SUMMER-2024	
Exam Seat No.:	
Academic Year:2023-2024	Semester:III
Class:SY	Program:B.Tech
Branch Code:ELE	Pattern:2022
Name of Course:Analog and Digital Circuits	Course Code:ELE222002
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper
and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

Question No. 1 Attempt following Question

1a) a) Explain voltage regulator with suitable applications of voltage regulator. (6) CO2

OR

b) Draw and explain Active first order High pass filter with its frequency response

Question No. 2 Attempt following Question

2a) a) Design a High pass filter with lower cut off frequency of 1kHz and pass band gain of 2. Assume C=0.01 Microfarad Find the Value of R. (6) CO2

OR

b) Design a Sine wave phase shift oscillator with oscillation frequency of 500Hz. Assume suitable data.

Question No. 3 Attempt following Question

3a) Explain the operation of basic sample and hold circuit with circuit diagram and wave form (8) CO2

OR

3b) Explain with neat diagram frequency to voltage converter. (8) CO2

3c) Explain SRAM (Static RAM) Explain the advantages and disadvantages of and their applications.   (8)   CO1

OR

3d) Compare PAL and PLA In terms of architecture, structure, flexibility, application   (8)   CO1

Question No. 4 Attempt following Question

4a) Design 3:8 Decoder using truth table and draw logic diagram   (8)   CO3

OR

4b) Design MOD 5 Asynchronous up Counter using proper steps, state diagram and timing diagram   (8)   CO3

4c) Design Synchronous decade down counter Using JK Flip-Flop   (8)   CO3

OR

4d) Design MOD 6 synchronous Up counter using JK flip-flop and K map   (8)   CO3

Question No. 5 Attempt following Question

5a) Describe the operational principles of a Dual Slop Analog-to-Digital Converter with circuit diagram.   (8)   CO2

OR

5b) Draw and Explain Zero Crossing Detector in Non-Inverting mode with Circuit diagram and wave form.   (8)   CO2

5c) Draw and explain 4-bit Ring Counter with truth table, timing diagram and state diagram. Load initial data $(0001)_2$.   (8)   CO3

OR

5d) Minimize the following Variable logic function using K Map and draw logic diagram   (8)   CO3

$F(A,B,C,D) = \sum_m (3, 4, 6, 7, 11, 12, 13, 14, 15)$

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