

Anjuman Islam Janjira Degree College of Science Murud-Janjira, Raigad-402401 Affiliated to University of Mumbai	
Class: -S.Y.B.Sc C.S	Subject: - Theory Of Computation
Semester:- III	Course code: -Major
Exam Event:- SH Winter 2025	Marks: -30
Date: - 13/10/2025	Duration: - 01:00 Hours

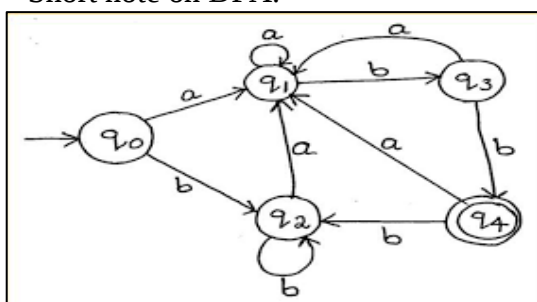
- N.B. –**
- 1 – All questions are compulsory.
 - 2 – All questions have internal choice.
 - 3 – Figures to the right indicate full marks.



Q1. Answer the following question (4 out of 6)

10

1. Write a steps of minimization of DFA.
Short note on DFA.



2. Find equivalence DFA for NFA given by.
 $L = (\{A, B, C\}(a, b), \delta, A, \{c\})$ where δ is given transition function.

States	a	b
A	A, B	C
B	A	B
C	-	A, B

3. Explain Chomsky Classification of grammar.
4. Define FSM. Explain a NFA set of all string that starts with 0

Q2. Answer the following question (4 out of 6)

10

1. Convert the following CFG to GNF $p: s \rightarrow AsA | aB, A \rightarrow B | \epsilon, B \rightarrow b | \epsilon$
2. Derive to Explain attributes of UTM.
3. Construct a PDA that accepts $L = \{0^n 1^n | n \geq 1\}$. Define PDA tuples.
4. Explain variants of TM.

Q3. Answer the following question. (4 out of 6)

10

1. Design TM which can accept language 0^*1^* .
2. Explain Halting problem & Prove $ATM = \{(M, w) \mid \text{The TM } M \text{ halts on inputs on } w\}$ is undecidable.
3. Difference between DFA and NFA. Describe string operation & language operation.
4. Using pumping lemma. Prove that the language $A = \{a^n b^n \mid n \geq 0\}$ is not regular.