Q.P. Code: 39914

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

N.B. 1) Question **no.1 is compulsory**
2) Solve any **Three** questions from remaining five.
3) Assume suitable data wherever required.

Q 1) a) What are the types of services provided by operating systems for the convenience of the programmer and also for the efficient operating of the system? (**10**)

b) Illustrate the principles of process scheduling, with necessary diagrams. (**10**)

Q 2) a) What is meant by critical section problem? What are the conditions to be satisfied by a solution to the problem? (**10**)

b) Illustrate the use of semaphores to deal with n-process critical section problem. (**10**)

Q 3) a) What are the necessary conditions for deadlocks? What are the methods for handling deadlocks? (**10**)

b) Illustrate the paging scheme of memory management, with an example. (**10**)

Q 4) a) Explain the file system layout. Discuss the issues in implementing file storage**.** (**10**)

b) Suppose w = 23 43 243 24 56 75 67 45 67 21 is a page reference stream. Assuming a page frame allocation of 3, how many page faults occur in optimal, FIFO, LRU. (**10**)

Q 5) a) What are the methods for selecting a disk scheduling algorithm? Explain the disk scheduling algorithms? (**10**)

b) Explain about preemptive and non preemptive strategies. (**10**)

Q 6) a) Explain the various protection and security mechanisms need to be implemented by Operating System. (**10**)

b) Classify and explain about the functions provided by an Operating System. (**10**)

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

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

Q.1 a. Differentiate between Bitmap and Vector based graphics [5]
b. Explain inside-outside test [5]
c. Explain graphical rendering pipeline [5]
d. Explain Java 3D [5]

Q.2 a. Draw Bezier curve of order 3 having 4 control points (1, 1), (2, 3), (4, 3) and (6, 4) [10]
b. What are the applications of Virtual Reality? [10]

Q.3 a. Explain Cohen Sutherland line clipping algorithm. Hence find the clipping Coordinates of line AB where A (-1, 5), B (3,8). Window coordinates are (-3, 1) and (2, 6) [10]
b. Explain types of projections. [10]

Q.4 a. Explain 2D reflection transformation with respect to arbitrary axis [10]
b. Explain Midpoint circle drawing algorithm [10]

Q.5 a. Explain 3D rotation with respect to arbitrary axis which is not parallel to x, y and z axis [10]
b. Explain VRML [5]
c. Find normalization transformation matrix in which window has lower left corner at (1, 1) and upper right corner at (6,6) which is mapped to the viewport where viewport is a normalized device screen. [5]

Q.6 Write short note on:
a. Types of VR Systems [5]
b. Text clipping [5]
c. Koch curve [5]
d. Mesh Warping [5]

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

1. **Question 1 is compulsory.**
2. **Solve any three questions from remaining**
3. **Consider suitable data wherever necessary.**

Q1a.Describe /etc/passwd, /etc/group and /etc/shadow file with respect to user administration. 10M

Q1b.Discuss process management in Linux along with the relevant command for process management. 10M

Q2a.How the activity is created? Draw and explain the activity life cycle. 10M

Q2b. What is data persistency in Android? 10M

Q3a. Explain the concept of vi editor and give commands. 10M

Q3b.write shell script for print 10M

i)
$
$ $
$ $ $
$ $ $ $

ii) Finding the biggest number among the three numbers.

Q4a.Explain networking command 10M

A. nslookup
B. traceroute
C. host
D. ping
E. ifconfig

Q4b.Explain different types of DNS servers. 10M

Q5a. What is file permission? Explain different ways of setting permission. 10M

Q5b. what are the packages required to configure a secure server with SSL? How can we obtain a digital certificate from certifying authority? 10M

Q6. a. Explain following user commands with examples. 10M

i. adduser
ii. usermod
iii. chgrp
iv. chmod
v. deluser

Q6.b. How to configure apache web server. 10M

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

N.B.:- (1) Question No. **1** is **Compulsory**.

(2) Solve any **three** questions from the remaining **five** questions.

(3) **Figures** to the **right** indicate **full** marks.

(4) Assume **suitable** data where **necessary.**

1.	(a)	Describe the feature of ARM 7 processor	**5**
	(b)	Explain SOC in detail.	**5**
	(c)	Explain application areas of Embedded System.	**5**
	(d)	Compare AJMP, SJMP, LJMP instructions of 8051	**5**
2.	(a)	Explain addressing modes of ARM 7 processor with suitable example instructions.	**10**
	(b)	Explain various operating modes of the serial I/O port of 8051 microcontroller.	**10**
3.	(a)	Explain in details ARM7 pipelining.	**10**
	(b)	Explain the auto reload mode of timer/counter of 8051 microcontroller.	**10**
4.	(a)	Explain priority inversion problem in Embedded Systems. How does it resolved?	**10**
	(b)	Draw and explain the architecture of 8051 microcontroller.	**10**
5.	(a)	What is Semaphore? Explain the use of semaphore with respect to embedded systems?	**10**
	(b)	Write an assembly language program for 8051 microcontroller to arrange block of ten numbers in ascending order.	**10**
6.		Write notes on	**20**
	(a)	Digital Camera System.	
	(b)	Automated meter reading system.	

****

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

N.B. : (1) Question No. 1 is **compulsory**
(2) Solve any **three** questions out of remaining **five**

1. (a) Explain View and Give Difference between View and Base Table **5**
(b) What is Write –Ahead Logging and when it is used? **5**
(c) Write a short note on SQL Injection. **5**
(d) Define a lock and describe the types of locks used in concurrency control. **5**

2. (a) Design a schema in SQL for a Library System. Show one example each for PRIMARY KEY and FOREIGN KEY constraint. Create one assertion for the following Constraint: "No member can borrow more than three books at a time". **10**
(b) Explain use of SQLJ with two types of iterators available in SQLJ. **10**

3. (a) Describe ARIES recovery algorithm with example. **10**
(b) Explain Query Processing and Optimization in Distributed database. **10**

4. (a) Explain multilevel indexing with suitable example? **10**
(b) Explain with suitable example object identity, object structure and type constructors in OODB. **10**

5. (a) Explain data warehouse architecture in detail. **10**
(b) Compare MAC and DAC and RBAC for multi level security. **10**

6. Consider a Dataware house for a hospital where there are three dimensions: **20**
1) Doctor
2) Patients.
3) Time and two measures count and charge.

Using above example perform following
a. Star schema
b. Snakeflake schema
c. Rollup & drilldown operations
d. Pivot operation
e. Slice and Dice operations
