	E.G.S. PILLAY ENGINEERING COLLEGE (An Autonomous Institution, Affiliated to Anna University, Chennai) Nagore Post, Nagapattinam – 611 002, Tamilnadu.	Rev.0 COE/2017/QB

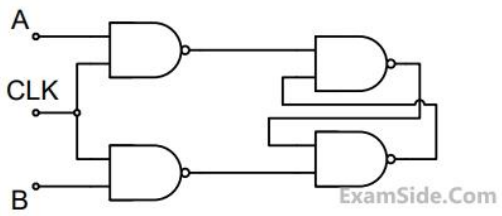
DIGITAL ELECTRONICS

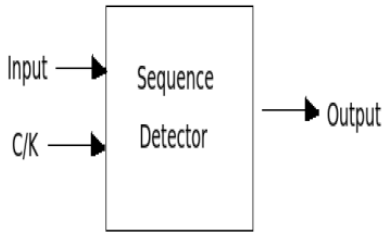
Academic Year :	2021-2022	**Question Bank**	Programme	B.E - EEE
Year / Semester :	II / III		Course Coordinator:	Dr. V.Mohan

Course Objectives	Course Outcomes
1. To study the fundamentals of digital systems, programmable logic devices and logic families. 2. To design and implement combinational logic circuits. 3. To design and implement synchronous and asynchronous sequential logic circuits.	On the successful completion of the course, students will be able to CO1: Solve digital system problems using number systems, binary codes, logic gates, Boolean algebra and Karnaugh Map (K3) CO2: Construct combinational logic circuits using logic gates and multiplexers (K3) CO3: Build synchronous sequential logic circuits using excitation table, stable table and state diagrams (K3) CO4: Construct asynchronous sequential logic circuits using flow table, transition table, state assignment and state reduction techniques (K3) CO5: Implement Boolean functions and combinational logic circuits using memories, programmable logic devices and logic families (K3)

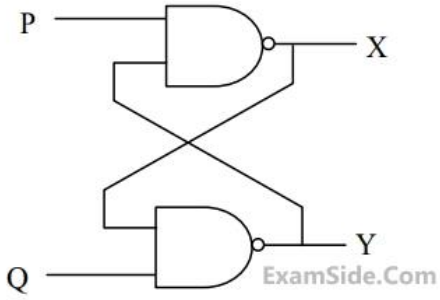
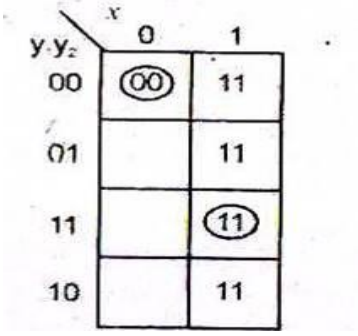
MODULE 4: ASYNCHRONOUS SEQUENTIAL LOGIC CIRCUITS

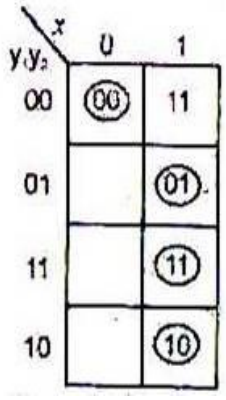
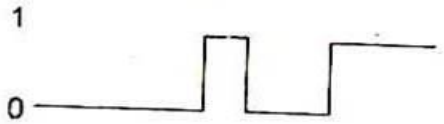
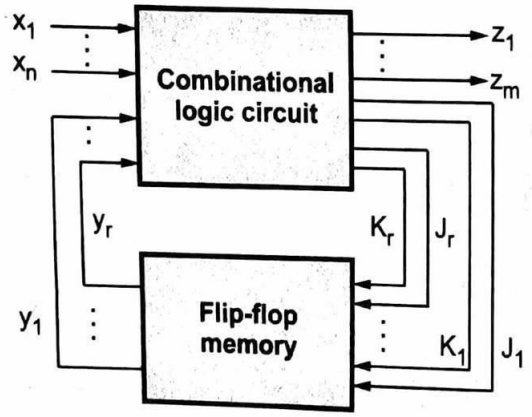
CO4: Construct asynchronous sequential logic circuits using flow table, transition table, state assignment and state reduction techniques (K3)

