

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES**  
(AUTONOMOUS)  
II/IV B. Tech II- Semester Regular Examinations April – 2017  
**Computer Organization**  
(CSE)

Time: 3 hours

Max Marks: 60

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Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered at one place only

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Unit -I

1. A) Explain in detail about logic and shift micro operation. (6 M)
- b) Design a 4-bit adder/subtractor circuit using full adders and explain its function (6 M)

(OR)

2. A) Explain about booth's multiplication algorithm (6 M)
- B) Draw and explain the hardware arrangement for signed magnitude addition and subtraction (6 M)

Unit-II

3. A) explain about basic computer instruction formats with an example (6 M)
- b) With an example of each, explain memory reference instructions (6 M)

(OR)

4. a) With a neat block diagram, how the basic computer registers are connected to the common bus (6 M)
- b) What is the difference between a direct and an indirect address instruction? How many references to memory are needed for each type of instruction to bring an operand into a processor register? (6 M)

Unit-III

5. A) Explain about the functionality of control memory? (6 M)
- B) Define the following i) microoperation ii) microinstruction iii) microprogram and iv) microcode (6 M)

(OR)

6. A) Describe the organization of a typical micro programmed control unit organization with the help of the diagram? (6 M)
- B) Explain the microinstruction code format with a neat sketch? (6 M)

Unit-IV

7. A) Compare RISC with CISC (6 M)  
B) Give the one addressing mode instructions to evaluate the give expression  
 $X=(A+B)*(C+D)$  (6 M)
- (OR)
8. Define addressing modes. Explain all the addressing modes with an example (12 M)

Unit-IV

9. A) What are the types of I/O devices interfaced through DMA? Describe the bus arbitration process used for DMA? (6 M)  
B) Explain about memory hierarchy with a neat diagram? (6 M)
- (OR)
10. A) What is virtual memory? Explain the method of virtual to physical address translation with the help of a neat diagram? (6 M)  
B) Explain about asynchronous data transfer with a neat diagram? (6 M)

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**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES**  
(AUTONOMOUS)  
**II/IV B. Tech II- Semester Regular Examinations April – 2017**  
**Data Communications**  
(CSE)

Time: 3 hours

Max Marks: 60

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**Answer ONE Question from each Unit**

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**UNIT-I**

1. A) Define Data communication and list its components . Explain importance of protocol architecture? (6M)
- B) Explain OSI model elaborative with neat sketch? (6M)

**(OR)**

2. A) write briefly about communications model? (3M)
- B) Define and explain types of networks? (3M)
- C) Explain the operation of TCP/IP protocol architecture? (6M)

**UNIT-II**

3. Explain in detail Guided Transmission medium and wireless transmission techniques with neat sketch? (12M)

**(OR)**

4. A) Explain the modulations of analog signals for Digital Data? (6M)
- B) Explain in detail about Digital Signal encoding techniques with an example? (6M)

**UNIT-III**

5. a) Explain the difference between synchronous and asynchronous transmission techniques? (3M)
- b) List out types of errors. Explain CRC techniques with example? (9M)

**(OR)**

6. A) Explain in detail about any one flow control technique and any one error control technique? (6M)
- B) Elaborate on HDLC protocol? (6M)

