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5E5101

5E5101

B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017

Computer Science

5CS1A Computer Architecture

CS,IT

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain Von-Neumann architecture in detail. (8)
- b) What is addressing mode? Explain the direct and indirect register addressing modes with suitable examples. (8)

OR

1. a) Explain the Flynn's classification of computer. (8)
- b) Explain the arithmetic micro-operation in register transfer language. (8)

Unit - II

2. a) Explain the differences between RISC and CISC computers. (8)
- b) Explain speed up, efficiency and throughput in pipelining. (8)

OR

2. a) Why do we require instruction pipelining? Explain its working procedure. Discuss the pipeline performance measures. (8)
- b) Draw and explain the organization of a CPU showing the connections between the register to a common bus. (8)

Unit - III

3. a) Using Booth algorithm. Multiply (+14) and (-12) when the number's are represented in 2's complement form. (8)
- b) Draw and explain flow chart for addition and subtraction of floating points numbers. (8)

OR

3. a) Explain array multiplier with a suitable example. (8)
b) Divide 0100100001 by 11001 using restoring division algorithms. Explain the steps. (8)

Unit - IV

4. a) Explain how virtual address is translated into real address in segmented memory system. (8)
b) Briefly compare the mapping procedure used in cache memory organization. (8)

OR

4. Give the basic cell of an associative memory and explain its operation. Show how associative memories can be constructed using the basic cell with match logic. (16)

Unit - V

5. a) Describe the data transfer method using DMA. (8)
b) What are the various modes of data transfer to and from the computers system? Explain. (8)

OR

5. Write short note on : (2×8=16)
a) Priority interrupt
b) IOP processor



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5E 5102

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B.Tech. V Semester (Main & Back) Examination, Nov./Dec. - 2017
Computer Science and Engineering
5CS2A Digital Logic Design

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain lexical elements of VHDL language with example. (8)
- b) Explain mixed style of modeling with example. (8)

OR

1. a) Describe the design steps of digital circuit using HDL. (8)
- b) Write down a behavioural style code for half subtractor. (8)

Unit - II

2. a). Explain different kinds of subprogram with examples. (8)
- b) Write the differences between package and entity. (8)

OR

2. Explain the following statements with one example in VHDL : (16)
 - a) If statement
 - b) Case statement
 - c) Loops statement
 - d) Generate statement

Unit - III

3. a) Write a VHDL code for serial adder circuit. (8)
- b) Write VHDL code for rising edge J-K flip-flop by using structural modeling. (8)

OR

3. a) Explain the following : (4×2=8)
- i) Clock skew
 - ii) Metastable state
 - iii) Hold Time
 - iv) Set up time
- b) Write a short note on : (4×2=8)
- i) ROM
 - ii) FPGA

Unit - IV

4. a) Define event driven circuits and write steps for designing these circuits. (10)
- b) What is meant by race-free assignments? (6)

OR

4. a) Explain in detail essential hazards and eliminating hazards. (8)
- b) Explain the procedure of state reduction of incompletely specified machine with a suitable example. (8)

Unit - V

5. a) Write short notes on : (4×2=8)
- i) SRAM
 - ii) Flash Memory
- b) What is the importance of Altera static (8)

OR

5. a) Why should one prefer Xilinx Virtex-II PRO? (8)
- b) Explain the FPGA mapping flow with the help of flow diagram. (8)



5E5103

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5E5103**B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017****Computer Science****5CS3A Telecommunication Fundamentals****CS, IT****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates :**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Draw and explain TCP/IP reference model in computer network communication. **(10)**
- b) Differentiate between Analog and Digital transmission. **(6)**

OR

1. a) What are lossless and lossy channels? Also explain transmission impairments in detail. **(8)**
- b) Explain sliding window protocols. **(8)**

Unit - II

2. a) Discuss channel allocation problem in MAC sublayer. **(8)**
- b) What is two dimensional parity check? **(8)**

OR

2. a) Compare and discuss the throughput of pure and slotted ALOHA. **(8)**
- b) What is HDLC in data link control? **(8)**

Unit - III

3. a) Explain 802.11 architecture. **(8)**
- b) What is virtual LAN? **(8)**

OR

3. a) Explain spanning Tree protocol in detail. (8)
b) Explain Bluetooth Architecture & protocol stack. (8)

Unit - IV

4. a) What is multiplexing? Explain FDM & TDM in detail. (10)
b) Discuss TDMA Burst structure. (6)

OR

4. a) What is switching? Explain space-time-space division switching in detail. (10)
b) What is slip rate in digital terrestrial network. (6)

Unit - V

5. a) What is frequency hopping (FHSS)? (8)
b) Differentiate between forward and reverse CDMA channel. (8)

OR

5. Write short notes on : (8 × 2 = 16)
a) IMT – 2000
b) Orthogonal code & Gold sequences
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5E5104

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5E5104**B.Tech. V Semester (Main/Back) Examination, Nov./ Dec. - 2017****Information Tech.****5IT4A Database Management Systems****CS,IT****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates :**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain advantage of DBMS over file system. (8)
- b) Discuss types of DBMS. (8)

OR

1. a) Draw and explain architecture of RDBMS. (10)
- b) Contrast between DDL and DML. (6)

Unit - II

2. Draw ER diagram of any one of the following and explain each component of this ER diagram.

Library management system. (16)

OR

2. Inventory management system. (16)

Unit-III

3. Explain following operations in Relational algebra : (4×4=16)
 - a) Selection
 - b) Projection
 - c) Join
 - d) Rename

OR

3. a) Explain the difference between relational Algebra and relational calculus. (8)
b) State the difference between tuple and Domain relational calculus. (8)

Unit-IV

4. Write SQL queries for following operations : (4×4=16)
- a) Create student registration table and insert records in it.
 - b) Update records based on a key.
 - c) Display name and Roll numbers of students who have scored more than 60% marks.
 - d) Delete records and table.

