CBCS SCHEME

USN | | | | | | | | | |

15NT563

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Nanodevices and Applications

Time: 3 hrs. Max. Marks: 80

Note: ***Answer any FIVE full questions, choosing ONE full question from each module.***

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-1

1 a. Explain about sensors and their classification. Add a note on micrsensors, nanosensors and biosensors. **(08 Marks)**
b. Discuss about the principle and applications of magnetic sensors. **(08 Marks)**

OR

2 a. Write a brief note on temperature sensors and heat sensors. **(10 Marks)**
b. Explain in detail about electromagnetic sensing and dopler effect. **(06 Marks)**

Module-2

3 a. Write about nonostructured gas sensors and performance factors. **(10 Marks)**
b. Write a note on nanomechanical sensors. **(06 Marks)**

OR

4 a. Explain about density of states. Add note on density of states of 3D, 2D, 1D and 0D materials. **(10 Marks)**
b. Explain about anisotropic magnetoresistance sensors. **(06 Marks)**

Module-3

5 a. Explain about NEMS and NEMS resonators. **(06 Marks)**
b. Brief about nano imprint lithography. Mention its advantages. **(10 Marks)**

OR

6 a. Explain the nano machining of NEMS based upon electrical beam lithography. **(06 Marks)**
b. Discuss about preparation of polymeric nanofibre templates. **(10 Marks)**

Module-4

7 a. Explain about photo induced electron transport in DNA. **(08 Marks)**
b. Write a note on DNA-gold nano conjugates. **(08 Marks)**

OR

8 a. Discuss about electronic devices based on DNA. **(08 Marks)**
b. Explain about photo induced charge transport in DNA. **(08 Marks)**

Module-5

9 a. Explain about non invasive biosensors in clinical analysis. **(10 Marks)**
b. Explain about biochips and bioMEMS. **(06 Marks)**

OR

10 a. Discuss about the applications of bioseonsors based instruments to the bioprocess industry. **(10 Marks)**
b. Discuss about BIAcore. **(06 Marks)**

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