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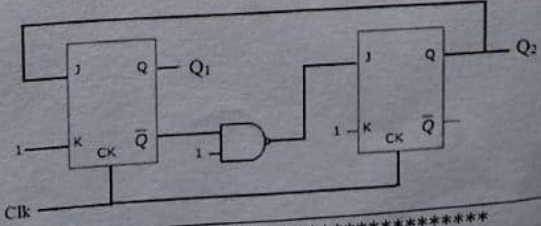
**SCHOOL ELECTRONICS ENGINEERING**  
**CONTINUOUS ASSESSMENT TEST - II**  
**FALL SEMESTER 2024-2025**

SLOT: D2

**Programme Name & Branch** : BTECH ECE  
**Course Code and Course Name** : BECE102L & Digital System Design  
**Faculty Name(s)** : Nithish Kumar V, Dhanabal R, Tanmaya Kumar Das, Jayakrishnan P, Shilpi Ruchi Kerketta  
**Class Number(s)** : VL2024250103667, 3679, 3674, 4051, 4054  
**Date of Examination** : 16.10.24  
**Exam Duration** : 90 minutes **Maximum Marks: 50**

**General instruction(s):**

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- CO2. Model the Combinational and Sequential logic circuits using Verilog HDL.
- CO3. Design the various combinational logic circuits and data path circuits.
- CO4. Analyze and apply the design aspects of sequential logic circuits

Q. No	Question	M	CO	BL
1.	a) Re-write the following design in behavioral Verilog module. <pre>           module expl_str(y,a,b,c);           input a, b, c; output y; wire a, b, c, y;           assign y = a ? ( b ? 1'b1 : c ) : ( b ? c : 1'b0 );           endmodule           </pre> b) Write a verilog code for the arithmetic progression $a_n = a + (n - 1) \times d$ sequence with 4-bit input initial term 'a' and a 4-bit common difference 'd' as inputs. It should output the subsequent terms of the AP, each as a 32-bit value, until the generated term reaches the maximum possible 32-bit value after that stop generating the sequence.	5	2	4
2.	Design a 4-bit grey code up-counter using T FF.	10	3	4
3.	Design a 2-bit magnitude comparator datapath circuit using 4to16 decoder.	10	3	4
4.	a) Design a D-Flip flop using T Flip Flop.	5	4	3
	b) Write a Verilog code for the above design using structural modelling.	5		
5.	In the sequential circuit given below, assume that the initial value of $Q_1 = 0$ & $Q_2 = 1$ and then clocked for 6 pulses, give the function table and draw the wave sequences for the outputs $Q_1$ and $Q_2$ . <div style="text-align: center; margin-top: 10px;">  </div>	10	4	4

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