# 3.1.1 Finite State Machines with Outputs

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| **This Worksheet Tests:** |
| Draw and interpret simple state transition diagrams, transition tables. | |

1. Below is a state transition diagram. This machine reads a whole word at a time.

**Jill**

**throws**

**tantrums**

**Joe**

**eats**

**apples**

**big**

**bad**

**loud**

State whether the following will be accepted or rejected.

|  |  |  |
| --- | --- | --- |
|  | **Statements** | **Accepted/Rejected** |
| a. | Jill eats tantrums. |  |
| b. | Joe eats loud big bad big big apples. |  |
| c. | Jill eats. |  |
| d. | Joe throws loud loud tantrums. |  |
| e. | Joe throws apples. |  |
| f. | Jill throws Joe. |  |

[6]

2. Below is the state transition diagram for an Finite State Automation (FSA)

**a**

**b**

**a**

**a**

**a**

State whether the following will be accepted or rejected.

|  |  |  |
| --- | --- | --- |
|  | **Statements** | **Accepted/Rejected** |
| a. | a a b a a |  |
| b. | a b a |  |
| c. | a b b |  |
| d. | a a |  |
| e. | b a b |  |
| f. | a a a a b a |  |

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3. Draw the state transition diagram that satisfies the following statements:

• Mary eats and chews bananas.

• Fred peels oranges.

• Fred peels yellow bananas.

[8]

Total Marks = 20