Code No: R1622055 **R16** SET - 1

II B. Tech II Semester Regular/Supplementary Examinations, November - 2020
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 **FOUR** Questions from **Part-B**

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PART –A

1.	a)	Why it is important to study Automata Theory for Computer science?	2M
	b)	Write the regular expression for the L={w €_{0,1}* ׀ w has no pair of consecutive zeros?	3M
	c)	Write the advantages of parse tree in identifying ambiguity.	2M
	d)	Write about the model of Push Down Automata.	3M
	e)	What is the name of the test that is used to evaluate whether a machine is intelligent human?	2M
	f)	Prove that integer linear programming is NP-Hard.	2M

PART -B

2.	a)	Describe the procedure of converting NFA to DFA with a suitable example..	7M
	b)	(0/1)*011 for this regular expression draw the NFA with ϵ-closures and convert it into NFA.	7M
3.	a)	Give a regular expression that generates the language L over the alphabet ∑={a, b} where each b in the string is followed by exactly one or three a's.	7M
	b)	Show that L={a^{2n}/n<0} is Regular.	7M
4.	a)	Define Context Free Grammar. State and Explain the closure properties of CFG.	7M
	b)	Discus various steps in signification of context free grammar. What is the need of such signification.	7M
5.	a)	Define Push Down Automata. Explain the basic structure of PDA with a neat graphical representation.	7M
	b)	Construct a PDA which accepts language of word over alphabet {a,b} canting {$a^ib^jc^k$/i,j,k €N,i+k=j}.	7M
6.	a)	Design a turing machines and its transition diagram to accept language greeted by {$a^ib^jc^k$/i,j,k €N,i+k=j}.	7M
	b)	Explain about types of Turing Machine warfare then.	7M
7.	a)	How to determine whether a problem is NP-Hard or P? Illustrate with an example.	7M
	b)	How can the Halting problem of Turing machine be Handled? Explain.	7M

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