

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

Term-End Examination

00599

December, 2017

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 the basic transport processes with respect to vapour phase epitaxy with suitable diagrams and equations. 10

2. With a neat diagram, explain the Czochralski method of crystal growth. 10

3. Briefly discuss the following : 5+5
 - (a) Properties of silicon dioxide
 - (b) Difference between wet and dry oxidation

4. Determine the time to be taken to grow 1.0 μm of silicon dioxide at 920°C and 25 atm steam pressure. 10

5. Write briefly on the following : $4 \times 2 \frac{1}{2} = 10$
- (a) Interstitial diffusion
 - (b) Substitutional diffusion
 - (c) Impurity behaviour of silicon
 - (d) Impurity behaviour of gallium arsenide
6. Why is plasma etching preferred in CMOS IC fabrication ? Compare five different types of plasma etching systems. 3+7
7. Describe Electron Beam Lithography System with a suitable diagram. 10
8. Discuss the steps involved in the integration of CMOS. 10
9. What is Annealing ? State the annealing properties of silicon and gallium arsenide. 2+4+4
10. (a) Explain the interconnection process and films used for single metal, multmetal and multilevel metallization schemes.
- (b) Discuss the process of chemical vapour deposition with a suitable diagram. 5+5
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