Hall Ticket Number:

Code No. : 13206 S

VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD

B.E. (CSE: CBCS) III-Semester Supplementary Examinations, May/June-2018

Introduction to Electronics Engineering

Time: **3** hours Max. Marks: **70**

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

Part-A (10 × 2 = 20 Marks)

1. Describe the formation of a depletion region in PN junction.
2. Define a rectifier. Compare different types of it.
3. What is Early effect? How does it affect the V-I characteristics?
4. Briefly discuss how Zener diode acts as a voltage regulator.
5. Name the types of feedback used in amplifier circuits.
6. What is an oscillator? Give its classification.
7. Make a comparison between an ideal op-amp and practical op-amp.
8. Show that the dual of the Exclusive-OR is also its compliment.
9. What is LVDT? With the help of a graph, show the relation between the output voltage and the displacement of a core.
10. List the applications of CRO.

Part-B (5 × 10 = 50 Marks)
(All bits carry equal marks)

11. a) Differentiate between Static and Dynamic resistances of a PN junction diode with the help of its VI characteristic curves.
    b) What is the ripple factor, if a power supply of 220V, 50 Hz is to be full wave rectified and filtered with a 220 micro farad capacitor before delivering to a resistive load of 120 ohms?
12. a) Define the four hybrid parameters of a BJT in CE configuration. Also draw its equivalent circuit.
    b) Explain in detail about the Avalanche and Zener breakdown mechanisms.
13. a) Draw drain and transfer characteristics of JFET.
    b) With a neat sketch, explain the working principle of Hartley oscillator.
14. a) Op-amp acts as a differentiator and an integrator as well. Justify.
    b) Design Half adder and Half subtractor using logic gates along with Boolean expressions and truth tables.
15. a) With the necessary sketches, discuss the working principle of a thermocouple.
    b) Explain the construction and working principle of SCR.
16. a) Discuss the conductivity and mobility aspects of semiconductors.
    b) Write the differences between BJT and FET. Also list the applications of JFET.
17. Answer any ***two*** of the following:
    a) An amplifier has voltage gain with feedback of 100. If the gain without feedback changes by 20 % and gain with feedback should not vary more than 2%, determine the value of open loop gain A and feedback ratio β.
    b) Realize the basic logic gates OR, AND and NOT gates using universal logic gates only.
    c) Explain the constructional details and working of UJT.