TE. comp. - V (R) May 2017

B/sem-V/CBGS/Computer

Q.P. Code : 581201

23/5/17

(3 Hours) Microprocessor [Total Marks : 100 80

N.B. : (1) Question No.1 is compulsory.
(2) Answer any four questions from Q.No.2 to Q.No.6 three
(3) Figures to the right indicate full marks.
(4) Assume suitable data if required.

1. (a) What is memory segmentation? State advantages of memory segmentation. 5
(b) What is GDT? Explain structure of GDT. 5
(c) Explain integer pipeline of Pentium processor? 5
(d) Briefly explain string instructions of 8086. 5

2. (a) Design 8086 based system for following requirements : 10
(i) Clock frequency 5 MHz
(ii) 512 KB RAM using 32 KB x 8
(iii) 256 KB ROM using 32 KB x 8
(b) Draw and explain block diagram of 8253. 10

3. (a) Explain DMA data transfer modes in brief. 10
(b) Explain, with neat diagram, address translation mechanism implemented on 80386DX. 10

4. (a) Explain, with neat diagram, cache memory organization is supported by Pentium processor. 10
(b) Draw and explain block diagram of Pentium processor. 10

5. (a) Draw and explain block diagram of SuperSpare processor. 10
(b) Explain interrupt structure of 8086. 10

6. Write short note on :
(a) Mixed language programming 5
(b) Virtual 86 mode of 80386DX 5
(c) Branch prediction logic 5
(d) Control registers of 80386DX 5

TE (comp) SEM V CBGS
Operating Systems

QP CODE : 581101
17/05/2017

(3 Hours)

Total Marks : 80

1/1

N.B. 1. Q.no.1 is **compulsory**
2. Attempt any **three** out of the remaining five questions
3. Figures to **right** indicate **full** marks
4. Assume suitable data if necessary but justify the same

Q.1. Attempt the following (Any four)
a. Compare the monolithic and microkernals [5]
b. Explain the Internal and External Fragmentation [5]
c. What is mutual exclusion? Explain its significance [5]
d. What is a semaphore? Elaborate with example, the significance of semaphores [5]
e. Explain the effect of page size on performance of Operating System [5]

Q.2. a. Calculate hit and miss for the following string using page replacement policies – FIFO, LRU and Optimal. Compare it for the frame size 3 & 4.

1 2 3 2 1 5 2 1 6 2 5 6 3 1 3 6 1 2 4 3 [10]

b. What is a deadlock? Explain the necessary and sufficient conditions for the deadlock. Also suggest techniques to avoid deadlocks. [10]

Q.3. a. Explain an algorithm for dining philosophers problem [10]
b. Explain the banker's algorithm in detail. [10]

Q. 4. a. Explain the hardware support for paging [10]
b. Assume the following processes arrive for execution at the time indicated and the length of cpu burst time given in msec. [10]

Job	Burst time	Priority	Arrival time
P1	10	5	0
P2	6	2	0
P3	7	4	1
P4	4	1	1
P5	5	3	2

For the above process parameters, find average waiting times and average turnaround times for the following scheduling algorithms- First Come First Serve, Shortest Job First, non preemptive priority Round Robin (assume quantum=5 units)

Q.5. a. Explain the process transition diagram for UNIX operating system [10]

b. Compare the following Disk scheduling algorithms using appropriate example- SSTF, FCFS, SCAN, C-SCAN, LOOK [10]

Q.6. Write notes on the following: [20]

a. Resource Allocation Graph
b. Process Control Block
c. System Components in Windows Architecture
d. Scheduling in Linux system

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T.E (Comp) – Sem V – CBSGS – 05/06/2012

SODAD

Q.P. Code : 581400

(3 HOURS) [Total Marks: 80]

N.B.: (1) Question no. 1 is compulsory.
(2) Attempt any three questions from remaining.
(3) Assume suitable data wherever necessary.

Q.1. Answer the following: [20]
a) Explain the representation of Zachman Framework for an Enterprise.
b) Describe different phases of SDLC.

Q.2. a) Explain purpose of use case diagram with example. [10]

b) Draw two levels of DFD for Stock/Inventory Management System. The items which are purchased from the various dealers and suppliers are recorded into the database. The software system provides facilities for adding new item, removing an item, updating the stock, purchasing and total stock. [10]

Q.3 a) You are required to present an outline design of a system that will be used by doctors at a medical practice to keep basic patient records. The system should record each consultation between a doctor and patient, any illness diagnosed, and any drugs prescribed to the patient. At regular intervals, an auditor will use the system to check whether the same drug is being prescribed repeatedly to a particular patient. Draw UML Class diagram for system to support this functionality. [10]

b) Explain Cohesion and coupling in short. [10]

Q.4 a) A project requires an initial investment of Rs. 2,25,000 and is expected to generate the following net cash inflows:

Year	1	2	3	4
Cash inflow (Rs.)	95,000	80,000	60,000	55,000

Compute net present value of project if the minimum desired rate of return is 12%. [10]

b) Draw Interaction/Communication diagram for new course registration at college. [10]

Q.5 a) Explain the need of deployment diagram. Draw a deployment diagram to model fully distributed systems. [10]

b) Draw a state diagram for online shopping system where a Customer can browse through the product catalog and add the items to shopping cart. He will require to login for purchase with different payment options and provided to give feedback. [10]

Q.6 Write short notes on: (Any two) [20]

a) Application Architecture
b) Principles of user interface (UI) design
c) Software requirements specification (SRS)
d) Design pattern

T.E/Sem-V/COGS CN 29/5/17 1/2
Computer Engg

Q.P. Code : 581301

(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) Enumerate the main responsibilities of the data link layer. **20**
   (b) What are the different guided and unguided transmission media?
   (c) Explain with examples the classification of IPV4 addresses.
   (d) Compare and contrast a circuit switching and a packet switching network.

2. (a) Consider a message represented by the polynomial $M(x) = x^5 + x^4 + x$. **10**
   Consider a generating polynomial $G(x) = x^3 + x^2 + 1$ (1101). Generate a 3 bit CRC and show what will be the transmitted frame. How is error detected by CRC?
   (b) What is ISO-OSI reference model? Compare it with TCP/IP reference model. **10**
   Which layer is used for the following :
   (i) to route packets
   (ii) to convert packets to frame
   (iii) to detect and correct errors
   (iv) to run services like FTP, Telnet etc.

3. (a) Explain Distance Vector Routing. What are its limitations and how are they overcome? **10**
   (b) What are Congestion Prevention Policies? Explain Congestion control in Vitiual Circuit and Datagram Subnets. **10**

4. (a) With the help of suitable example explain sliding window protocol with selective reject. Compare its performance to sliding window with Go-back-n technique. **10**
   (b) Explain with the help of suitable diagram TCP connection management and release. **10**

TURN OVER

T.E/sem-V/CBGS Computer Engg CN

Q.P. Code : 581301 29/5/17

2/2

5. (a) Explain 1-persistent, p-persistent and 0-persistent CSMA giving strong and weak points of each. **10**

   (b) What is subnetting? Given the class C network 192.168.10.0 use the subnet mask 255.255.255.192 to create subnets and answer the following : **10**

   (i) What is the number of subnets created?

   (ii) How many hosts per subnet?

   (iii) Calculate the IP address of the first host, the last host and the broadcast address of each subnet.

6. Write a short notes on the following **(any two)** : **20**

   (i) SNMP and MIB

   (ii) Bluetooth Architecture

   (iii) Border Gateway Protocol
