RAMAIAH UNIVERSITY OF APPLIED SCIENCES

Faculty of Engineering & Technology			
Ramaiah University of Applied Sciences			
Department	Computer Science and Engineering	**Programme**	B. Tech.
Semester/Batch	4th/2017		
Course Code	CSC211A	**Course Title**	Formal Languages and Automata Theory
Course Leader	P.Padma Priya Dharishini , Prakash P.		

Assignment no 1

Name of Student		Register No	

Sections		Marking Scheme	Max Marks	First Examiner Marks	Second Examiner Marks
Part-A	A1.1	Introduction	01		
	A1.2	Discussion on role of FA to represent control characters in games	3		
	A1.3	Conclusion	1		
		Part-A Max Marks	**5**		
Part B 1	B1.1	Introduction and problem definition	01		
	B1.2	Problem solving approach	02		
	B1.3	Design	05		
	B1.4	Concluding remarks (Summary, limitations and improvements)	02		
		B.1 Max Marks	10		
Part B 2	B2.1	Introduction and problem definition	01		
	B2.2	Problem solving approach	02		
	B2.3	Design	05		
	B2.4	Concluding remarks (Summary, limitations and improvements)	02		
		B.2 Max Marks	**10**		
		Total Assignment Marks	**25**		

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Subject Marks Tabulation				
Component- CET B Assignment	**First Examiner**	**Remarks**	**Second Examiner**	**Remarks**
A				
B.1				
B.2				
B.3				
B.4				
Marks (Max 50)				
Marks (out of 25)				
Signature of First Examiner			Signature of Second Examiner	

Please note:

1. Documental evidence for all the components/parts of the assessment such as the reports, photographs, laboratory exam / tool tests are required to be attached to the assignment report in a proper order.
2. The First Examiner is required to mark the comments in RED ink and the Second Examiner's comments should be in GREEN ink.
3. The marks for all the questions of the assignment have to be written only in the **Component – CET B: Assignment** table.
4. If the variation between the marks awarded by the first examiner and the second examiner lies within +/- 3 marks, then the marks allotted by the first examiner is considered to be final. If the variation is more than +/- 3 marks then both the examiners should resolve the issue in consultation with the Chairman BoE.

Assignment – 1

Term-1

Instructions to students:

1. The assignment consists of 3 questions: Part A – 1 Question, Part B- 2 Questions.
2. Maximum marks is 25.
3. The assignment has to be neatly word processed as per the prescribed format.
4. The maximum number of pages should be restricted to 1**0**.
5. Restrict your report for Part-A to 3 pages only.
6. Restrict your report for Part-B to a maximum of 7 pages.
7. The printed assignment must be submitted to the subject leader.
8. **Submission Date: 18 FEB 2018**

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9. **Submission after the due date is not permitted.**
10. **IMPORTANT**: It is essential that all the sources used in preparation of the assignment must be suitably referenced in the text.
11. Marks will be awarded only to the sections and subsections clearly indicated as per the problem statement/exercise/question

Preamble:

This Course is intended to develop an understanding of the concepts of automata theory and formal languages and their relationship to computation models. Students are taught regular, context-free, context-sensitive and universal languages, their generating grammars and properties along with the related automata and machine models. Formal relationships among machines, languages and grammars are covered. Students are trained to design automata and machine models for a given formal language requirements.

PART A **5 Marks**

Preamble

Finite Automata (FA) is used in wide applications. All text editors uses FA for implementation. Using FA approximate solutions can be computed for undecidable problems. FA solution assures for the correctness for all applications.

In this context, develop an essay on: **"Role of FA to represent control characters in games"**

Your essay should comprise the following:

A1.1 Introduction to control characters in games

A1.2 Discussion on role of FA to represent control characters in games

A1.3 Conclusion

PART B **20 Marks**

B1 **10 Marks**

Consider a Salad Vending Machine (SVM) for Ramaiah University that vend vegetable salad and fruit salad to staff and students. The requirements for SVM are the following:

- It has to display the menu of available fruits and vegetables
- It should allow the user to select the required fruits/vegetables for their salad
- After selecting fruits/vegetables the user has to press the submit button
- Based on the fruits/vegetables selected SVM has to display the price of the salad
- It should dispense the salad after accepting money from the user
- It should not allow the user to select both fruits/vegetables salad at the same time

Design a finite state automata for SVM based on the given requirements.

Document the following:

B1.1 Introduction

B1.2 Problem solving approach

B1.3 Design and validation

B1.4 Concluding remarks (Summary, limitations and improvements)

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B2 **10 marks**

Develop a regular expression or a set of regular expressions to satisfy the given requirements in **PART** - **B1**.

Document the following:

- **B2.1** Introduction
- **B2.2** Problem solving approach
- **B2.3** Design and validation
- **B2.4** Concluding remarks (Summary, limitations and improvements)