UNITED INTERNATIONAL UNIVERSITY
Department of Computer Science and Engineering (CSE)

Course Title: Theory of Computation **Course Code: CSE 2233** **Credit Hours: 3.0**

Trimester & Year: Fall 2021 **Section: A** **AZ**

CT-01

Total Marks: 20 Time: **40** min

1. Write a Formal definition of the DFA including the transition table using its state diagram given in Figure 01. The DFA has been constructed over alphabet, $\sum = \{a, b\}$. **3**

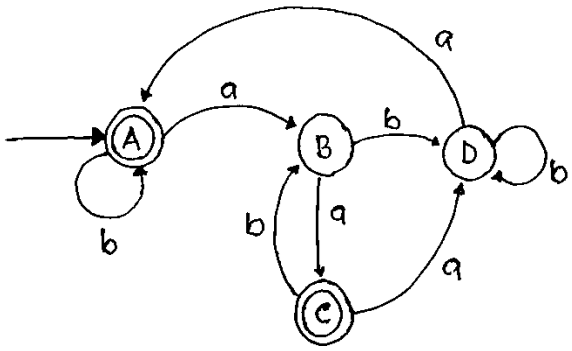

Figure 01: State Diagram

2. Write a Formal definition of the DFA including the state diagram using its transition table given in Table 01. The DFA has been constructed over alphabet, $\sum = \{x, y, z\}$. **3**

Table 01: Transition table (→ denotes the start state and * denotes the accepted states)

	x	y	z
→ A	A	B	D
*B	A	E	D
C	A	D	A
*D	D	E	A
E	B	C	D

3. A DFA is defined over alphabet $\sum = \{x, y\}$ which accepts all the strings w of the Language L where

L = {w | w starts and ends with different symbol}. **5**

Construct the state diagram of the DFA.

4. A DFA is defined over alphabet $\sum = \{2, 3\}$ which accepts all the strings w of the language L where

L = {w | w contains "3232"}. **1 + 5 + 3**

a) Write down three strings that will be accepted by the DFA
b) Construct the state diagram of the DFA.
c) Write down the formal definition of the DFA including the transition table.