ACE
Engineering College

(An Autonomous Institution)

Question Paper Code: EC405PC

ACE-R20

Semester End Examination
II B. Tech- II Semester- AUGUST/SEPTEMBER -2022
LINEAR AND DIGITAL INTEGRATED CIRCUITS
ELECTRONICS AND COMMUNICATION ENGINEERING

Time: 3 Hours **Max. Marks: 70**

H. T. No										

Answer any 5 Questions out of 8 Questions from the following

Q.No	Question	Marks
1. a)	Draw the block diagram of typical Op-Amp with various stages and explain in detail.	7
b)	What is a comparator? Discuss the Non-inverting comparator and obtain its input and output waveforms.	7
2. a)	Design a differentiator to differentiate an input signal that varies in frequency from 100Hz to 10 KHz. If a sine wave of 1.2V Peak at 10 KHz is applied to the differentiator of part, draw its output waveform.	7
b)	Explain and draw the circuit of IC 723 voltage regulator and list the characteristics of IC723.	7
3. a)	With neat circuit diagram, explain the operation of first order Butterworth HPF and derive an expression for voltage gain.	7
b)	Draw the basic block schematic of PLL and explain in detail. Also, define the terms: lock- in-range, capture range & pull – in time.	7
4. a)	Design a Band Pass filter with f_L = 1 KHz, f_0 = 5 KHz, Q = 3 and A_f = 10. Draw the circuit with all the components.	7
b)	Discuss the IC555 timer in Monostable operation and explain the applications of it.	7
5. a)	With a neat sketch, explain the R-2R ladder resistor type DAC.	7
b)	Draw the schematic circuit diagram of Dual-slope A/D converter and explain its operation. Derive expression for output voltage.	7
6. a)	Explain the priority encoder with a neat logic diagram.	7
b)	Define a multiplexer. Draw a 4:1 multiplexer and explain with logic symbol and truth table.	7
7. a)	What is the drawback of JK flip-flop? Design a flip-flop that overcomes this drawback and explain with neat diagram.	7
b)	Define ROM and draw its architecture ?and also explain clearly about different types of ROM's	7
8. a)	Design a 3- bit Synchronous Up Counter.	7
b)	Compare Static and Dynamic RAM.	7