

TE (7.9.) - SEM V
O.F.C.D.

May 2014
15/05/14

QP Code : MV-18419

(3 Hours)

[Total Marks : 100

- N.B. 1. Question No 1 is compulsory.
2. Attempt any four out of the remaining six questions.

- Q1. (a) Define and explain the following terms: i) Process ii) Process state
iii) Multiprogramming iv) Time-sharing. 05
(b) Draw and Explain process state diagram. Can a process make a transition
from a ready state to the blocked state? Why or why not? 05
(c) What is a system call? Explain any four system calls. 05
(d) Explain effect of page size on performance. 05
- Q2. (a) Define the notion of a deadlock. Explain necessary and sufficient conditions
for a deadlock to occur. What is the difference between a deadlocked state and
an unsafe state? 10
Q2.(b) Describe the difference between pre-emptive and non-pre-emptive scheduling
algorithms. Which one is more suitable for a time-sharing system? Justify. 10
- Q3 (a) What are the different file allocation methods? Which file allocation method
would you use for a system whose main task is database management? Why? 10
Q3(b) Briefly explain the different modes of inter-process communication. 10
- Q4. (a) Briefly explain how message passing can be used to achieve mutual exclusion.
Compare this technique with semaphores and monitors. 10
(b) What is the critical section problem? Discuss a solution to the problem 10
- Q5 (a) There are five processes A to E which are waiting to be scheduled. Their arrival
times are 0,1,3,9 and 12 sec respectively and their processing times are
3,5,2,5, and 5 seconds respectively. What is the average turn-around time using
FCFS, SJF and Round-Robin(with a quantum of 1 sec) scheduling? 10
Q5 (b) What are the requirements of memory management? Explain segmentation with
the help of an example. 10
- Q6 a. What are processes and threads? What are the advantages and disadvantages
of implementing threads in kernel space and user space? 10
- Q6 b. Compare and contrast any three disk arm scheduling algorithms. 10
- Q7. Short notes on: 20
i) Unix File management
ii) I/O buffering
iii) Real Time Operating System
iv) RAID.
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Con. 9784-14.

(3 Hours)

[Total Marks : 100

- N.B.:**
- Question No. 1 is compulsory.
 - Attempt any four out of remaining Questions

Q.1 a What is the difference between include and extend? Explain with example 10

Q.1b What is Requirement? What are the techniques for gathering and analyzing requirement?
10

Q2.a Develop an activity diagram based on the following narrative. The purpose of the Open Access Insurance System is to provide automotive insurance to car owners. Initially, prospective customers fill out an insurance application, which provides information about the customer and his or her vehicles. This information is sent to an agent, who sends it to various insurance companies to get quotes for insurance. When the responses return, the agent then determines the best policy for the type and level of coverage desired and gives the customer a copy of the insurance policy proposal and quote. 10

Q2b Differentiate: Action state vs. Activity state. How are forking and joining used in Activity Diagram? Illustrate 10

Q3a. Draw Use case diagram for the following problem statement. Shree travel agency plans to become a market leader by augmenting its human travel agents with an automated travel agent system for processing flight reservations. The automated travel agent will intermediate between travellers and the STC corporate computing system, which interfaces with commercial airline reservation services (e.g. Yatra). Like a human travel agent, it will assist travellers in booking, changing, and cancelling flight reservations. If, for any reason, a traveller making a flight reservation travel request prefers human assistance, he/she will have the option to interact directly with a human travel agent. 10

Q3b State different types of Coupling and Cohesion. Explain any four types of both

Q 4 a Draw Class Diagram for an information modelling system for an Engineering College, it has one or more Departments. Department offers one or more Subjects. A particular subject will be offered by only one department. Department has Lecturers and Lecturers can work for one or more departments. Student can enrol in up to 5 subjects in a College. Lecturers can teach up to 3 subjects. The same subject can be taught by different Lecturers. 10

