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BIELE-007

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

00203

June, 2018

BIELE-007 : NANO-ELECTRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. All questions carry equal marks. Assume missing data, if any, suitably.*

1. Explain various scaling effects on MOSFET. *10*

2. Discuss the concept of : *5+5*

(a) Charge quantization

(b) Energy quantization

3. With neat diagram explain Si-Ge heterostructure and its characteristics. *10*

4. What is the difference between CNFET and Spin-FET ? *10*

5. Explain the working principle of the following with neat diagram : *5+5*

   (a) FinFET

   (b) Vertical MOSFET

6. Explain various challenges in sub-100 nm technology. *10*

7. What is Silicon-on-nothing and Silicon-on-insulator ? Differentiate them. *10*

8. With help of diagram, explain the working of resonant-tunneling diode. State its use. *10*

9. Draw the input-output characteristics of *10*

   (a) Enhancement type MOSFET

   (b) NPN transistor in common collector configuration.

10. Draw the energy band structure of the following : *5+5*

    (a) II – VI compounds

    (b) Type – III heterojunctions