| Q.P.Code: 18EC0443 | R18 | H.T.No. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|

15.06.24 FN

**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**
(AUTONOMOUS)

**B.Tech II Year I Semester Supplementary Examinations June-2024**

**ANALOG ELECTRONIC CIRCUITS**
**(Common to EEE, CSE & CSIT)**

**Time: 3 Hours** **Max. Marks: 60**

**PART-A**

(Answer all the Questions **5 x 2 = 10** Marks)

| | | | | | |
|---|---|---|---|---|---|
| 1 | a | Draw the VI characteristics of PN diode. | CO1 | L1 | 2M |
| | b | Write the relation between β and α. | CO2 | L2 | 2M |
| | c | Write the advanatges of FET. | CO3 | L1 | 2M |
| | d | Define an operational amplifier. | CO4 | L1 | 2M |
| | e | Write the specifications of ADC and DC. | CO5 | L1 | 2M |

**PART-B**

(Answer all Five Units 5 x 10 = 50 Marks)

**UNIT-I**

| | | | | | |
|---|---|---|---|---|---|
| 2 | a | Explain the formation of depletion layer in a PN junction. | CO1 | L1 | 5M |
| | b | Write the different applications of PN junction diode. | CO1 | L2 | 5M |
| | | **OR** | | | |
| 3 | a | Draw and discuss the VI characteristics of a Zener Diode. | CO1 | L2 | 5M |
| | b | Write notes on Diode Clippers and Clampers with diagram. | CO1 | L1 | 5M |

**UNIT-II**

| | | | | | |
|---|---|---|---|---|---|
| 4 | a | With neat diagram explain the operation of NPN transistor. | CO2 | L2 | 5M |
| | b | Explain the Input and Output characteristics of a BJT in CB configuration. | CO2 | L2 | 5M |
| | | **OR** | | | |
| 5 | a | Write the difference between CB, CE and CC configurations of BJT. | CO2 | L4 | 5M |
| | b | Write the applications of CB, CE and CC amplifiers. | CO2 | L2 | 5M |

**UNIT-III**

| | | | | | |
|---|---|---|---|---|---|
| 6 | a | With the help of neat diagram, explain the operation and characteristics of n-channel enhancement type MOSFET. | CO3 | L2 | 8M |
| | b | Write the difference between FET and BJT. | CO3 | L2 | 2M |
| | | **OR** | | | |
| 7 | | Discuss the operation and characteristics of n-channel depletion type MOSFET with diagram. | CO3 | L2 | 10M |

## UNIT-IV

| | | | | | |
|---|---|---|---|---|---|
| 8 | a | Draw the various functional blocks of an operational amplifier. Explain each block. | CO4 | L2 | 6M |
| | b | Compare different configurations of differential amplifier. | CO4 | L2 | 4M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 9 | a | With the help of diagram, explain frequency response of practical op-amp. | CO4 | L2 | 5M |
| | b | Design an inverting amplifier with gain A= 20 | CO4 | L3 | 5M |

## UNIT-V

| | | | | | |
|---|---|---|---|---|---|
| 10 | a | Draw the circuit of a difference amplifier with one op-amp and derive the expression for voltage gain. | CO5 | L2 | 5M |
| | b | With the help of circuit diagram explain instrumentation amplifier and derive the gain. | CO5 | L2 | 5M |

**OR**

| | | | | | |
|---|---|---|---|---|---|
| 11 | a | Explain about flash type ADC. | CO5 | L1 | 5M |
| | b | Draw and explain in detail about R-2R DAC | CO5 | L2 | 5M |

***** END *****