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(Pages : 2)

Name...

Reg. No.......................................

FIRST SEMESTER B.A./B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CBCSS—UG)

Electronics

ELE 1C 01—ELECTRONIC DEVICES

(2019 Admissions)

Time : Two Hours

Maximum : 60 Marks

Section A

Answer **all** *questions.*
2 marks for each question.
Ceiling - 20 marks.

1. Define an electronic component. List and define different types of electronic components.

2. Define capacitance. If a capacitor is having a rating of 50 μF, 6V and a plus sign near to one of its terminals, what type of capacitor is that ?

3. What is a fuse ? Explain its working principle.

4. Explain how the process of avalanche breakdown occurs in a PN-junction diode.

5. Explain why Zener diode is also called a voltage reference diode.

6. What are the precautions required while using LEDs ?

7. In what respects LCDs are advantageous over LEDs ?

8. What do you understand by collector reverse saturation ? In which configuration does it have a higher value ?

9. Draw the circuit of a common collector NPN transistor configuration. Indicate the input and output terminals.

10. Explain the reason why there is no noise in a JFET.

11. What is the main construction difference between an enhancement type MOSFET and a depletion enhancement type MOSFET ?

12. What are the special features of UJT ?

Section B

Answer **all** *questions.*
5 marks for each question.
Ceiling - 30 marks.

13. Explain the difference between conductors, insulators and semiconductors using the energy-band diagrams.

14. Explain the formation of the depletion region in an open circuited PN-junction.

Turn over

15. Draw and explain the open circuit output voltage characteristic of a photovoltaic cell.

16. In a transistor circuit, $I_E = 5$ mA, $I_c = 4.95$ mA and $I_{CEO} = 200$ μA. Calculate the DC current gain β_{dc} and leakage current I_{CBO}.

17. Explain the working of an NPN transistor as a switch.

18. For an N-channel JFET, $I_{DSS} = 8.7$ mA, $V_P = -3V$, $V_{GS} = -1V$. Find the values of drain current (I_D), transconductance for $V_{GS} = 0$ (g_{m0}) and transconductance (g_m).

19. Describe the constructional details of UJT.

Section C

Answer any one question.

10 marks for each question.

20. Discuss the behavior of PN junction when it is (a) Forward Biased (b) Reverse Biased.

Or

21. Sketch the CE transistor input and output characteristics and explain them.