OR

4. a) Explain Triggers with the help of suitable example. (8)
b) Explain Aggregate operators. (8)

Unit - V

5. a) Explain functional dependencies with the help of suitable examples. (10)
b) Discuss need of normalization. (6)

OR

5. a) Explain 3rd NF with suitable example. (8)
b) Explain BCNF with suitable example. (8)



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B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017
Computer Science & Engineering
5CS5A Operating Systems
CS, IT

Time : 3 Hours**Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates :**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) What is operating system? Explain its types and services provided by operating system in detail. (8)
- b) Explain the architecture of operating system with neat and clean diagram. (8)

OR

1. a) What you mean by process and lifecycle of process. Explain context switching between two processes. (8)
- b) What you mean by thread? Explain kernel and user level thread. (8)

Unit - II

2. a) What you mean by scheduling? Why scheduling is required? Differentiate the Preemption & Non-Preemption Scheduling? (8)
- b) Write short notes on the following : (2 × 4 = 8)
 - i) Fair share scheduling
 - ii) Race condition
 - iii) Critical section
 - iv) Semaphore and mutex

OR

2. Consider the following four processes, with the length of the CPU burst time given in milliseconds. (16)

Process	Burst time (ms)	Arrival time (ms)
P0	15	0.0
P1	20	1.0
P2	3	2.0
P3	7	2.0

Consider the Shortest Remaining Time First (SRTF), Round Robin (RR) (Quantum = 5ms) scheduling algorithms. Illustrate the scheduling using Gantt chart. Which algorithm will give the minimum average waiting time?

Unit - III

3. a) What is deadlock? Explain the conditions and prevention of deadlock? (4)
b) What is deadlock avoidance? Explain banker's algorithm with following SNAPSHOT of a system? Resource A = 3, B = 14, C = 12 and D = 12 instances. If P1 request 1 0 2 1 resource instance It can be granted or not?(12)

	Allocation				Maximum				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	0	0	1	2	0	0	1	2	1	5	2	0
P1	1	0	0	0	1	7	5	0				
P2	1	3	5	4	2	3	5	6				
P3	0	6	3	2	0	6	5	2				
P4	0	0	1	4	0	6	5	6				

OR

3. a) What is memory allocation schemes? Explain with example. (8)
b) What is thrashing? What do you understand by degree of multiprogramming.(8)

Unit - IV

4. a) What you mean by paging? Explain the concept of demand paging with proper diagram. (8)
b) What is fragmentation? Differentiate between external and internal fragmentation. (8)

OR

4. Explain the FIFO, Optimal, LRU page replacement algorithm for the reference string. (16)

7 0 1 2 0 3 0 4 2 3 10 3.

Unit - V

5. a) Explain various disk scheduling algorithm in brief. (8)
- b) What are the various access methods for file system. (8)

OR

5. What do you mean by disk scheduling? Suppose the head of moving head disk is currently servicing a request at track 60. If the queue of request is kept in FIFO order. What is the total head movement to satisfy these requests for the following disk scheduling algorithm: (16)

- i) FCFS
- ii) SCAN
- iii) C-SCAN

REQUEST SEQUENCE	TRACK NUMBER
1	55
2	175
3	30
4	125
5	10
6	140





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	B.Tech. V Semester (Main/Back) Examination, Nov./Dec. - 2017	
	Computer Science 5CS6.1A Advanced Data Structure CS,IT	

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 26

Instructions to Candidates :

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit - I

1. Define Red-black trees. What is “big-oh” performance for the operation find Insert and Remove for a Red-black tree in best, worst & average cases. (16)

OR

1. a) Explain the operations on weighted balanced trees in detail. (10)
b) Write short note on Dynamic order statistics. (6)

Unit - II

2. Explain the implementation of a binomial heap and its operations with suitable example in detail. (16)

OR

2. Explain Amortization analysis and potential function of fibonacci heap along with implementation of fibonacci heap. (16)

Unit - III

3. Explain following in contrast to Graphs
- a) Cut sets (5)
- b) Vertices Planar & Dual graphs (5)
- c) Spanning Trees (6)

OR

3. a) Write and explain single Min-cut Max-flow theorems in Network flows. (8)
b) Explain ford fulkerson max flow algorithm. (8)

Unit - IV

4. Explain the concept of priority queues and concatenable queues using 2-3 Trees along with suitable example. (16)

OR

4. a) Explain various operations on Disjoint sets and its union find problem. (10)
b) Write short note on zero-one example. (6)

Unit - V

5. a) Explain notation of elementary number theorem also explain Division theorem. (10)
b) Write short note on Chinese Remainder Theorem. (6)

OR

5. Write short notes on :
a) Primality testing & Integer factorization. (8)
b) Computation of Discrete logarithms. (8)
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