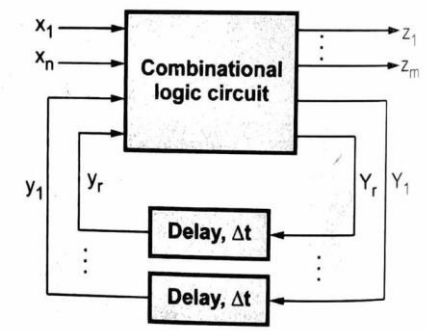
S.No	Questions	Mark	COs	BTL
1	Race condition occurs in Synchronous circuits **Asynchronous circuits** Combinational circuits All of the above	1	4	1
2	Which of the following does not constitute a static hazard? a. The output goes to 0, then temporally moves to 1, and then again back to 0 b. The output goes to 1, then temporally moves to 0, and then again back to 1 **c. The output goes to 0, then temporally moves to 1, and then to 0 and then to 1** d. none of these	1	4	2
3	In a sequential circuit, the output at any time depends only on _____at that time. a) Past output values b) Intermediate values **c) Both past output and present input** d) Present input values	1	4	2
4	Consider the given circuit. In this circuit, the race around  	1	4	2

	A does not occur B occurs when CLK = 0 C occurs when CLK = 1 and A = B = 1 D occurs when CLK = 1 and A = B = 0 **Answer: A**			
5	If a complete sequence is detected, what will be the output of a sequence detector?  **a. 1** b. 0 c. Both a and b d. None of the above	1	4	1
6	The present states and next state of asynchronous circuits are also called **a) secondary variables** b) primary variables c) excitation variables **d)** short term memory	1	4	1
7	The race in which stable state depends on order is called **critical race** identical race non critical race defined race	1	4	1
8	A Condition occurs when an asynchronous sequential circuit changes two or more binary states variables a. deadlock condition b. Running condition **c. Race condition** **d.** None	1	4	1
9	Time delay device is the memory element of a) Unclocked flip-flops b) clocked flip-flops c) synchronous circuits **d) asynchronous circuits**	1	4	1
10	Asynchronous sequential logic circuit not uses a. inputs b. outputs **c. clock pulses** d. time	1	4	1
11	Naming the states is done in transition table stable state **flow table** excitation table	1	4	1

12	The race in which stable state does not depends on order is called a) critical race b) identical race **c) non critical race** d) defined race	1	4	1
13	Internal state and input values together are called a) full state **b) total state** c) initial state d) output state	1	4	1
14	Table having one state in each row is called a) transition table b) state table c) flow table **d) primitive flow table**	1	4	1
15	The next states of asynchronous circuits are also called a) secondary variables b) primary variables **c) excitation variables** d) short term memory	1	4	1
16	In fundamental mode the circuit is assumed to be in a) unstable state **b) stable state** c) reset state d) clear state	1	4	1
17	Table that is not a part of asynchronous analysis procedure is a. transition table b. state table c. flow table **d. excitation table**	1	4	1
18	Which of the following constitutes a static 1 hazard? The output goes to 0, then temporally moves to 1, and then again back to 0 **The output goes to 1, then temporally moves to 0, and then again back to 1** The output goes to 0, then temporally moves to 1, and then to 0 and then to 1 none of these	1	4	2
19	Asynchronous sequential logic circuits usually perform operations in Identical mode **Fundamental mode** Reserved mode Reset mode	1	4	1
20	In fundamental mode, the circuit is said to be in A) Unstable state **B) Stable state** C) Reset state **D)** Clear state	1	4	1
21	Unclocked flip-flops are known as **A) Latches** B) Registers C) Clocked FF D) Counters	1	4	1
22	Asynchronous sequential circuits are used when a primary need is	1	4	1

	A) Time B) Pressure **C) Speed** D) accuracy			
23	Memory elements in the asynchronous circuits are **Unclocked FF** Clocked FF Clock pulses Latches	1	4	1
24	In the latch circuit shown, the NAND gates have non-zero, but unequal propagation delays. The present input condition is: P = Q = "0". If the input condition is changed simultaneously to P = Q = "1", the outputs X and Y are  A X = '1', Y = '1' B either X = '1', Y = '0' or X = '0', Y = '1' C either X = '1', Y = '1' or X = '0', Y = '0' D X = '0', Y = '0' **Answer: B**	2	4	2
25	What type of race occurs for the given transition table?  a) Critical race **b) Non critical race** c) Both a and b d) Race doesn't occur	2	4	3
26	What type of race occurs for the given transition table?	2	4	3

	 **a) Critical race** b) Non critical race c) Both a and b d) Race doesn't occur			
27	In an asynchronous sequential circuit, the output has to change from 0 to 1. Due to propagation delay in the circuit, the output changes as shown in figure. What is type of hazard that occurs in the circuit?  a) Static 1 hazard **b) Dynamic hazard** c) Static 0 hazard d) None of the above	2	4	2
28	Identify the type of digital circuit.  A) Synchronous circuit **B) Pulse mode asynchronous circuit** C) Fundamental mode asynchronous circuit D) Combinational circuits	2	4	2
29	Identify the type of digital circuit.	2	4	2



A) Synchronous circuit
B) Pulse mode asynchronous circuit
C) Fundamental mode asynchronous circuit
D) Combinational circuits