

13. a)	Draw the internal diagram of IC-723 voltage regulator and explain its functionality.	4	1	3	1
b)	Explain the operation of a 3-bit R-2R type DAC and the expression for the output voltage.	4	2	3	1
14. a)	Draw and explain NAND gate operation using CMOS logic.	4	3	4	1
b)	Explain how to interface TTL with CMOS logic.	4	1	4	1
15. a)	Design a Parallel Binary Adder/Subtractor using 2's Complement method.	5	3	5	2
b)	Design a binary up counter using IC 74XX series.	3	3	5	2
16. a)	Show that the output of the subtractor is proportional to the difference between the two input voltages?	3	2	1	1
b)	Derive the transfer function, gain, and phase angle for first order and second order low pass active filter.	5	2	2	1
17.	Answer any <i>two</i> of the following:				
a)	The basic step of a 9-bit DAC is 10.3mV. If 00000000 represents 0V i) Find the output of a DAC for an input: 101101101 and 011011011 What is the full scale reading of this DAC?	4	3	3	1,2
b)	Draw and explain the operation of tristate TTL inverter.	4	1	4	1
c)	Design mod 5 Asynchronous counter.	4	3	5	2

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	22.50%
ii)	Blooms Taxonomy Level – 2	37.50%
iii)	Blooms Taxonomy Level – 3 & 4	40%
