Q.P. Code: 36003

(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) Make **suitable** assumptions wherever **necessary** and state them **clearly**.

1.	(a)	Define Embedded System. Discuss various components of embedded system.	**5**
	(b)	What is Semaphore? Explain the types of semaphore.	**5**
	(c)	Compare AJMP, SJMP, LJMP instructions of 8051.	**5**
	(d)	Explain the brief Real Time operating Systems	**5**
2.	(a)	Explain in detail ARM 7 pipelining	**10**
	(b)	Explain the Timer/ Counter of IC 8051.	**10**
3.	(a)	Write an assembly language program for 8051 microcontroller to multiply two 8 bit numbers stored external memory locations 4000H and 4001 H. Send the result on PORT 1 and PORT 3.	**10**
	(b)	Explain CPSR register of ARM 7 processor.	**10**
4.	(a)	Explain the addressing modes of ARM 7 processor.	**10**
	(b)	Explain the hardware and software interrupts of 8051 microcontroller	**10**
5.	(a)	Explain Internal memory organization of 8051.	**10**
	(b)	Explain the addressing modes of 8051 microcontroller.	**10**
6.		Write note on (**any two**):	**20**
	(a)	Automated meter reading system.	
	(b)	Digital Camera.	
	(c)	Serial communication of 8051.	
	(d)	Assembler directives.	

Q.P. Code: 39915

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

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

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

(3) Make suitable assumption if necessary

1. Solve any four out of five:
   (a) Explain OS as resource manager. **5**
   (b) Explain types of schedulers. **5**
   (c) Differentiate fragmentation. **5**
   (d) Explain importance and types of threads. **5**
   (e) Short-note: Critical Section **5**

2. (a) What is deadlock? Explain deadlock detection and recovery. **10**
   (b) Explain contiguous memory allocation with variable partitions. **10**

3. (a) Paging system consists of physical memory 2^{24} bytes, pages of logical address space is 256. Page size of 2^{10} bytes, how many bits are in a logical address. **10**
   (b) Consider a system with 5 processes and 3 resource types. At a time following snapshot of the system has been taken: **10**

	Allocated		Maximum		Available	
Process ID	R1	R2	R1	R2	R1	R2
P1	1	2	4	2	1	1
P2	0	1	1	2		
P3	1	0	1	3		
P4	2	0	3	2		

Check whether the system is in safe state or not?

4. (a) Explain IO buffering. **10**
   (b) Consider following set of processes with the length of CPU burst time given in ms: **10**

Process	Arrival Time	Burst Time
P1	0	8
P2	1	2
P3	2	3
P4	3	3
P5	4	7

Draw the gantt chart for: FCFS, SJF (preemptive). Calculate turn around time and waiting time in each case.

5. (a) Explain SSF,SCAN and LOOK algorithms. **10**
   (b) Explain different file access methods in detail. **10**

6. Write notes on the following(any four):
   (a) Race conditions. **5**
   (b) Android OS **5**
   (c) I-node **5**
   (d) Monitors **5**
   (e) System calls **5**

(3 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 necessary.
4. Draw figures wherever applicable

1.	(a)	Differentiate between Raster Scan Display and Random Scan Display	5
	(b)	What is VRML? How to build a cone shape in VRML.	5
	(c)	What are the different applications in Virtual Reality?	5
	(d)	Show that transformation matrix for reflection about y=x is equivalent to reflection to X-axis followed by counter clockwise rotation of 90 degree.	5
2.	(a)	Derive mathematical representation for Bezier Curve and state their property.	10
	(b)	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 P1P 2 with P 1 (10,30), P 2 (80,90)	10
3	(a)	Explain Flood Fill using 8-connected approach. What are its advantages over Boundary Fill Algorithm	10
	(b)	Explain Geometric & Kinematic Modeling	10
4.	(a)	Explain Graphical Rendering Pipeline	10
	(b)	Derive DDA Line Drawing Algorithm. Calculate the pixel co-ordinates of line AB using DDA Algorithm. Where A=(0,0) and B=(8,4)	10
5	(a)	What are different types of projection? Apply one point perspective projection on z=0 plane for a unit cube situated at origin, assuming centre of Projection at z_c=2 on Z-axis.	10
	(b)	Why there is a need of Homogenous Coordinate? Rotate a triangle ABC by an angle 90 degree about a point(-1,1)where the triangle has the coordinates A(5,0),B(10,2),and C(7,4)	10
6		**Write Short Note On:(Any four)**	20
	(a)	Tracker Jitter & Tracker Drift	
	(b)	Text Clipping	
	(c)	What are Fractals? Derive an equation D=log N/log S	
	(d)	Key Frame Animation	
	(e)	Winding Number Method	

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

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

Qu-1		Attempt the following.	
	a)	Event Condition Action (ECA) model (Triggers) in SQL with suitable example.	**5**
	b)	Explain "Write Ahead Logging."	**5**
	c)	Explain "Object Query Language (OQL)" in short.	**5**
	d)	OLAP vs OLTP	**5**
Qu-2	a)	State the role of metadata and classification of Metadata for Data Warehouse.	**10**
	b)	Explain Stored Procedures in SQL with suitable example.	**10**
Qu-3	a)	Explain Factless Fact Table with suitable example.	**10**
	b)	Explain Mandatory Access Control and Role-Based Access Control.	**10**
Qu-4	a)	Explain Star Schema with suitable example.	**10**
	b)	Explain ARIES with suitable example.	**10**
Qu-5	a)	Explain Dynamic Multilevel Indexes Using B+-Trees.	**10**
	b)	Explain Query Processing in Distributed Databases.	**10**
Qu-6		Write short note on	
	a)	Single-Level Ordered Indexes.	**5**
	b)	Concurrency Control in Distributed Databases.	**5**
	c)	Data Marts.	**5**
	d)	ROLAP	**5**

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Time: 3 Hours Marks: 80

N.B. (1) Question number 1 is compulsory.
(2) Solve any 3 from remaining.
(3) Assume suitable data where ever necessary.

Q.1. Attempt the following: 20

a. Explain use of echo, expr and read command with example shell script.
b. Explain use of export, set command with an example.
c. Explain ping and netstat commands with example.
d. Explain various Layouts in Android Programming.

Q.2.

(a) Explain different file access permissions in Linux. Consider you have a folder named "mydir" with two files "f1", "f2" write appropriate command/s to make both files and directory to have all the permissions only for the owner of files. 10

(b) Write note on iptalbes and with example explain how it can be used to drop traffic coming from a specific ip address to a machine. Also explain how to list all firewall rules using iptables. 10

Q3.

(a) Explain use of wget and curl commands to get website contents. 10

(b) Write note on sed. Show how it can be used for 10

(i) As replacement for head command
(ii) As find and replace utility, for all two or more digit numbers by string 'N'

Q4.

(a) Write a note on process management in Linux. Explain ps command. 10

(b) Explain how to work with data and Files in Android application. 10

Q5.

(a) Explain use of httpd.conf Explain any five configuration directives used in httpd.conf file. 10

(b) Explain following commnds with an example each.
i. usermod ii. chgrp iii. adduser iv. chown v. userdel 10

Q6.

(a) Discuss significance of passwd, shadow, group and gshadow files in /etc directory. 10

(b) Write note on Disk partitioning. Explain role of Logical Volume Manager as device mapper. 10