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

B.Tech II Year I Semester Supplementary Examinations December-2021

ANALOG ELECTRONICS CIRCUITS

(Common to EEE, CSE & CSIT)

Time: 3 hours

Max. Marks: 60

PART-A

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

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|---|---|--|----|----|
| 1 | a | Mention the advantages of Full Wave Rectifier. | L1 | 2M |
| | b | Mention the applications of Transistor. | L2 | 2M |
| | c | Mention the advantages of FET. | L1 | 2M |
| | d | List out the ideal characteristics, and draw the equivalent diagram of an OP-MP. | L2 | 2M |
| | e | Draw the freq. response of the LPF. | L1 | 2M |

PART-B

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

UNIT-I

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|---|---|---|----|----|
| 2 | a | What is a PN Junction? Explain the formation of depletion layer in a PN junction. | L2 | 5M |
| | b | Discuss the applications of a PN Junction Diode. | L2 | 5M |

OR

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|---|---|--|----|----|
| 3 | a | Discuss the working of inductor filter with circuit diagram. | L4 | 5M |
| | b | Calculate the ripple factor for a π type filter, employing 10H choke and two equal capacitors 16 μ F each and fed from a full wave rectifier and 50Hz mains. The load resistance is 4K Ω . Draw the neat circuit diagram. | L1 | 5M |

UNIT-II

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|---|---|---|----|----|
| 4 | a | What is early effect of a BJT? | L1 | 2M |
| | b | With neat diagram, explain the Input and Output characteristics of a BJT in CB Configuration. | L2 | 8M |

OR

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|---|---|---|----|----|
| 5 | a | Derive the expression for Stability Factor S of a Fixed Bias Circuit. | L3 | 5M |
| | b | Derive the expression for Stability Factor S of a Collector to Base Bias Circuit. | L3 | 5M |

UNIT-III

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| 6 | | Draw the circuit diagram for Common Source configuration of n channel JFET and Discuss the Drain and Transfer Characteristics. | L2 | 10M |
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OR

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| 7 | | Derive input impedance, output impedance and voltage gain of JFET Common Drain amplifier with neat diagram. | L2 | 10M |
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UNIT-IV

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|---|---|--|----|----|
| 8 | a | What are the four different configuration of differential amplifier? | L2 | 6M |
| | b | Compare and contrast ideal and practical op-amp? | L2 | 4M |

OR

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|---|---|---|----|----|
| 9 | a | List out the ideal characteristics of an operational amplifier. | L1 | 5M |
| | b | An op-amp has a slew rate of 2V/ μ s. What is the maximum frequency of an output sinusoid of peak? Value 5V at which the distortion sets in due to the slew rate limitation | L3 | 5M |

UNIT-V

- 10 a Draw a neat circuit of an differentiator circuit. Explain the functioning with the input-output Wave forms L1 5M
- b Design a first order high pass filter for a cut-off frequency of 100 Hz and gain 2 draw the circuit diagram. L3 5M

OR

- 11 a Draw and explain successive approximation type ADC? L1 5M
- b The basic step of a 9 bit DAC is 10.3 mV. If "000000000" represents 0 V. What output is Produced if the input is "101101111"? L3 5M

END