

Code No: P18ECT09

HALL TICKET NUMBER

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PACE INSTITUTE OF TECHNOLOGY & SCIENCES::ONGOLE
(AUTONOMOUS)

III B.TECH I SEMESTER END SUPPLEMENTARY EXAMINATIONS, MARCH/APRIL– 2023
LINEAR AND DIGITAL IC APPLICATIONS
(ECE Branch)

Time: 3 hours

Max. Marks: 60

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answer all the questions in Part-A (5X2=10M)

Q.No.	Questions	Marks	CO	KL
1.	a) What are the features of 741 Op-Amp	[2M]	1	1
	b) Discuss the role of a level translator in op-amp.	[2M]	2	3
	c) What are the advantages of active filters over passive filters?	[2M]	3	1
	d) Write the elements of VHDL	[2M]	4	2
	e) Discuss the modes of operation of shift registers.	[2M]	3	3

PART-B

Answer One Question from each UNIT (5X10=50M)

Q.No.	Questions	Marks	CO	KL
UNIT-I				
2.	a) With a neat sketch explain the ac analysis of a single input unbalanced output differential amplifier	[5M]	1	2
	b) Explain the operation of the instrumentation amplifier	[5M]	1	2
OR				
3.	a) Explain the process of measuring offset voltage and Slew rate in the op-amp.	[5M]	1	2
	b) Draw the circuit diagram of the integrator using IC 741 and explain its operation.	[5M]	1	3
UNIT-II				
4.	a) Design the 2nd order HPF and explain its operation in detail.	[5M]	2	3
	b) Derive the frequency of oscillations by using a sawtooth wave generator.	[5M]	2	3
OR				
5.	a) Draw and explain the IC565 PLL and also write its applications	[5M]	2	2
	b) Explain the operation of monostable multivibrator using a 555 timer	[5M]	2	2
UNIT-III				
6.	a) Draw the functional diagram of a dual slope integrating type ADC and also obtain expression for the output voltage	[5M]	3	2
	b) Find the voltage at all nodes 0, 1, 2 ... and at the output of a 5-bit R-2R ladder DAC. The LSB is 1 and all other bits are equal to '0'. Assume $V_R = -10V$ and $R = 10k\Omega$	[5M]	3	3
OR				
7.	a) Compare different types of A-D converters	[5M]	3	2



	b)	Compare the merits and demerits of different types of D/A converters. If the maximum output voltage of a 9-bit DAC is 25.4 V, what is the smallest change in the output as the binary count increases?	[5M]	3	3
UNIT-IV					
8.	a)	Explain about the following (i) Packages with syntax (ii) Libraries with syntax?	[5M]	4	2
	b)	Discuss the sequential assignment statements with examples.	[5M]	4	2
OR					
9.	a)	What are the operations performed by a logic simulator.	[5M]	4	2
	b)	Write description of Concurrent and Sequential Statements of VHDL with examples	[5M]	4	2
UNIT-V					
10.	a)	Explain about the Dual Priority Encoder with neat diagram.	[5M]	5	2
	b)	Write VHDL code for Johnson Counter.	[5M]	5	3
OR					
11.	a)	Explain about the Look Ahead Carry Generator with neat diagram	[5M]	5	2
	b)	Explain the different Modes of Operation of Shift Registers.	[5M]	5	2
