National University of Computer and Emerging Sciences, Lahore Campus

Course:	Digital Logic Design	Course Code:	EE-227
Program:	BS (Computer Science)	Semester:	Spring 2021
Duration:	20 Minutes	Total Marks:	15
Paper Date:	22-June-2021	Weight	3 %
Section:	B	Page(s):	2
Exam:	Quiz 3	Reg. No.	

Instruction/Notes: Calculators are strictly not allowed in all exams
Plagiarism will be dealt seriously causing an F in course

1. **For the following state table and state assignment, design a system using JK flip flops.**

Q	Q*		z	
	X=0	X=1	X=0	X=1
A	B	C	1	1
B	A	B	1	0
C	B	A	1	0

Q	Q_1	Q_2
A	1	1
B	1	0
C	0	1

2. **A sequential circuit with two D flip-flops A and B, two inputs X and Y, and one output Z is specified by the following input equations:**

$$D_A = XA + \overline{X}\,\overline{Y},\ D_B = XB + \overline{X}A,\ Z = \overline{X}B$$

(a) Draw the logic diagram of the circuit.
(b) Derive the state table.
(c) Derive the state diagram.
(d) Is this a Mealy or a Moore machine?