

**M. TECH. (NANO TECHNOLOGY) SEM-III (CBCS – 2015
COURSE) : SUMMER - 2018
SUBJECT: ELECTIVE – I: NANO ELECTRONICS**

Day : **Tuesday**
Date : **29/05/2018**

S-2018-2949

Time: **11.00 AM TO 02.00 PM**
Max. Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Answers to both the sections should be written in **SEPARATE** answer books.
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SECTION – I

Q.1 Explain giving suitable examples how various nanomaterials are useful in [10]
sensing applications.

OR

Define 'Electroluminescence'. State its applications in the field of Nanoelectronics.

Q.2 Explain advantages and limitations of polymeric materials over oxides for [10]
applications in gas sensors.

OR

Explain the working principle and operation of 'piezo-resistive' and 'piezo-electric' type of pressure sensors.

Q.3 Give an overview of 'Nanorobotics'. State its significance for biomedical [10]
applications.

OR

How can high efficiency materials for OLEDs find application in Quantum well IR photo detectors?

SECTION – II

Q.4 Give an account of Temperature sensors based on semi conducting oxides. [10]

OR

Define 'Quantum dot lasers' and 'Quantum wire lasers'. State their applications in Nanoelectronics.

Q.5 Write short notes on: [10]

- a) DNA sensors b) Chemical sensors

OR

Discuss in detail any one bio-inspired technique for sensing applications.

Q.6 Describe the basic principle and operation of Resonance Tunneling Transistor. [10]
How would temperature affect the working of the same?

OR

Write short notes on:

- a) Electronic nose b) Glucose sensors

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