1.

The output value of mealy state machine depends upon

a. The current state.
b. The input values.
c. The input value and the current state.
d. The input value, the current state and the previous state.

Ans. c (The input value and the current state)
Justification: The output value in mealy state machine depends upon the current state and the input value.

2.

The disadvantages of finite state machine are:

a. The finite state machines seldom show inconsistency.
b. The lack of ability to display the temporal behaviour of the system explicitly.
c. Not suitable for control dominated system.
d. Lack of hierarchy and concurrency.
e.

Ans. d (Lack of hierarchy and concurrency)
Justification: The finite state machines are suitable for displaying temporal behaviour explicitly and for control dominated systems. But when it tries to represent complex systems, lack of hierarchy and concurrency becomes the disadvantage of finite state machine as number of states and arcs increases greatly.

3.

In a super state, whenever super state is entered the default state to enter is called:

a. Default state
b. Sub state
c. Prior state
d. None of the above

Ans. a (Default state)
Justification: In a super state, unless specified otherwise, the default state to enter is called default state or entry state.

4.

Statement 1: A history node indicates the last active sub-state of a superstate.
Statement 2: A history node can not be combined with default entry node.

a. Statement 1 and 2 both are true.
b. Statement 1 is true but 2 is false.
c. Statement 2 is true but 1 is false.
d. Statement 1 and 2 both are false.

Ans. b (Statement 1 is true but 2 is false)
Justification: A history node keeps track of the last active substate from which superstate was exited so that when entering into the superstate the system can enter into the state from which it exited. A history node can be combined with the default entry node.

5.

In an AND-Super state:

a. One of the substate runs at a time.
b. The substates executes the same work parallelly.
c. All the substates run concurrently.
d. None of the above

Ans. c (All the substates run concurrently.)
Justification: In an AND-Super state all the substates works concurrently and executes different functions.

6.

Timer in in a state chart representation does the following:

a. When an input is given to a timer state it waits for a certain time and then the next state will be entered.
b. When a timer state is entered, other states are entered according to input value and if no input received within the certain time a predefined state is entered.
c. When a time state is entered, irrespective of the input, a predefined next state will be entered after the certain time.
d. If a timer state is entered after a certain time the timeout will take place and the process will be terminated.

Ans. B
Justification: When a timer state is entered, upon receiving input the control goes to respective states and if no input value is received within certain time, it enters to a predefined state.

7.

Statement 1: An event exists until next evaluation of the model.
Statement 2: A condition consist of a variable whose value can be reassigned.

a. Statement 1 and 2 both are true
b. Statement 1 is true but 2 is false
c. Statement 2 is true but 1 is false
d. Statement 1 and 2 both are false

Ans. a (Statement 1 and 2 both are true)
Justification: An event exist only until the model is revaluated.
A condition consists of variable which can be reassigned and until reassignment occurs the variables keep their value.

8.

The phases of evaluation of edge models are:

a. Evaluation of the effect, checking of condition and execution
b. Checking of condition, execution
c. Evaluation of the effect and effective transition with variables gaining new values
d. Evaluation of effect of external change on event and condition, computation of transitions and changing of values of variables

Ans. d (Evaluation of effect of external change on event and condition, computation of transitions and changing of values of variables)
Justification: The three phases of evaluation of an edge of the model is:
i) Effect of external changes on events and condition is evaluated.

ii) The set of transitions to be made in current state and right-hand sides of assignment are computed

iii) The transition becomes effective and variables obtain new values.

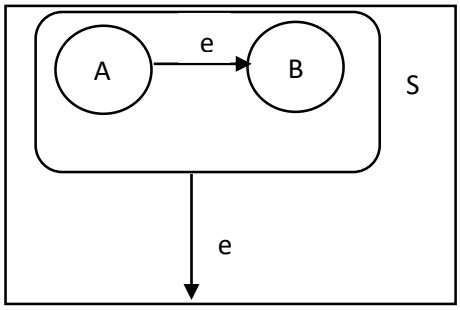
9.

In state chart the mode of communication used is:

a. Asynchronous message passing
b. Synchronous message passing
c. Broadcast
d. Semaphore

Ans. c (Broadcast)

Justification: In state chart broadcast mode of communication is used. It means if from a state an action generates an event, that event is visible to all other states.



In the following figure when event e occurs in state A the following will take place:

a. The control will go state B
b. The control will move from the super state S and will go to next state.
c. A conflict scenario will be generated
d. None of the above

Ans. c (A conflict scenario will be generated)

Justification: When the event shows in the picture occurs, a conflict scenario arises and a deterministic overcome is not possible in this case