**20EC501**

**Hall Ticket Number:**

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| **III/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **February, 2023** | **Electronics & Communication Engineering** | | |
| **Fifth Semester** | **Linear Integrated Circuits** | | |
| **Time:** Three Hours | | **Maximum: 7**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (14X1 = 14 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X14=56 Marks) |

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| 1. | a) | Compare the Open loop and closed loop Op-amp operation. | CO1 | L4 | 1M |
|  | b) | Define common mode rejection ratio. | CO1 | L1 | 1M |
|  | c) | What is a differential amplifier? | CO1 | L1 | 1M |
|  | d) | What is a Precision rectifier? | CO1 | L1 | 1M |
|  | e) | List the applications of the voltage-controlled oscillator. | CO2 | L1 | 1M |
|  | f) | Write the limitations of Op-Amps as a comparator. | CO2 | L3 | 1M |
|  | g) | What is frequency stability? | CO2 | L1 | 1M |
|  | h) | Describe hysteresis. | CO2 | L2 | 1M |
|  | i) | Classify different types of DAC. | CO3 | L2 | 1M |
|  | j) | Write the specification of ADC. | CO3 | L3 | 1M |
|  | k) | What is an Sample and Hold circuit? | CO3 | L1 | 1M |
|  | l) | Compare wideband filter and narrow bandpass filter. | CO4 | L4 | 1M |
|  | m) | List the application of PLL. | CO4 | L1 | 1M |
|  | n) | List the applications of the voltage regulator. | CO4 | L1 | 1M |
| **Unit -I** | | | | | |
| 2. | a) | Discuss bout DC Characteristics of the Op-amp. | CO1 | L2 | 7M |
|  | b) | Solve for Vo output of the adder-subtractor as shown in the below figure: | CO1 | L3 | 7M |
|  |  | **(OR)** |  |  |  |
| 3. | a) | Draw and explain the operation of op-amp as integrators | CO1 | L2 | 7M |
|  | b) | Design a subtractor circuit using Op-amp to get the output expression as  Vo = (V1 – V2)  Where V1, and V2 are the inputs. | CO1 | L3 | 7M |
|  |  | **Unit -II** |  |  |  |
| 4. | a) | Draw and explain the operation of a Triangular wave generator. | CO2 | L2 | 7M |
|  | b) | Design a square wave of 1kHz frequency using Op-amp and dc supply voltage as ± 12V | CO2 | L4 | 7M |
|  |  | **(OR)** |  |  |  |
| 5. | a) | Discuss the operation of Voltage controlled oscillator. | CO2 | L2 | 7M |
|  | b) | Design a circuit that converts the Sinewave to a square wave generator. | CO2 | L4 | 7M |
|  |  | **Unit -III** | |  |  |
| 6. | a) | Explain the function of a positive clipper circuit with its input and output waveforms. | CO3 | L2 | 7M |
|  | b) | Design a 4-bit R-2R ladder type D/A Converter. Find the output voltage when with R=2k and input bit stream 1010. | CO3 | L4 | 7M |
|  |  | **(OR)** |  |  |  |
| 7. | a) | Explain the operation of Dual slope converters. | CO3 | L2 | 7M |
|  | b) | What output voltage would be produced by an 8bit D/A converter whose output range is 0 to 10 V and whose input binary number is  (i) 10111100  (ii) 10110011 | CO3 | L3 | 7M |
|  |  | **Unit -IV** |  |  |  |
| 8. | a) | Explain the operation of the all-pass filter. | CO4 | L2 | 7M |
|  | b) | Design a second-order butter worth high pass filter having a lower cut-off frequency of 1KHz. | CO4 | L4 | 7M |
|  |  | **(OR)** |  |  |  |
| 9. | a) | Explain the operation of the Astable Multivibrator. | CO4 | L2 | 7M |
|  | b) | Describe the operation of Monostable Multivibrator and design a monostable multivibrator using a 555 timer to produce a pulse width of 100 m sec. | CO4 | L4 | 7M |

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