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Total Number of Pages : 01

B.Tech  
PBT6J004

6<sup>th</sup> Semester Regular / Back Examination 2018-19

**NANOBIOTECHNOLOGY**

**BRANCH : BIOTECH**

**Time : 3 Hours**

**Max Marks : 100**

**Q.CODE : F765**

**Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.**

**The figures in the right hand margin indicate marks.**

**Part- I**

**Q1 Only Short Answer Type Questions (Answer All-10) (2 x 10)**

- Explain the term quantum dot?
- Define top down and bottom up approach.
- Name two physical entities that have negligible effect on nanostructures.
- Why C-60 molecules are called as bucky balls? Give reasons?
- What do you understand by the term magnetosomes?
- Write the principle of scanning probe technique?
- What are lab-on-a chip devices? Write its use in nanobiotechnology?
- Which amino acids provide sharp bands/ turns in protein chain?
- What do you mean by NANO? List any two processes to produce nanopowders?
- Write the role of nanoparticle in cytotoxicity study?

**Part- II**

**Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**

- What are the various applications of nanomaterials in biology and medicine?
- Describe in detail about the principle and process of X ray diffraction technique with neat sketch.
- Describe the function and application of DNA based nanostructure?
- Differentiate between self-assembly and self-organization of nanostructure?
- Explain MEMS and BioMEMS and their types and potential applications?
- Write the techniques involved in the microbial synthesis of nanoparticle?
- Discuss the classification of nanomaterial in detail?
- Briefly explain types and various properties of carbon nanotubes?
- What are the tools used for making nanostructures. Explain?
- Explain the importance of size and shape dependence of material properties at the nanoscale.
- Explain microarray technology with reference to Nanoscience in brief?
- What are bionano-machines? Explain about bacteriorhodopsin as a typical bionano-machine?

**Part-III**

**Q3 Only Long Answer Type Questions (Answer Any Two out of Four) (16)**

Discuss how the electron microscopic techniques are useful in characterization of nanomaterials? Compare the applications of TEM, AFM and SEM in the characterization of nanomaterials.

**Q4 Describe the various processes of lithography for nanofabrication? (16)**

**Q5 Describe briefly the polymeric nanocontainers? Explain how these materials used in drug delivery system? (16)**

**Q6 Discuss the characterization, physical properties of nanowires and their application? (16)**