

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- VIII<sup>th</sup> SEMESTER-EXAMINATION – MAY- 2012****Subject code: 180404****Date: 16/05/2012****Subject Name: Nano-Biotechnology****Time: 10:30 am – 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Define Biomaterial. What are the different types of biomaterials depending on origin, contact and interaction? **04**  
(b) Enlist the applications of biomaterials. **03**  
(c) Enlist the basic fundamental sciences required for the understanding of Nano-biotechnology. Explain three of them. **07**

- Q.2** (a) The properties of cell make it an exceptional nano bio machine. Justify. **07**  
(b) Draw the porphyrin structure. Explain three potential applications of porphyrin structure. **07**

**OR**

- (b) What are the various applications of Nano-biotechnology? **07**

- Q.3** (a) What is carbon nanotube? What are its applications? **07**  
(b) Write short notes on motor protein as a nanomachine. **07**

**OR**

- Q.3** (a) What is nanopore? Explain three application of nanopore ? **07**  
(b) How one can construct a nanopore in laboratory? **07**

- Q.4** (a) What do you mean by natural nanoscale sensor, electromagnetic sensor and electroic noses? **07**  
(b) What are the components of signaling pathways? Explain how signaling pathway is related to molecular movement. **07**

**OR**

- Q.4** (a) Using nanoparticle can sometimes cause problems. Explain how. **07**  
(b) Explain the steps involved in activation of Ras. **07**

- Q.5** (a) What are the main principles of methodology used in nanobioICT? **07**  
(b) Explain Postman in moleware. **07**

**OR**

- Q.5** (a) Write short note on Informatics of moleware communication. **07**  
(b) Explain the term little big science. What are the methodologies we can learn from cell and beyond? **07**

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