
Answer ALL questions.

PART A — (10 x 2 = 20 marks)

1. What is intrinsic semiconductor? Give two examples.
2. What is meant by zener breakdown?
3. Write the Barkhausen criterion condition for oscillator.
4. Mention some of the applications of oscillators.
5. Mention the ideal characteristics' of operational amplifier.
6. Define thermal drift.
7. List the important features of HDL.
8. What are the functions of encoders and decoders?
9. What are fundamental mode circuits?
10. What is race?

PART B — (5 x 18 = 80 marks)

11. (a) Discuss the V-I characteristics of P-N diode and zener diode with their construction and principle of operation.

Or

(b) (i) Describe the construction, working and V-I characteristics of SCR.

(ii) Explain the V-I characteristics of TRIAC.

12. (a) Draw the hybrid model of CE amplifier and obtain its gain, input impedance and output impedance. Compare the performance of this CE amplifier with CC and CB configuration.

Or

(b) Discuss the working of single tuned and synchronously tuned amplifiers.

13. (a) With operational amplifier, explain the operation of wein bridge oscillator and low pass filter.

Or

(b) Explain the operation of 555 timer connected for monostable operation and design the above circuit for the following specifications: $T = 100 \text{ ms}$ and $R = 100 \text{ kohm}$

14. (a) (i) Design a full adder and realize it using two half adder and an OR gate.

(ii) Explain the concept and working of quadruple 2 to 1 line multiplexer.

Or

(b) Construct a combinational circuit to convert given binary coded decimal number into an Excess-3 code. For example when the input to the gate is 0110 then the circuit should generate output as 1001.

15. (a) Draw the fundamental mode and pulse mode asynchronous circuit and explain in detail.

Or

(b) (i) Summarize the design procedure for synchronous sequential circuit.

(ii) Explain the following terms ;

(1) Flow table

(2) Critical race

(3) Non critical race

(4) Hazard.

Educationobserver.com