RA

Code No: 155SN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, January/February - 2023
LINEAR AND DIGITAL IC APPLICATIONS
(Electrical and Electronics Engineering)

Time: 3 Hours **Max.Marks:75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A

(25 Marks)

1.a)	What is an Op-Amp?	[2]
b)	Draw the pin configuration of IC741.	[3]
c)	List out the applications of 565 PLL.	[2]
d)	What is an all pass filter?	[3]
e)	What is meant by Resolution?	[2]
f)	Define Stability of a Converter.	[3]
g)	What are the characteristics of TTL NAND gate?	[2]
h)	List out the merits and demerits of Integrated Circuit Technology.	[3]
i)	What is meant by transparent latch?	[2]
j)	Define Static RAM.	[3]

PART – B

(50 Marks)

2.a) What is a Comparator? Explain how an Op-Amp is used as a Comparator with a neat circuit diagram.
b) Discuss the DC and AC characteristics of an Ideal Op-Amp with relevant expressions. [5+5]

OR

3.a) Explain how an Op-Amp is used as an Integrator with a neat circuit diagram.
b) With a neat circuit diagram, explain the working principle of IC 723 Voltage Regulator. [5+5]

4.a) Design a first order LPF that has a cutoff frequency of 3KHZ and pass band gain of 1.
b) With a neat schematic diagram of IC555, explain how it can be used as an Astable Multivibrator. [5+5]

OR

5.a) With a neat circuit diagram, explain the operation of Sawtooth-waveform generator and derive the expression for frequency of Oscillations.
b) Explain the working of IC565 with a neat diagram. [5+5]

6.a) With a neat diagram, explain the working principle of R-2R Ladder type DAC.
b) Explain the operation of Parallel Comparator type ADC with a neat diagram. [5+5]

OR

7.a) With a neat diagram, explain the internal architecture of IC 1408 architecture.
b) State and explain the important specifications of ADC. [6+4]

8.a) What is meant by Tristate Logic? Draw the circuit of Tristate TTL logic and explain the functions.
b) Explain the concept of CMOS transmission gate. [6+4]

OR

9.a) Discuss the design considerations of Multiplexer and explain the operation with relevant circuit.
b) Draw the pin configuration of decoder used for driving LED and LCD display. [5+5]

10.a) Explain how PROM, EPROM and EEPROM technologies differ from each other.
b) Describe the operation of JK flip flop with neat diagram. Also explain how the drawback of JK flip flop can be eliminated. [5+5]

OR

11.a) Design a synchronous counter using 74XX ICs and explain its working with neat timing Waveforms.
b) With a neat diagram, explain the architecture of RAM. [5+5]

---ooOoo---