

II B. Tech II Semester Supplementary Examinations, November-2018
FORMAL LANGUAGES AND AUTOMATA THEORY
 (Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)
 2. Answer **ALL** the question in **Part-A**
 3. Answer any **THREE** Questions from **Part-B**
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PART -A

1. a) What is automata? Discuss. (3M)
- b) Define recursive language. (3M)
- c) What is transition table and transition diagram? (4M)
- d) Define minimal DFA with example. (4M)
- e) Define GNF. (4M)
- f) Discuss about P and NP classes. (4M)

PART -B

2. a) Discuss about the classification of automata. (8M)
- b) Explain about the mathematical representation of finite Sate machine. (8M)
3. a) Write a short notes on recursively enumerable language (8M)
- b) What is formal language? What operations that can be performed on languages. (8M)
4. a) Differentiate between DFA and NFA. (4M)
- b) Construct NFA without ϵ moves for the following transition table (12M)

	0	1	ϵ
q0	ϕ	ϕ	{ q0, q1, q2 }
q1	{q1}	{q3}	ϕ
q2	{q3}	{q2}	ϕ
q3	ϕ	ϕ	ϕ

where q3 is the final state and q0 is the start state.

5. a) What is regular expression? What are the properties of regular expression? (7M)
- b) Construct the NFA for the following regular expressions (9M)

i) $0(1+23)^*$ ii) $(a+b)^*abb$ iii) $(11+00)^*$

6. a) Explain about moore machine? (4M)
- b) Construct the Mealy machine equivalent to the Moore machine M defined by table 1. (12M)

Table 1:

	a=0	a=1	output
q1	q1	q2	0
q2	q1	q3	0
q3	q1	q3	1

7. Construct the Turing machine that accepts all a's and b's such that no of a's is equal to no of b's. (16M)

