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

**B.Tech II Year II Semester Supplementary Examinations July-2022**

**ANALOG CIRCUITS**

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 60

**PART-A**

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

- |   |   |   |    |    |
|---|---|---|----|----|
| 1 | a | What is cascode amplifier?                  | L1 | 2M |
|   | b | What are the applications of oscillators?   | L1 | 2M |
|   | c | What is a tuned amplifier?                  | L1 | 2M |
|   | d | List the characteristics of an ideal opamp. | L1 | 2M |
|   | e | Mention the types of DACs.                  | L1 | 2M |

**PART-B**

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

**UNIT-I**

- |   |   |   |    |    |
|---|---|---|----|----|
| 2 | a | Draw the Hybrid- $\pi$ model and explain the significance of each and every component in it.        | L2 | 5M |
|   | b | Describe the variation of hybrid- $\pi$ parameters upon collector current, $V_{CE}$ and temperature | L2 | 5M |

**OR**

- |   |  |  |    |     |
|---|--|--|----|-----|
| 3 |  | Draw the block diagram of n-stage cascaded amplifier and analyze its various parameters. | L4 | 10M |
|---|--|--|----|-----|

**UNIT-II**

- |   |   |   |    |    |
|---|---|---|----|----|
| 4 | a | Explain the concept of negative feedback with the help of a neat block diagram. | L2 | 6M |
|   | b | With neat diagram, discuss voltage amplifier and current amplifier.             | L2 | 4M |

**OR**

- |   |  |   |    |     |
|---|--|---|----|-----|
| 5 |  | With the help of a neat circuit diagram, discuss RC phase shift oscillator using BJT and derive the expression for its frequency of oscillations. | L2 | 10M |
|---|--|---|----|-----|

**UNIT-III**

- |   |   |  |    |    |
|---|---|--|----|----|
| 6 | a | Discuss with diagram, Transformer coupled Class A Power Amplifier and derive its maximum efficiency. | L1 | 5M |
|   | b | Write notes on crossover distortion in class B power amplifier.                                      | L1 | 5M |

**OR**

- |   |  |   |    |     |
|---|--|---|----|-----|
| 7 |  | Discuss Double Tuned Amplifier with neat diagram and derive the expression for its bandwidth. | L2 | 10M |
|---|--|---|----|-----|

**UNIT-IV**

- |   |   |   |    |    |
|---|---|---|----|----|
| 8 | a | Draw an inverting amplifier using an op-amp and derive the expression for its closed loop voltage gain. | L2 | 6M |
|   | b | Explain the block diagram of an internal circuit of an operational amplifier.                           | L2 | 4M |

**OR**

- |   |  |   |    |     |
|---|--|---|----|-----|
| 9 |  | Obtain the expression for output voltage for an non inverting summing amplifier and subtractor. | L2 | 10M |
|---|--|---|----|-----|

**UNIT-V**

- 10 a** Classify Band pass filter. Mention the important parameters of a band pass filter. **L2 5M**  
Draw a second order narrow band pass filter and derive its transfer function.
- b** Draw a first order wide band pass filter and determine its transfer function. **L2 5M**

**OR**

- 11** Draw the circuit diagram of inverted R-2R ladder DAC network. Explain its working. **L2 10M**  
List out the advantages over R-2R ladder network.

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