**UNIT-IV**

7. A) Explain LAN protocol architecture? (6M)  
B) wat is Ethernet ? Explain various protocols of Ethernet? (6M)

**(OR)**

8. Explain IEEE 802.3 frame format? Explain IEEE802.3 different types of Ethernet? (12M)

**UNIT-V**

9. What is multiplexing? Explain the various FDM techniques in detail? (12M)

**(OR)**

10. Explain various time division multiplexing techniques in detail? (12M)

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES  
(AUTONOMOUS)**

**II/IV B. Tech II- Semester Regular Examinations April – 2017**

**Formal Languages and Automata Theory**

**(CSE)**

**Time: 3 hours**

**Max Marks: 60**

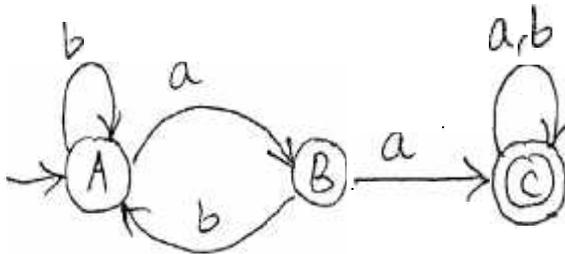
**Answer ONE Question from each Unit**

**All Questions Carry Equal Marks**

**All parts of the question must be answered at one place only**

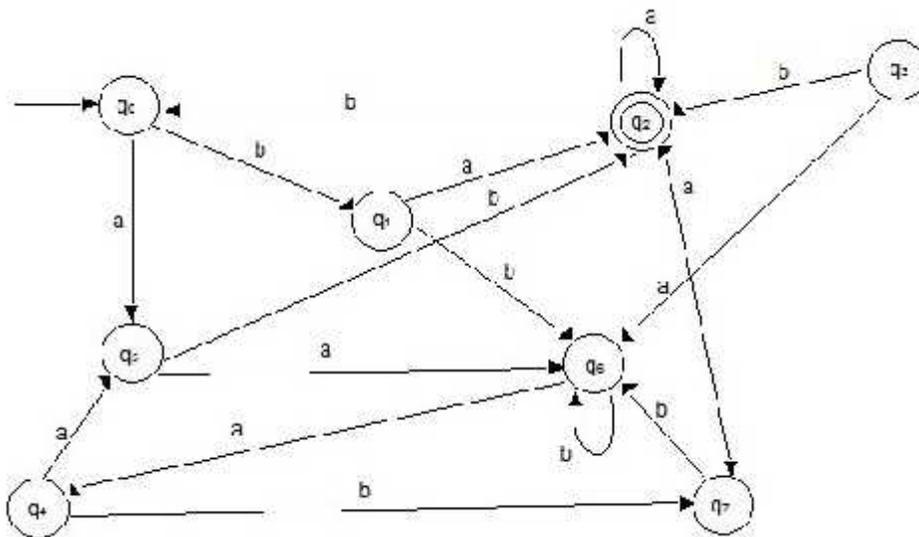
UNIT-I

- 1 a) Give mathematical definition of DFA and To design a DFA to accept even number of a's and odd number of b's over  $\Sigma = \{a,b\}$ . (4M)  
 b) Convert Regular Expression  $(a + b)^*(aa + bb)(a + b)^*$  to NFA. (8M)  
 (OR)
  
- 2 a) Give mathematical representation of moore and mealy machines. (4M)  
 b) Find the regular expression for the following finite automaton. (8M)



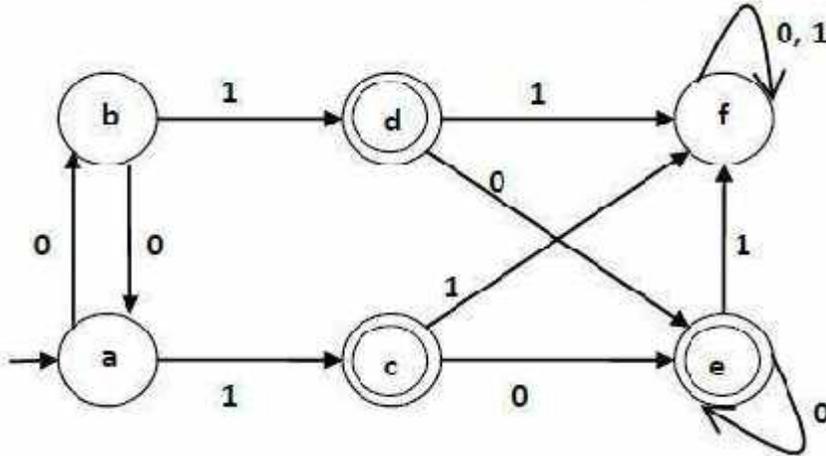
UNIT-II

- 3 a) Prove that  $L = \{a^n b^n \text{ for } n=0,1,2,\dots\}$  is not Regular. (4M)  
 b) Minimize the given DFA using myhill-nerode theorem. (8M)



(OR)

- 4 a) Show that  $L = \{0^i 1^j \mid j=i \text{ or } j=2i\}$  is not Regular. (4M)
- b) Construct a Minimization of FA for the following automaton. (8M)



UNIT-III

- 5 a) Give the CFG for odd palindrome over the alphabet  $\{0,1\}$  (4M)
- b) Reduce the following grammar : (8M)
- S  $ABC \mid BbB$   
 A  $aA \mid BaC \mid aaa$   
 B  $bBb \mid aD$   
 C  $CA \mid AC$

(OR)

- 6 a) Show the grammar is ambiguous. (4M)
- $S \rightarrow aB/ab$   
 $A \rightarrow aAB/a$   
 $B \rightarrow ABb/b$

- b) Consider the grammar (8M)

S  $aB \quad bA$   
 A  $a \quad aS \quad bAA$   
 B  $b \quad bS \quad aBB$

For the string  $aaabbabbba$ ,

Find

- i. Leftmost Derivation.
- ii. Rightmost Derivation.
- iii. Derivation Tree

UNIT-IV

7. a) Reduce the following CFG to GNF: (4M)
- $S \rightarrow ABb \mid a, A \rightarrow aaA, B \rightarrow bAb$
- b) Construct a PDA A equivalent to the following CFG: (8M)
- $S \rightarrow 0BB$   
 $B \rightarrow 0S \mid 1S \mid 0$   
 Test whether  $010^4$  is in  $N(A)$ . (OR)

