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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B. Tech II Year II Semester Regular Examinations October-2022****LINEAR & DIGITAL IC APPLICATIONS**

(Electronics and Communication Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Describe about the block diagram of Op-Amp. **L1 8M**
 b Determine the output voltage of a differential Amplifier for the input voltages of $300\mu\text{V}$ & $240\mu\text{V}$. The Differential gain of the amplifier is 5000. the value of the CMRR is 100. **L3 4M**

OR

- 2 a Draw and Explain about the Non-Inverting Amplifier. **L2 6M**
 b Discuss about Schmitt trigger with neat sketches. **L3 6M**

UNIT-II

- 3 a Explain about the operation of Wien Bridge Oscillator using Op-Amp **L3 6M**
 b Draw the circuit of a 1st order low pass Butterworth filter and discuss its transfer functions. **L2 6M**

OR

- 4 a Discuss about All pass filter with neat sketch. **L2 8M**
 b Discuss about the Discharge and control voltage pin role in the 555 timer. **L2 4M**

UNIT-III

- 5 a Draw and Explain about the block schematics of PLL. **L2 8M**
 b Define PLL and List the applications of PLL. **L3 4M**

OR

- 6 Draw and explain about R-2R DAC with an example. **L1 12M**

UNIT-IV

- 7 a Explain about functions and procedures with an example. **L2 6M**
 b Write a VHDL entity and Architecture for the following function. $F(x) = (a + b)(c+d)$ Also draw the relevant logic diagram. **L2 6M**

OR

- 8 Design the logic circuit and write VHDL program for the following function. $F(X) = \Sigma A, B, C, D (0, 2, 5, 7, 8, 10, 13, 15) + d (1, 6, 11)$. **L3 12M**

UNIT-V

- 9 a Explain the operation of standard IC for 3X8 decoder with necessary truth table and internal architecture. **L2 6M**
 b Write a VHDL code for the above Decoder. **L2 6M**

OR

- 10 a Distinguish between latch and flip flop. Show the logic diagram for both. Explain the operation with the help of function table. **L4 6M**
 b Write a VHDL code for a D-flip flop in behavioral model. **L2 6M**

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