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Code No.: 21512 S

**VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**  
**B.E. II Year (I.T.) I-Semester Supplementary Examinations, May/June-2017**

**Micro Electronics**

Time: 3 hours

Max. Marks: 70

*Note: Answer ALL questions in Part-A and any FIVE from Part-B*

**Part-A (10 X 2=20 Marks)**

1. List any two differences between an ordinary PN diode and a Schottky diode.
2. If the voltage across a 'Si' diode is 0.7 V, when the current is 2 mA, find the reverse saturation current. Assume  $V_T = 26$  mV.
3. Draw the circuit symbols of npn and pnp transistors.
4. Give the relationship between ' $\alpha$ ' and ' $\beta$ ' with respect to BJT.
5. Define the terms 'Noise margin' and 'Propagation Delay in CMOS logic circuits.
6. Write any 2 differences between JFET and MOSFET.
7. Define 'loop gain'.
8. Mention the type of feedback used in sinusoidal oscillators and in amplifiers.
9. Draw the schematic symbol of op-Amp and indicate all its terminals.
10. Draw the circuit for implementing a Subtractor using op-Amp.

**Part-B (5 × 10 = 50 Marks)**

11. a) How to implement a voltage Regulator using Zener Diode? [4]  
b) Explain the functioning of different types of clipping circuits with the help of neat circuit diagrams. [6]
12. a) Explain how a bipolar junction transistor can be used as a switch. [4]  
b) Explain various biasing techniques of a bipolar junction transistor. [6]
13. a) Draw the CMOS implementation for 2-input NAND gate. [5]  
b) Explain in detail the physical structure and operation of MOSFET. [5]
14. a) Draw the RC phase shift oscillator circuit and derive the expression for the frequency of oscillations. [7]  
b) Derive the expression for loop gain of a positive feedback amplifier. [3]
15. a) List the characteristics of an Ideal op-Amp. [5]  
b) How to use an op-amp as a current controlled voltage source? [5]
16. a) Explain in detail the varactor diode. [4]  
b) With a neat circuit diagram, explain about the working of BJT in the Common Emitter Configuration and plot its input and output characteristics. [6]
17. Answer any *two* of the following:
  - a) Drain Characteristics of n- channel Junction Field Effect Transistor. [5]
  - b) LC Oscillators [5]
  - c) Mono-Stable multi-vibrator. [5]

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