MAHAVELI – V (CBCS – 2014 COURSE) : WINTER – 2016
SUBJECT : THEORY OF AUTOMATA & FORMAL LANGUAGES

Day : Friday

Date : 02.12.2016

Time : 2.30 P.M. To 5.30 P.M.

Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data wherever necessary.

Q.1 a) Construct a finite Automata for divisibility by 3 tester for BINARY (06) numbers.

b) Give formal definition of Finite Automata explaining each symbol. (04)

OR

a) Consider Moore machine described by the transition table given below. (06) Construct corresponding Mealy machine.

Present State	Next State		O/P
	a = 0	a = 1	
q_1	q_1	q_2	0
q_2	q_1	q_3	0
q_3	q_1	q_3	1

b) Distinguish between NFA and DFA with example. (04)

Q.2 State and prove pumping lemma for regular sets. Give applications of (10) pumping lemma.

OR

Prove that the language $L = \{a^n b^{n+1} \mid n > 0\}$ is non regular using pumping (10) lemma.

Q.3 Consider the grammar $S \rightarrow aS \mid aSbS \mid \in$. This grammar is ambiguous. (10)
   i) Show in particular that aab has two parse trees.
   ii) Find an unambiguous grammar for the same.

OR

Write a CFG which accepts the language L. (10)
$L = \{0^i 1^j 0^k \mid j > (i + k)\}$

Q.4 Give the graphical representation of the language which represent the (10) language generated by CFG.
$S \rightarrow S+S \mid S*S \mid 4$

OR

Show that the context free languages are closed under union, concatenation (10) and kleen star.

Q.5 Design a Turing Machine to replace string 110 by 101 in a binary input (10) string.

OR

Design a Turing Machine to check well formedness of parenthesis. (10)

Q.6 Write detailed note on how finite automata design is used in text processing. (10)

OR

Write a note on application of TAFL in compiler construction. (10)

* * *

32803

MAHAVELI – V (CBCS – 2014 COURSE) : WINTER – 2016
SUBJECT : THEORY OF AUTOMATA & FORMAL LANGUAGES

Day : Friday   Time : 2.30 P.M. To 5.30 P.M.
Date : 02.12.2016   Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
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Q.1 **a)** Construct a finite Automata for divisibility by 3 tester for BINARY numbers. **(06)**

b) Give formal definition of Finite Automata explaining each symbol. **(04)**

OR

a) Consider Moore machine described by the transition table given below. **(06)** Construct corresponding Mealy machine.

Present	Next State		O/P
State	a = 0	a = 1	
q_1	q_1	q_2	0
q_2	q_1	q_3	0
q_3	q_1	q_3	1

b) Distinguish between NFA and DFA with example. **(04)**

Q.2 State and prove pumping lemma for regular sets. Give applications of **(10)** pumping lemma.

OR

Prove that the language $L = \{a^n b^{n+1} \mid n > 0\}$ is non regular using pumping **(10)** lemma.

Q.3 Consider the grammar $S \rightarrow aS \mid aSbS \mid \in$. This grammar is ambiguous. **(10)**
   i) Show in particular that aab has two parse trees.
   ii) Find an unambiguous grammar for the same.

OR

Write a CFG which accepts the language L. **(10)**
$L = \{0^i 1^j 0^k \mid j > (i + k)\}$

Q.4 Give the graphical representation of the language which represent the **(10)** language generated by CFG.
$S \rightarrow S+S \mid S*S \mid 4$

OR

Show that the context free languages are closed under union, concatenation **(10)** and kleen star.

Q.5 Design a Turing Machine to replace string 110 by 101 in a binary input **(10)** string.

OR

Design a Turing Machine to check well formedness of parenthesis. **(10)**

Q.6 Write detailed note on how finite automata design is used in text processing. **(10)**

OR

Write a note on application of TAFL in compiler construction. **(10)**

*   *   *

32806

MAHAVELI – V (CBCS 2014 COURSE) : WINTER - 2016
SUBJECT : MICROPROCESSOR ARCHITECTURE & PROGRAMMING

Day : Friday

Date : 09-12-2016

Time : 2.30 P.M. To 5.30 P.M

Max. Marks : 60

N.B.
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Answers to both the sections should be written in **SEPARATE** answer book.

