

QP Code : **14951**

(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 Factless Fact Table. 5
- (b) Compare OLTP vs OLAP 5
- (c) How does multilevel indexing improve the efficiency of searching an index file? 5
- (d) Explain different types of transparencies in distributed database. 5
2. (a) What are Triggers? Give an example. 10
- (b) Explain Concurrency control in distributed database. 10
3. (a) Draw and Explain Data Warehouse architecture. 10
- (b) Describe the three phases of the ARIES recovery method. 10
4. (a) Find out the data transfer cost of distributed query processing for following queries "For each employee, retrieve the employee name and name of the department for which employee works."
 Site1 : Employee 10

Fname	Minit	Laname	SSn	Bdate	Address	Sex	Salary	SSSn	Dno
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10000 records each record is 100 bytes long.

SSn field is 9 bytes, Fname field is 15 bytes, Dno field is 4bytes, Lname is 15 bytes.

Site2: Department.

Dname	Dnumber	Mgrssn	Mgrstartdate
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100 records each record is 35 bytes long, Dnumber field is 4bytes, Dname field is 10 bytes, Mgrssn field is 9 bytes. Query is submitted to result site 3. Consider different strategies for executing this query and find which strategy is best using natural join and semijoin.

- (b) Explain with suitable example object identity, object structure and type constructors in OODBs. 10
5. (a) Explain Data loading and its types. 10
- (b) Explain the Operations on files. 10

6. (a) Consider a data warehouse for a hospital, where there are three dimensions: **10**
- (i) Doctor
 - (ii) Patient and
 - (iii) Time
- and two measures:
- (i) Count and
 - (ii) Charge.
- Using the above example describe the following OLAP operations
- (i) Slice
 - (ii) Dice
 - (iii) Rollup
 - (iv) Drilldown
 - (v) Pivot
- (b) What are the different types of SQL injection attacks. **10**
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- N.B. : (1) Question No. 1 is **compulsory**.
 (2) Solve any **three** questions out of remaining **five** questions.
 (3) **Assume** suitable data if **necessary**.
 (4) **Draw** neat diagrams wherever **necessary**.

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|----|-----|---|----|
| 1. | (a) | Define and classify the embedded systems, give few examples of such systems. | 5 |
| | (b) | Compare AJMP, SJMP, LJMP instructions of 8051. | 5 |
| | (c) | Explain function of \overline{PSEN} and \overline{EA} pins of 8051. | 4 |
| | (d) | Describe the principal features of the ARM architecture. | 6 |
| 2. | (a) | Explain Internal memory organization of 8051. | 10 |
| | (b) | Explain addressing modes of ARM 7 processor. | 10 |
| 3. | (a) | Explain interrupt structure of 8051 in detail. | 10 |
| | (b) | What is semaphore ? Explain the use of semaphore with respect to embedded operating systems. | 10 |
| 4. | (a) | Write assembly language program for 8051 to multiply two 8 bit numbers stored in external memory locations 4000 H and 4001 H. Send the result on PORT 1 and PORT 3. | 10 |
| | (b) | Explain CPSR of ARM 7 processor. | 10 |
| 5. | (a) | What do you mean by Task and Task state related to embedded operating systems and also discuss about task control block (TCB) and its data. | 10 |
| | (b) | Write assembly language program for 8051 to transfer message "ENGINEER" serially at the baud rate of 4800 in mode 1. | 10 |
| 6. | (a) | Explain Smart Card Reader system in detail. | 12 |
| | (b) | Explain priority inversion problem in Embedded System. How does it is resolved ? | 8 |

QP Code : 14876

(3 Hours)

