



Examiner : Dr. Mustafa M. Shiple
 Subject: Advanced Microprocessor / (EEC 209)
 Score: 10 Marks

Term: Feb - May 2016/2017
 Exam Time:30 min

ANSWER THE FOLLOWING QUESTIONS:

1. Briefly discuss the clock skew?

[3 marks] [A_q, A_u, B_k]

Solution: Q1. **Clock skew** is a phenomenon in synchronous circuits in which the clock signal arrives at different components at different times. Due to:

- Wire-interconnect length
- Temperature variations
- Capacitive coupling
- Material imperfections and differences in input capacitance on the clock inputs

2. Evaluate next equation $Y = ABC + B(\bar{C} + \bar{A})$ against glitches.

[3 marks] [B_a, A_d, A_q]

Solution:

buges		
A,C		
ABC	at input A	Hazard
A00	0	No
A01	0	No
A10	1	No
A11	$A + \bar{A}$	Static 1

at input C		
00C	0	No
01C	1	No
10C	0	No
11C	$C + \bar{C}$	Static 1

[Total Marks is 10]

Signature of
 Examiner:

Good Luck

The hazards are shown in the next figure

3. Redesign the previous equation to avoid glitches if existed. [4 marks] [C_o, A_m]

Solution: (A)

$C \setminus AB$	00	01	11	10
0	0	1	1	0
1	0	1	1	0

$C \setminus AB$	00	01	11	10
0	0	1	1	0
1	0	1	1	0

$C \setminus AB$	00	01	11	10
0	0	1	1	0
1	0	1	1	0

to avoid glitches $Y = B$