R-16

Code: 2305/BL

Faculty of Science

B.Sc (Electronics) I-Year, CBCS-II Semester Backlog Examinations, Dec/Jan 2019-20

PAPER: Electronic Devices

Time: 3 hours Max Marks: 80

Section-A

I. Answer any FIVE of the following questions. (5x4=20 Marks)

1. Explain how a p-n junction is formed?
2. Write about a varactor diode?
3. Define active, cutoff and saturation regions in transistor operation. Show the regions in figure.
4. Following current readings are obtained in a transistor circuit: I_E=2mA and I_B=20μA. compute the values of α and I_C.
5. What are the advantages of FET over BJT?
6. A unijunction transistor has a firing potential of 10V. If it is connected across the capacitor of a series R-C circuit with R=100KΩ and C=100pF supplied by source of 20V d.c. Calculate the time period of the saw tooth wave form generated.
7. Explain how an SCR operates as a switch?
8. What is an LED? Write three applications of an LED?

Section-B

II. Answer the following questions. (4x15=60 Marks)

9. (a) Draw V-I characteristics of Zener Diode. Discuss how a zener diode acts as a voltage regulator to maintain constant output voltage. A zener diode of 80V breakdown is connected in series with resistance of 200Ω. If the load of 2KΩ is connected across the diode, over what range of input voltage will the circuit operate (maximum zener current is not to exceed 25mA).

(OR)

(b) Describe the construction and working of a tunnel diode. Sketch its V-I characteristics and indicate the negative resistance region.

10. (a) Discuss the input and output characteristics of BJT in CE configuration with diagram. Obtain h-parameters from the characteristics.

(OR)

(b) What is biasing of a transistor? What is self bias? Draw the circuit of self bias and explain. Why the self bias is an improvement over fixed bias circuit?

11. (a) Describe experimental setup to draw the output and transfer characteristics of JFET. Explain how FET parameters can be determined from these characteristics.

(OR)

(b) Explain construction and working of UJT. Explain working of UJT as a relaxation oscillator.

12. (a) Describe the structure of SCR. Explain the operation of SCR when
    (i) The gate is positive
    (ii) The gate is open.

(OR)

(b) Describe the construction and working of photo voltaic cell (solar cell). Explain the characteristic curves of it.

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