

**PRACTICE SET**

**End Semester Examination, Spring- 2026**

**Program: Diploma (CSE)**

**Course: Electronic Devices and Circuits**

**Subject Code: 3DESC207**

**Semester: IV**

**UNIT-I**

**Section: II (All Questions Carries Ten Marks)**

1. Differentiate between conductors, insulators, and semiconductors.
2. Describe P-type and N-type semiconductors.
3. A Silicon diode indicates forward current of 2mA and 8mA when forward voltage are 0.6V and 0.7V respectively .Estimate the operating temperature of the diode.
4. What is PN junction diode? Explain the V-I characteristics of a PN junction diode.
5. Explain Zener diode as a voltage regulator with circuit diagram and working.
6. What is Schottky diodes? Mention their advantages.

**Section: III (All Questions Carries Twenty Marks)**

7. Explain clipping and clamping circuits with diagrams and waveforms.
8. What is Rectifier? Describe the working of rectifiers half-wave and full-wave with circuit diagrams, waveforms, and efficiency.

**UNIT II**

**Section: II (All Questions Carries Ten Marks)**

9. Explain the NPN and PNP transistors.
10. A transistor is connected in common emitter (CE) configuration in which collector supply is 8 V and the voltage drop across resistance  $R_C$  connected in the collector circuit is 0.5 V. The value of  $R_C = 800 \Omega$ . If  $\alpha = 0.96$ , determine : (i) collector-emitter voltage (ii) base current.
11. What is thermal runaway? Explain its causes.
12. Explain the operation of a transistor as a switch.
13. What is transistor? Explain how transistor is used as an amplifier?

**Section: III (All Questions Carries Twenty Marks)**

14. Explain in detail the input and output characteristics of CE, CB, and CC configurations with graphs.

15. Derive the relation between  $\alpha$ ,  $\beta$ , and  $\gamma$  and explain their significance in transistor operation.

### UNIT III

#### Section: II (All Questions Carries Ten Marks)

16. Differentiate between JFET and MOSFET.  
17. Explain the construction and working of a JFET with neat diagram.  
18. Show how FET behave as voltage variable resistor.  
19. Calculate the transconductance for a JFET having  $I_{DSS} = 8\text{mA}$  and  $V_P = -4\text{V}$  and its bias to operate at  $V_{GS} = -1.8\text{V}$ . And also Calculate the maximum transconductance.  
20. Draw and explain the small-signal model of JFET.

#### Section: III (All Questions Carries Twenty Marks)

21. Describe the construction, operation, and characteristics of MOSFET both enhancement and depletion types.  
22. Explain various biasing techniques of JFET.

### UNIT IV

#### Section: II (All Questions Carries Ten Marks)

23. Compare DC-coupled and RC-coupled amplifiers.  
24. Describe the working of a differential amplifier.  
25. Explain the need for multistage amplifiers.  
26. What causes gain reduction at low frequencies in amplifiers?

#### Section: III (All Questions Carries Twenty Marks)

27. Explain the analysis of BJT multistage amplifiers and derive the expression for overall gain.  
28. Explain the Darlington pair, derive its current gain, and discuss its applications.

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**Disclaimer:** - This is a Practices Set. The Question in End term examination will differ from the Practices Set. This Practices Set is meant for practice only.