QP Code : 31067

MAX MARKS : 80   TIME : 03 HRS

N.B.   1. Question No 1 is **compulsory**.

    2. Solve any **three** questions out of remaining five questions.

    3. Assume suitable data if necessary.

Q. 1. Solve any **four** out of five sub questions

    a. What are the major functions carried out by an operating system?   (05)

    b. Describe the types of semaphores.   (05)

    c. Discuss the problem of consumer-producer.   (05)

    d. Explain various process scheduling queues.   (05)

    e. Differentiate between internal and external fragmentation.   (05)

Q. 2. a) Briefly explain the different kernel architectures.   (10)

    b) State the necessary conditions for deadlock. How to prevent the deadlock?   (10)

Q. 3 a) Calculate number of page faults and page hits for the page replacement policies FIFO, Optimal & LRU for given reference string 6,0,5,2,0,3,0,4,2,3,0,3,2,5,2,0, 5,6,0,5(assuming three frame size).   (10)

    b) Discuss the various file allocation methods.   (10)

Q. 4 a) What is mutual exclusion? Explain Peterson's algorithm for mutual exclusion.   (10)

    b) Explain the file systems of Windows and Linux operating system.   (10)

Q.5 a) Assume that the disk head is initially positioned over track 100. For the disk space request of 27, 129, 110, 186, 147, 41, 10, 64 and 120. Show how disk scheduling is carried out for SSTF, C-SCAN, C-LLOK. Calculate the average seek length and show the tracing of the requests.   (10)

    b) Define the terms Critical section, Race condition, Process Control Block, Kernel and shell of OS , Context Switch.   (10)

Q. 6. Write a note on

    a. Comparison between FCFS & SJF scheduling algorithms.   (06)

    b. Paging and segmentation   (08)

    c. Process state diagram   (06)

FW-Con.8963-16.

QP Code : 31109

(2½ Hours) [Total Marks : 80

N.B. : (1) Question 1 is compulsory.
    (2) Attempt any three questions from the remaining questions.
    (3) Assume suitable data wherever applicable.
    (4) Draw figures wherever applicable.

1. (a) Differentiate between Raster scan display and Random scan display.   5
   (b) Prove that two successive rotation transformations are additive   5
   (c) Show that the transformation matrix for a reflection about a line $y = x$ is equivalent to reflection to x-axis followed by counter clockwise rotation of 90°.   5
   (d) Explain 3D trackers & enumerate some important trackers characteristics   5

2. (a) Specify highlights and drawbacks of Bezier curve. Construct the Bezier curve of order three with control points P1(0,0),P2(1,3),P3(4,2) and P4(2,1).Generate at least five points on the curve.   10
   (b) Write DDA Line drawing Algorithm. Compare DDA with Bresenham's Line drawing Algorithm. Calculate the pixel co-ordinates of line Abusing DDA Algorithm where A=(0,0) and B=(4,6).   10

3. (a) Let ABCD be the rectangular window with A (20,20), B(90,20), C(90,70) and D(20,70).Find region codes for endpoints and use Cohen Sutherland algorithm to clip the lines
      P1 P2 with P1 (10,30), P 2 (80,90)   10
   (b) With respect to 3D transformations, describe the steps to be-carried out when an object is to be rotated about an arbitrary axis. Specify all the required matrices. State your assumptions clearly.   10

4. (a) Explain Flood Fill Algorithm for 4 connected and 8 connected. What are its advantage over Boundary Fill Algorithm   10
   (b) Explain an algorithm which uses parametric equation of line clipping. Using same algorithm find the line segment A(10, 10) and B(70,40) after it is clipped against the window of two vertices (20,20) and (40,50).   10

TURN OVER

FW-Con. 10276-16.

5. (a) Consider a triangle ABC whose coordinates are A (1 0, 20) B (30, 40) and 8 C (50, 20). Perform the following transformations (Specify the matrices that are used)　10

    (i) Translate the given triangle by 3 units in X direction and -2 units in Y direction.

    (ii) Rotate the given triangle by 30.

    (iii) Reflect the given triangle about X = Y

    (iv) Scale the given triangle uniformly by 2 units.

  (b) What is the significance of modeling in virtual reality? Explain any modeling technique used in virtual reality.　10

6. Write a short note on (Any five):

    (a) Homogeneous Coordinates.　5

    (b) Text Clipping.　5

    (c) fractals　5

    (d) B- spline curve　5

    (e) Morphing and warping.　5

QP Code : 31152

(3 Hours) [Total Marks: 80]

N.B.: (1) Question No. 1 is compulsory.

