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

Term-End Examination

□□3□3   **June, 2018**

BIELE-002 : MICROELECTRONICS TECHNOLOGY

Time : 3 hours   *Maximum Marks : 70*

*Note : Attempt any **seven** questions. All questions carry equal marks. Assume suitable missing data, if any. Use of scientific calculator is permitted.*

1. Explain with suitable diagram, the float-zone process for crystal growth.   *10*

2. Discuss the following :   *5+5*

   (a) Defects in real crystal

   (b) Range theory of ion-implantation

3. Describe kinetics of silicon dioxide growth and its orientation dependent effects.   *10*

4. State the diffusion equation and explain the following : $4 \times 2\frac{1}{2} = 10$

   (a) Lateral diffusion effect

   (b) Sheet resistance

   (c) Surface concentration

5. What is etching ? Discuss plasma etching process. How is it different from wet etching ? $2+6+2=10$

6. Write notes on : $5+5$

   (a) Photo Reactive Materials

   (b) Properties of Silicon Dioxide

7. Explain the steps involved in the integration of bipolar junction transistor process. 10

8. Explain the steps involved in NMOS fabrication with suitable diagram. 10

9. (a) What is E-beam lithography ? $5+5$

   (b) What are the orientation dependent properties of silicon ?

10. Discuss the following : $5+5$

   (a) Multi-level Metallization Process

   (b) RIE Techniques