SECTION – I

Q.1   Explain the concepts of following in detail: **(10)**
a) Memory segmentation   b) Instruction pipelining
<div align="center">OR</div>

Explain the function of following pins of 8086 processor:
a) ALE   b) INTR   c) QS0, QS1   d) $\overline{LOCK}$

Q.2   Explain the following assembler directives with examples.   **(10)**
a) WORD PTR   b) EQU   c) MACRO   d) ENDS
<div align="center">OR</div>

How do you write a C program using int 86, intdos, intdosx functions? Explain with example.

Q.3   Explain the internal architecture of 8255 PPI with neat block diagram.   **(10)**
<div align="center">OR</div>

Consider one master and two slave 8259s. Explain the response of 8086 and master 8259 when any two interrupt requests arrive one from each slave.

SECTION – II

Q.4   Differentiate between RISC and CISC architecture by showing block diagram   **(10)** of each.
<div align="center">OR</div>

Differentiate between loosely and closely coupled organizations by showing block diagram of each.

Q.5   Explain the programmer's model of 8051 microcontroller.   **(10)**
<div align="center">OR</div>

Explain the various addressing modes of 8051 microcontroller with suitable examples.

Q.6   Explain the interrupt structure of 8051 microcontroller.   **(10)**
<div align="center">OR</div>

Explain the serial part structure and its programming of 8051 microcontroller.

<div align="center">*   *   *</div>

32806

MAHAVELI – V (CBCS 2014 COURSE) : WINTER - 2016
SUBJECT : MICROPROCESSOR ARCHITECTURE & PROGRAMMING

Day : Friday   Time : 2.30 P.M. To 5.30 P.(

Date : 09-12-2016   Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
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SECTION – I

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Explain the function of following pins of 8086 processor:
a) ALE   b) INTR   c) QS0, QS1   d) $\overline{\text{LOCK}}$

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Q.3 Explain the internal architecture of 8255 PPI with neat block diagram. **(10)**
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Explain the serial part structure and its programming of 8051 microcontroller.

<div align="center">*   *   *</div>

32808

Day: Tuesday

Date: 13-12.2016

Time 2·30 P.M. To 5·30 P.M.

Max Marks. 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1	Enlist & describe prerequisites for MIS.	**(10)**
	OR	
Q.1	Describe the procedure of processing & formatting of the data stored in information system.	**(10)**
Q.2	Describe the term information technology with respect to need, scope & benefits.	**(10)**
	OR	
Q.2	Describe the approach used to store & manage the data with suitable example.	**(10)**
Q.3	Describe with an example how the useful information is represented for business purpose.	**(10)**
	OR	
Q.3	Describe the reporting useful information for business.	**(10)**
Q.4	Describe the term social engineering. Enlist & explain popular types of social engineering attaches.	**(10)**
	OR	
Q.4	Describe the effective use of social engineering networks for increasing business value.	**(10)**
Q.5	Explain how the logical conclusion concept is used to ease the process of decision making.	**(10)**
	OR	
Q.5	What is analysis of data? Explain various types of data analysis with an example.	**(10)**
Q.6	Describe the ERP with respect to its need, features & scope & benefits of it.	**(10)**
	OR	
Q.6	Describe CRM with respect to scope, features benefits.	**(10)**

*   *   *

32808

MAHAVELI – V (CBCS 2014 COURSE) : WINTER 2016
SUBJECT: Elective-I MANAGEMENT OF INFORMATION SYSTEM

Day: Tuesday

Date: 13-12.2016

Time 2·30 P.M. To 5·30 P.M.

Max Marks. 60

N.B.
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1	Enlist & describe prerequisites for MIS.	**(10)**
	OR	
Q.1	Describe the procedure of processing & formatting of the data stored in information system.	**(10)**
Q.2	Describe the term information technology with respect to need, scope & benefits.	**(10)**
	OR	
Q.2	Describe the approach used to store & manage the data with suitable example.	**(10)**
Q.3	Describe with an example how the useful information is represented for business purpose.	**(10)**
	OR	
Q.3	Describe the reporting useful information for business.	**(10)**
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Q.6	Describe the ERP with respect to its need, features & scope & benefits of it.	**(10)**
	OR	
Q.6	Describe CRM with respect to scope, features benefits.	**(10)**

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