(2) Solve any **three** questions out of remaining **five**.

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

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

1.	(a)	Describe the features of ARM 7 processor.	5
	(b)	What is embedded systems and explain SoC in detail.	5
	(c)	Compare SJMP, AJMP and LJMP instruction of 8051 microcontroller.	5
	(d)	8051 microcontroller with XTAL frequency = 11.0592 MHZ , find the TH1 value needed to have the following baud rates (i) 9600 (ii) 2400 (iii) 1200	5
2.	(a)	Explain addressing modes of ARM 7 processor.	10
	(b)	Explain the Timer/Counter modes of 8051 microcontroller.	10
3.	(a)	Explain in detail ARM 7 pipelining.	10
	(b)	Explain various serial modes of 8051 microcontroller	10
4.	(a)	Explain priority inversion problem in Embedded system. How does it is resolved?	10
	(b)	Write an assembly language program for 8051 microcontroller to arrange block of ten numbers in ascending order.	10
5.	(a)	Write an assembly language to generate square wave of 2 KHz at pin P1.1 using 8051. Assume 8051 operating frequency 12 MHz.	10
	(b)	Explain CPSR register of ARM 7 processor.	10
6.	(a)	Explain detailed programmer's model of ARM 7.	10
	(b)	Explain automated meter reading system in detail.	10

FW-Con.10942-16.

QP Code : 31193

(Time: 3 Hrs)   **Marks: 80**

N.B. : 1. Question no. 1 is **compulsory**.
       2. Solve any **Three** questions out of remaining **Five** questions.

Q-1	a)	What is referential integrity? Explain with suitable example.	5
	b)	Explain in short Object Query Language (OQL).	5
	c)	Explain in short dynamic SQL.	5
	d)	List the different types of transparencies in distributed databases and explain any one in detail.	5

Q-2   a)   Differentiate between
            i.   Data Warehouse Modeling Vs Operational Database Modeling.   5
            ii.   OLTP vs OLAP   5

       b)   Explain Dynamic Multilevel Indexes Using B-Trees or B^+-Trees.   10

Q-3   a)   What are the different types of SQL injection attacks? What risks are associated with it? Explain any one attack in detail.   10

       b)   Consider the following database that has to be distributed: 10

            PROJ (**PNO**, PNAME, BUDGET)
            PAY (**TITLE**, SALARY)
            EMP (**ENO**, ENAME, TITLE)
            ASG (**ENO, PNO**, RESPONSIBILITY, DURATION)

            1. Show 2 examples of horizontal fragmentation.
            2. Show 1 example of derived fragmentation.
            3. Show 1 example of vertical fragmentation.

Q-4   a)   Explain with suitable example object identity, object structure and type constructors in OODB's.   10

       b)   Explain with suitable example "Star Schema".   10

Q-5   a)   Explain ECA model with suitable example.   10

FW-Con. 11343-16.   **[TURN OVER**

b) Explain Discretionary Access Control based on Granting and Revoking   **10**
Privileges

Q-6   a) Explain in short the concerrency control in distributed databases.   **10**

d) · Explain ETL phase in creating a data warehouse   **10**

FW-Con. 11343-16.

OST IT V

2/6/16

(3 Hours) [Total Marks : 80

N. B. : (1) Question No. 1 is compulsory.
(2) Attempt any three questions from remaining questions.
(3) Draw suitable diagram wherever necessary.
(4) Assume suitable data, if necessary.

1. Attempt all **four** sub questions.
   (a) Explain features of Linux   5
   (b) Describe Swap partition in Linux   5
   (c) Explain permissions on directory   5
   (d) Describe 'AndroidManifest.xml' file components   5

2. (a) What is data persistency in Android   10
   (b) Which are major components associated with Android application   10

3. (a) What is an Activity ? How is it created?   10
   (b) Explain concept of vi editor and give commands to move a cursor 10
       around, to insert text, to delete text, to cut & paste text, and to save
       & quit files.

4. (a) Explain concept of 'Links' and its types?   10
   (b) Explain command line editors 'sed' & 'gawk' with example   10

5. (a) Discuss significance of given files-./etc/passwd, /etc/shadow, /etc/group   10
   (b) Explain with examples given commands- chmod, chown, chgrp   10

6. (a) Explain following networking command-   10
       snetstat, ping, host, traceroute, route
   (b) Write short note on - process management in Linux   10

_____

FW-Con.11962-16.