fabrication. **(10 Marks)**
b. Describe about nano-sensors and its applications. **(06 Marks)**
c. Explain about effect of biosensors in biological and physico-chemical techniques. **(04 Marks)**

PART – B

5 a. Write a brief note on sequence specific molecular lithography. **(10 Marks)**
b. Write a note on bioelectronics. Explain how biomolecules manipulate the bioelectronics. **(10 Marks)**

6 a. What is medical imaging? **(04 Marks)**
b. What is MRI? Mention its advantages and limitations. **(06 Marks)**
c. Explain about targeted drug delivery. **(10 Marks)**

7 a. What are the predictable advantages of nanobiotechnology? **(06 Marks)**
b. Give the case study on solving the issue of mutation of P^{53} gene. **(10 Marks)**
c. Write a short note on the advantages and limitations of nano robots in repair of cells and genes. **(04 Marks)**

8 a. Explain about protein biochip array. **(10 Marks)**
b. Explain briefly about nanotoxicology. **(10 Marks)**

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