

**II B. Tech II Semester Supplementary Examinations, November-2017**  
**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) Define FSM. (3M)
- b) What is regular language? (3M)
- c) Define DFA with an example. (4M)
- d) Explain about 2DFA. (4M)
- e) What are the properties of mealy and moore machine. (4M)
- f) What is TM and what is the role of TM's? (4M)

**PART -B**

2. a) What are the components of Finite state automata? Discuss. (8M)
- b) Differentiate between FSS and FSM. (8M)
3. a) What is a string? What operations can be performed on strings? Explain. (8M)
- b) Define context sensitive language with example. (8M)
4. a) Differentiate between NFA with  $\epsilon$  moves and NFA without  $\epsilon$  moves with examples. (12M)
- b) What is NFA? What are the advantages of NFA? Discuss. (4M)
5. a) Given the regular expression  $(11+0)^*$ . Convert into NFA. (8M)
- b) Explain about the procedure for converting the DFA to regular expression (8M)
6. a) How to eliminate unit productions? Discuss with example. (6M)
- b) Explain about different normal forms with example. (10M)
7. a) Explain P&NP class of languages. (8M)
- b) What languages are accepted by Turing machines? Discuss. (8M)