- 8 a) Convert the Grammar into CNF  
     $S \rightarrow 1A/0B$   
     $A \rightarrow 1AA/0S/0$   
     $B \rightarrow 0BB/1$  (4M)  
b) Construct PDA accepting  $\{a^n b^n \mid n \geq 0\}$ . (8M)

UNIT-V

- 9 a. Define an ID of a Turing Machine? (4M)  
b. Construct a Turing Machine that accepts the language  $L = \{1^n 2^n 3^n \mid n \geq 1\}$ . Give the transition diagram for the Turing Machine obtained and also show the moves made by the Turing machine for the string 111222333. (8M)
- (OR)
- 10 a) Define Decidability and undecidability. (4M)  
b) Define PCP. Find whether the lists  $M = (ab, bab, bbaaa)$  and  $N = (a, ba, bab)$  have a Post Correspondence Solution? (8M)

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Hall Ticket No:

Question Paper Code :

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES**

(AUTONOMOUS)

II/IV B. Tech II- Semester Regular Examinations April – 2017

**Microprocessors and Interfacing**

(CSE)

Time: 3 hours

Max Marks: 60

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**UNIT-I**

1. a) Explain Register architecture and internal data operations of 8085? (8M)  
b) Draw and explain timing diagram of instruction ANI 22H? (4M)

(OR)

2. a) If the memory chip size is 1024X4 bits how many chips required to make up 2K Bytes of memory? (2M)  
b) Explain the addressing modes of 8085 with examples? (5M)  
c) Explain about the functions of control and status signals of 8085? (5M)

**UNIT-II**

3. a) Explain the sequence of program execution when a subroutine is called and executed? (6M)  
b) Elaborate on programming techniques of looping, counter and indexing? (6M)

(OR)

4. a) ADD 87H and 75H specify the contents of accumulator and states of flag register? (2M)  
b) Explain the complete Interrupt structure of 8085? (6M)  
c) Write the delay subroutine in 8085 for 0.5 seconds? (4M)

**UNIT-III**

5. a) Explain the block diagram of keyboard /display interface? (6M)  
b) Describe the operating modes of 8253 timer interface? (6M)

(OR)

6. a) Explain the successive approximation method of ADC? (6M)  
b) Explain about transmitter and receiver section of 8251? (6M)

**UNIT-IV**

7. a) Difference between 8088 and 8086? (2M)  
b) Explain the minimum mode operation in 8085 microprocessor? (6M)  
c) Describe the 8086 instruction queue and its advantages? (4M)

**(OR)**

8. a) Explain the addressing modes of 8086 with examples? (8M)  
b) Explain the role of BIU? (4M)

**UNIT-V**

9. a) Write an ALP program in 8086 to find LCM of two Bytes? (4M)  
b) Explain the string handling instructions of 8086? (6M)  
c) Swap the contents of registers AX and DX without using another register and don't use the instruction SUB? (2M)

**(OR)**

10. a) Explain .com and .exe program files ? (4M)  
b) Write short notes on data tables and modular programming? (4M)  
c) Difference between near and far procedure with examples? (4M)

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Hall Ticket No:

Question Paper Code :

**ANIL NEERUKONDA INSTITUTE OF TECHNOLOGY & SCIENCES**

**(AUTONOMOUS)**

**II/IV B. Tech II- Semester Regular Examinations April – 2017**

**Operating Systems**

**(CSE)**

**Time: 3 hours**

**Max Marks: 60**

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**UNIT-I**

1. a) Explain different OS structures in detail (8M)  
b) What is process and PCB, Process states (6M)  
(OR)
2. a) Different types of OS (6M)  
b) Explain about Multi thread problem. (6M)

**UNIT-II**

3. a) Explain about Dynamic philosopher problem (8M)  
b) What is scheduling and explain CPU scheduling Criteria (2M)  
(OR)
4. a) What is critical section problem with examples. (6M)  
b) Explain banker algorithm (6M)

**UNIT-III**

5. a) Explain about Segmentation concept with examples (6M)  
b) Optimal Page replacement algorithm (6M)  
(OR)
6. a) Difference between paging and segmentation (6M)  
b) Explain about design issues of paging (6M)

**UNIT-IV**

7. a) Explain about File Allocation Methods (12M)  
(OR)
8. a) Explain about free space management. (6M)  
b) Explain about Directory Implementation. (6M)

**UNIT-V**

9. Explain about protection mechanism . (12M)  
(OR)
10. Explain about the UNIX Operating System (12M)

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