



Biyani Institute of Science and Management
I Internal Examination 2019-20
Class: MCA-III
Subject- Theory of Computation (MCA-305)



Time: 1 ½Hrs

Set:A

MM: 20

[I] Answer the following questions in one line only

(2*1=2)

1. What do you understand by the term “graph”?
2. Define “Depth of a tree”.

[II] Answer the following questions in 50 words

(2*3=6)

1. Explain “Path” and “circuits” in graph with example.
2. Explain various phases in compiler design.

[III] Answer the following questions in 150 words.

(2*6=12)

1. Define “Non Deterministic Finite Automaton” with example.
2. Construct a deterministic finite automaton equivalent to

$M = (\{q_0, q_1, q_2, q_3\}, \{0, 1\}, \delta, q_0, \{q_3\})$

Where δ is given by the following table

State	a	B
$\rightarrow q_0$	q_0, q_1	q_0
q_1	q_2	q_1
q_2	q_3	q_3
q_3		q_2



Biyani Institute of Science and Management
I Internal Examination Sept. 2019
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Time: 1 ½Hrs

Set:B

MM: 20

[I] Answer the following questions in one line only

(2*1=2)

1. What do you understand by the term “tree”?
2. Write any two properties of a tree.

[II] Answer the following questions in 50 words

(2*3=6)

1. Define the following terms w.r.t. a tree:-
 - i) Length of a path
 - ii) Height of a tree
2. Define concatenation of two strings with example.

[III] Answer the following questions in 150 words.

(2*6=12)

1. Define “Transition System” with example.
2. Find a deterministic acceptor equivalent to

$M = (\{q_0, q_1, q_2\}, \{a, b\}, \delta, q_0, \{q_2\})$

Where δ is given by the following table

State	a	b
$\rightarrow q_0$	q_0, q_1	q_2
q_1	q_0	q_1
$\textcircled{q_2}$		q_0, q_1