S.No. 2252 **17UEL01**

(For the candidates admitted from 2017 – 2018 onwards)

B.Sc. DEGREE EXAMINATION, NOVEMBER 2017.

First Semester

Electronics and Communication

SEMICONDUCTOR DEVICES

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Define "Atomic Number" of an atom.
2. What is an ionic bond?
3. Define the term "Knee voltage" of a diode.
4. What is a zener diode?
5. Draw the schematic symbol of an NPN transistor.
6. What is a transistor?
7. Define the term "Drain resistance" for a JFET.

8. List the advantages of JFET.

9. Draw the symbol of N-channel depletion type MOSFET.

10. Expand (a) JFET (b) MOSFET.

PART B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Describe the structure of an atom.

Or

(b) Explain the formation of N type semiconductors.

12. (a) Explain the behaviour of Pn junction in forward bias mode.

Or

(b) How does a zener diode act as a voltage regulator? Explain.

13. (a) Describe the operation of a PNP transistor.

Or

(b) Explain how a transistor acts as an amplifier.

14. (a) Compare JFET and BJT.

Or

(b) Explain the working of a JFET as a voltage variable resistor.

15. (a) Discuss the transfer characteristics of an N-channel depletion MOSFET.

Or

(b) Compare P-Channel and N-Channel MOSFETS.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Describe conductors, insulators and semiconductors using energy band diagram.

17. Derive diode current equation.

18. Discuss the input and output characteristics of a transistor in CE configuration.

19. Discuss in detail, the construction, working and drain characteristics of an N-Channel JFET.

20. Explain the working of a P-channel Enhancement MOSFET and discuss its output characteristics.
