

V-SEMESTER  
MID SEMESTER EXAMINATION

B.Tech.(COE/SE)  
Sept-2016

## CO/SE-303 THEORY OF COMPUTATION

Time: 1:30 Hours

Max. Marks: 20

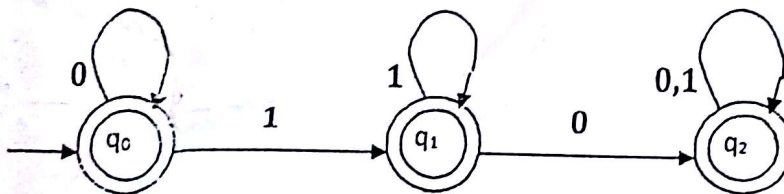
Note: Answer all questions. Assume suitable missing data, if any

Q.No. 1

2X3=06

A) What is Finite Automata? Construct a DFA that accepts string over  $\{0, 1\}$  if and only if the value of the strings interpreted as a binary representation of an integer, is zero module five. For example, 0101, 1111 representing integer '5' and '15' respectively are to be accepted.

B) Construct a regular expression(RE) corresponding to the following FA using Arden's theorem



Q.No. 2

2X3=06

A) Design a Mealy machine which reads the input from  $(0 + 1)^*$  and produces following outputs:

- If input ends at 101, output is "YES"
- Otherwise output is "NO"

B) Explain equivalence of two Finite automata(FA) with example and Construct a Moore Machine equivalent to given Mealy Machine as below

Present State	Next state	O/P	Next state	O/P
	Input=0		Input=1	
→S1	S3	A	S2	A
S2	S1	B	S4	A
S3	S2	B	S1	B
S4	S4	B	S3	A

Q.No.3

3+3+2=08

A) Given a regular expression  $(0+1(1+01)^*00)$ , construct NFA with and without null moves.

B) What is pumping lemma for regular expression? Show that the language  $L = \{ ww^R \mid w^R \text{ is the reverse of } w \text{ over the alphabet } \{0, 1\} \}$  is not regular.

C) Construct a grammar to generate the language  $L = \{ a^m b^n \mid m \neq n, m, n \geq 0 \}$  OR Explain Chomsky Classification of grammar with suitable examples.



MID SEMESTER EXAMINATION

September-2016

CO-302 SIMULATION AND MODELING

Time: 1:30 Hours

Max. Marks : 20

Note : Answer any TWO questions.  
Assume suitable missing data, if any.

Q1 Describe what you think would be the most effective way to study each of the following systems:

[a] Check-in Airport to board on flight (5)

[b] Token distribution in Metro Rail (5)

2[a] Explain the various classification of simulation model? (5)

[b] What is simulation and what are the areas in which simulation is used. (5)

3[a] Consider the discrete number of televisions per household (X) from US survey data. What is the probability there is at least one television but no more than three in any given household? (5)

# of Televisions	# of Households
0	1,218
1	32,379
2	37,961
3	19,387
4	7,714
5	2,842

[b] What are the advantages and disadvantages of simulation? (5)



Roll No. 045

Fifth Semester  
(Sep-2016)

Total No. of Pages: 1

B. Tech. (COE) Examination

Mid Semester E-304 MICROPROCESSOR & INTERFACING

Max. Marks: 20

Time: 1 hr 30 min

Note:

All Questions are Compulsory.  
Assume suitable missing data, if any.

- Q1. Draw a neat 8085 functional block diagram and explain about each pin signal in it. (5)
- Q2. (a) Define Subroutine, CALL and RET. (2)  
(b) Mention types of interrupts supported by 8085, give example for each. (3)
- Q3. (a) Why  $AD_0-AD_7$  lines are multiplexed. (1)  
(b) What is the function of ALE control signal. (1)  
(c) Draw a neat diagram of 8085 interrupts and vector location. (3)
- Q4. (a) Write all 8085 Machine Control Instructions and explain each. (3)  
(b) Draw and explain timing Diagram of op-code fetch operation. (2)



MID SEMESTER EXAMINATION

September-2016

CO-301 COMPUTER GRAPHICS

Time: 1:5 Hours

Max. Marks : 20

Note : Answer all questions.  
Assume suitable missing data, if any.

- 1[a] Explain the Midpoint Ellipse generation algorithm (2.5)  
[b] Draw a circle using midpoint algorithm whose centre is (2,3) and radius is 5 units. (2.5)
- 2[a] Define Aspect Ratio, Refresh Rate, Frame Buffer. (1.5)  
[b] Find out the aspect ratio of the raster system using 8 x 10 inches screen and 100 pixel/inch. (1.5)  
[c] Beam penetration Vs Shadow mask (2)
- 3[a] Solve for Bresenham's algorithm for line drawing given end points are (0,0) to (5,3). Also state its merits. (2)  
[b] A unit square ABCD is transformed by 2 x 2 transformation matrix. The resulting position vector are : A'(0,0), B'(2,3), C'(8,4), D'(6,1), what is the transformation matrix? (3)
4. Write short notes on (5)  
a) Anti-aliasing  
b) Persistence in terms of CRT Phosphorous  
c) Differentiate raster and random scan displays  
d) Boundary Fill Vs Flood Fill  
e) Find out the RGB coordinates of colors at (0.15, 0.75, 0) in the CMY space.