T-E-comps Sem V (CBGS) 4/12/14.

SOAD

QP Code : **14936**

[3 Hours] **[Total Marks:80**

N.B. (i) Q. No. **1** is **compulsory.**
(ii) Attempt any **three** questions from the remaining **five** questions.
(iii) Assume suitable **data** wherever necessary.
(iv) **Figures** in the **right** indicate **full** marks.

1	(a)	What are the characteristics of a system? Describe how structured systems differ from object oriented systems?	10
	(b)	Explain Zachman's framework	10
2	(a)	Explain the different tools used for gathering requirements. How are these requirements validated?	10
	(b)	Consider the use case diagram of a Course Registration System and explain extend, include and generalize relations between use cases.	10
3.	(a)	The Library of an institute has the problem of tracking books. Write the system proposal for this problem.	10
	(b)	What is Cost Benefit Analysis? Illustrate any two methods of cost-benefit analysis	10
4.	(a)	Draw the sequence diagram for login procedure to a system. Include all scenarios and draw the activity diagram also.	10
	(b)	Draw state machine diagram for a Printer	10
5.	(a)	Draw the DFD (upto 2 levels)for a Payroll system.How do you map DFD to a structured chart?	10
	(b)	Draw the class diagram for the Payroll system (minimum of four classes to be included)	10
6.	(a)	Explain the need for system integrity, control and security with suitable examples	10
	(b)	Assume that the Library management system is deployed on a 3-tier architecture. Explain the various components and its deployment	10

T.E. Comps sem V (CBGS). 28/11/14.

CN

Q.P. Code : 14901

(3 Hours) **[Total Marks :80**

N.B. : (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** questions out of remaining questions.
(3) Make suitable assumptions whenever **necessary**.

1. (a) Why there is a need for layered designing for networking and communication? Compare the TCP/IP and OSI reference models. **16**
1. (b) Explain the modes of propagating light along optical channels. What are the advantages over other guided media? **10**

2. (a) Explain the need for DNS and describe the protocol functioning. **10**
2. (b) Explain the different elements of transport protocols. **10**

3. (a) Explain how TCP handles error control and flow control. **10**
3. (b) Why is flow control needed? What are the mechanisms? Explain how the Go-Back-N and Selective Repeat ARQ differ from each other. **10**

4. (a) Why there is a need for congestion control? What are the different mechanisms? Explain them. **10**
4. (b) Explain CSMA Protocols. Explain how collisions are handled in CSMA/CD. **10**

5. (a) Why there is a need for framing? **10**
The following encoding is used in a data link protocol:
A: 01000111; B :11100011; FLAG : 01111110; ESC:11100000
Show the bit sequence transmitted (in binary) for the four character frame:
A B ESC FLAG
when each of the following framing methods are used:
    a. Character count
    b. Flag bytes and byte stuffing
    c. Starting and Ending flag bytes, with bit stuffing
5. (b) Compare the network layer protocols IPv4 and IPv6 **10**

6 Give Short notes on any **four** :– **20**
(a) SNMP
(b) HTTP
(c) BGP
(d) Ethernet
(e) Virtual LAN

T.E. Sem V Computer (CBGS). 24/11/14.
Microprocessor

QP Code :14858

(3 Hours) **[Total Marks : 80**

N. B. : (1) Q. 1 is **compulsory**.
(2) From remaining answer any **three** questions.
(3) Draw neat diagram wherever necessary.

1. (a) Draw and explain timing diagram for read operation in minimum mode of 8086. **5**
(b) Explain I/O related addressing mode of 8086. **5**
(c) Write down features of super SPARC processor. **5**
(d) Enlist the instruction pairing rules for U and V pipeline in Pentium. **5**

2. (a) Explain address translation mechanism used in protected mode of 80386. **10**
(b) Write assembly language program for 8086 to exchange contents of two memory blocks. **10**

3. (A) Design 8086 microprocessor based system with following specifications **10**
(a) Microprocessor 8086 working at 10 MHz in minimum mode
(b) 32 KB EPROM using 8 KB chips
(c) 16 KB SRAM using 4 KB chips
Explain the design along with memory address map.
(B) Explain how the flushing of pipeline problem is minimized in Pentium architecture. **10**

4. (a) Interface DMA controller 8237 with 8086 microprocessor. Explain different data transfer modes of 8237 DMA controller. **10**
(b) Differentiate between real mode and protected mode. **10**

5. (a) Draw & explain block diagram of 8259 PIC. **10**
(b) Draw a segment descriptor format and explain different fields. **10**

6. Write short note on any **four** :– **20**
(a) Code cache organization of Pentium.
(b) State the use of RF, TF, VM, NT, IOPL flag bits
(c) Data types supported by SPARC processor
(d) Advantages of memory segmentation in 8086.
(e) Maximum mode of 8086
(f) Control word register of 8255.

T.E - Sem V (CBGS - Computer). 18/11/14.
Operating System

QP Code : 14821

(3 Hours) **[Total Marks : 80**

N.B.: (1) Question No. **1** is **compulsory**.
(2) Attempt any **three** from remaining questions.
(3) **Figures** to the **right** indicate **full** marks.
(4) Assume **suitable** data if **necessary**.

1. (a) What is operating system ? Explain different functions of O.S. **5**
   (b) Explain role of process Control Block ? **5**
   (c) What is the difference between dead lock prevention and avoidance algorithms. **5**
   (d) Explain critical section problem. **5**

2. (a) What are the different allocation methods with reference to File Systems ? **10**
   (b) Consider the following set of processes, with the length of CPU burst given in miliseconds. **10**

Process	Burst time	Priority
P_1	10	3
P_2	1	1
P_3	2	3
P_4	1	4
P_5	5	2

The processes are assumed to have arrived in the order P_1, P_2, P_3, P_4, P_5 all at time 0. Draw Gnatt charts for the following scheduling algorithms FCFS, SJF nonpreemptive priority) and RR (quantum = 1) and also calculate turn around time, average waiting time.

3. (a) Explain Dining philospher problem and solution to it. **10**
   (b) What do you mean by process ? Draw and explain process state diagram in Unix. **10**

[TURN OVER

4. (a) Consider the following snapshot of a system –

	Allocation	Max	Available
	A B C D	A B C D	A B C D
P_0	0 0 1 2	0 0 1 2	1 5 2 0
P_1	1 0 0 0	1 7 5 0	
P_2	1 3 5 4	2 3 5 6	
P_3	0 6 3 2	0 6 5 2	
P_4	0 0 1 4	0 6 5 6	

with reference to banker's algorithm

(i) Find need matrix 2

(ii) Is the system in a safe state ? 4

(iii) If a request from process P_1 arrives for (0, 4, 2, 0), can the request be granted immediately. 4

(b) Discuss various techniques for structuring the page tables along with example. 10

5. (a) Explain in details, file management in Linux. 10

(b) Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999. The drive is currently servicing a request at cylinder 143 and the previous request was at cylinder 125. The queue of pending requests, in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. 10

Starting from the current head position, what is total distance (in Cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk scheduling algorithms

(i) SCAN (ii) C-Look

6. Write note on the following :– 20

(a) System components in Windows Operating System.

(b) Demand paging and various page replacement policies.