Q4b Differentiate between static and Dynamic modelling in detail 10

Q5a Draw a Deployment diagram for a online "Airline Reservation System" 10

Q5b How is recursion represented in a Sequence Diagram? 10

Q6 a State UML dynamic diagrams. Explain any one with example 10

Q6 b What are the design principles ? explain the difficulties and risk in design

Q7 Explain the following with suitable examples 20

- (a) Association
- (b) Aggregation
- (c) Multiplicity
- (d) Generalization

Sub: CA VRS

Computer Graphics &
Virtual Reality System

TE (IT) V (Rev)

21/5/2014

QP Code: MV-18464

(3 Hours)

[Total Marks : 100

- N. B. :** (1) Question No. 1 is compulsory.
(2) Attempt any **four** out of remaining **six** questions.
(3) Assume suitable **data** if **necessary** and state the assumptions **clearly**.

1. Solve any **four** :-

- | | |
|--|---|
| (a) Differentiate between Raster Scan Display and Random Scan Display. | 5 |
| (b) Draw and explain basic block diagram of Virtual Reality System. | 5 |
| (c) Calculate the pixel co-ordinates of line AB using DDA algorithm where A is (0,0) and B is (4,6). | 5 |
| (d) What are fractals ? Derive an equation $D = \log N / \log S$. | 5 |
| (e) Explain the significance of homogeneous co-ordinate system. | 5 |
2. (a) Explain five 2D transformations with suitable example of each. 10
(b) Explain Bezier Curve in detail. 10
3. (a) Describe any two VR architectures with neat diagrams. 10
(b) Derive 3D transformation for translation and scaling. 4
(c) What is computer Animation ? Explain its significance in real life. 6
4. (a) What are different types of projection ? Derive the matrix representation for perspective transformation in XY plane and on negative Z-axis. 10
(b) Explain Cohen-Sutherland line clipping algorithm with suitable example. List the shortcomings/advantages of this method, if any. 10
5. (a) Explain the terms Antialiasing and Morphing in detail. 10
(b) Explain different Input and Output devices used in VR systems. Describe 3D tracker in detail. 10
6. (a) Describe Physical and Geometric modeling. 10
(b) List various polygon filling algorithms and explain scanline fill in detail. 10
7. (a) Write a detailed note on VR applications. 10
(b) Describe Text Clipping and Polygon Clipping with suitable examples. 10

TE | IT | V (REV) 27/5/14.
CTNC.

QP Code : **MV-18503**

(3 Hours)

[Total Marks : 100

- N.B.** (1) Questions No. 1 is **compulsory**.
(2) Solve any **four** out of remaining questions.
(3) Assume **suitable** data if **necessary**.

1. Attempt the following (any **four**) : - 20
- (a) What are difference between ASK, PSK, FSK ?
 - (b) How frames are form at data link layer ?
 - (c) Explain GSM channels in detail ?
 - (d) What is importance of logical layers in TMN ?
 - (e) Explain different network topology ?
2. (a) What are different error correction and detection techniques used at data link layer? 10
(b) Explain modulator and demodulator used in Binary frequency shift keying (BFSK). 10
What is probability of error ?
3. (a) Explain Telecommunication managemen network (TMN) in detail and also explain 10
use of reference points in TMN.
(b) Explain in detail circuit switching, virtual circuit switching, packet switching ? 10
4. (a) Explain ISDN protocol stack ? How call is established and released in ISDN ? 10
(b) Explain input buffering, out buffering and shared buffering. Also state their merits 10
and demerits.
5. (a) Explain any three methods used for error correction and error detection at data 10
link layer ?
(b) Whar is Bridging ? Explain Bridges in LANS. 10
6. (a) What are different types of Bluetooth technology ? Explain bluetooth protocol 10
stack in detail ?
(b) What are the different multiple access system used in cellular system ? 10
7. Write short notes (any **four**) : - 20
- (a) Shared Memory and Shared Medium Switching
 - (b) 3G UMTS Network
 - (c) Traffic Shaping and Traffic Policing
 - (d) GSM architecture
 - (e) Network Topology.