[Total Marks : 80

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

1. (a) If 8 bits per pixel, per color scheme is used for a RGB display device, How much memory is required to hold picture data worth one screen, if the resolution is 800 X 600. If the refresh rate is 50Hz, How much memory is required to hold picture data for duration of one sec. **5**
- (b) Prove that the two successive rotation Transformations are additive. **5**
- (c) Explain different ways of performing text clipping. **5**
- (d) What is VRML, what is the meaning of six degrees of freedom in 3D graphics. How to define any shape (say cylinder) in VRML. **5**
2. (a) Given 4 control points (10, 10), (15, 15), (20, 15) and (30, 10), find the points to plot bezier curve by using step size as 0.2 . **10**
- (b) Explain Boundary fill and flood fill Algorithm. Which algorithm cannot be used to fill the Region R2 which is bounded by Blue color and Red Color boundary, justify. **10**
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3. (a) Find sequence of Transforming required to rotate a solid object w.r.t a line $y = mx + c$, in anticlockwise manner by angle θ . **10**
- (b) Explain Morphing and warping mechanism. **10**
4. (a) What are the important components of VR system. Explain different types of VR systems. **10**
- (b) What is projection, what are its different types? Derive transformation Matrix for oblique projection. **10**
5. (a) Explain Geometric and kinematic modeling in detail. **10**
- (b) Explain an algorithm which uses parametric equation for the propose of line clipping, using the same algorithm, find the coordinates of the line segment A(10, 10), B (70, 40), after it is clipped against a window with two diagonal vertices at (20, 20) (40, 50). **10**
6. Write short notes on : (any two) **20**
- (a) Fractals
- (b) Applications of VR
- (c) 3D position Trackers.

T.E. Sem V (CBAS) - (I.T.)
Operating System

18/11/14

QP Code : 14836

(3 Hours)

[Total Marks : 80

Note: Q1 is compulsory.

Solve any three questions from remaining five.

Figure from right indicates full marks.

Assume suitable data wherever required.

Q1. Answer any four. (20)

- Differentiate: Monolithic kernel and Microkernel.
- Discuss I/O buffering in detail.
- Explain Semaphore.
- Write short note on: producer-consumer problem.
- Compare and contrast: thread and process.

Q2a) What is Deadlock? State necessary conditions for deadlock. (10)

How to prevent deadlock?

Q2b) draw process state transition diagram and explain the following transitions: (10)

- Running to ready
- Waiting to ready
- Running to waiting
- Blocked to ready
- Running to terminated

Q3 a) calculate Hit and Miss using LRU, Optimal, FIFO page replacement policies (10)

for the following sequence. Page frame size is 3.

0, 4, 3, 2, 1, 4, 6, 3, 0, 8, 9, 3, 8, 5.

Q3 b) Explain file allocation methods in detail with proper diagram. (10)

Q4a) Use following scheduling algorithms to calculate ATAT and AWT for (10)

the following processes.

- FCFS
- pre-emptive and non pre-emptive SJF
- preemptive priority

Process	Arrival Time	Burst Time	Priority
P1	0	8	3
P2	1	1	1
P3	2	3	2
P4	3	2	3
P5	4	6	4

Q4b) What is meant by inter-process communication? (10)

Q5a) Explain paging in detail. Describe how logical address is converted into physical address? (10)

Q5b) (10)

Process	Max				Allocation				Available			
	A	B	C	D	A	B	C	D	A	B	C	D
P0	6	0	1	2	4	0	0	1	3	2	1	1
P1	1	7	5	0	1	1	0	0				
P2	2	3	5	6	1	2	5	4				
P3	1	6	5	3	0	6	3	3				
P4	1	6	5	6	0	2	1	2				

Using Banker's algorithm answer the following questions-

- How many resources of type A, B, C, D are there?
- What are the contents of need matrix?
- Find if the system is in safe state? If it is, find the safe sequence.

Q6 Write short notes on: (any four) (10)

- Characteristics of Modern operating system
- RAID
- Android OS
- Distributed operating system
- I-node

Q.P. Code : 14985

(3 Hours)

[Total Marks : 80

N.B. : (1) Attempt any four questions.

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|--------|---|----|
| 1. (a) | Compare Open source software with Other type of Software. | 10 |
| 1. (b) | Explain partition of Hard disk with respect to dual boot environment also explain the purpose of bootloader | 10 |
| 2 (a) | Explain File system Hierarchy Standards (FHS) | 10 |
| 2. (b) | Write a note on Process management in Linux along with the relevant command used for process management? | 10 |
| 3. (a) | Describe /etc/passwd, /etc/group and /etc/shadow files with respect to user administration | 10 |
| 3. (b) | Explain the purpose of following networking command
(i) ifconfig (ii) traceroute (iii) nslookup (iv) route (v) arp | 10 |
| 4. (a) | Discuss steps for the configuration of Linux machines as the Master DNS server. | 10 |
| 4. (b) | Write a note on "working with a Web using shell script". | 10 |
| 5. (a) | Explain the role of Linux kernel in the Android Architecture. | |
| | (b) Enlist some native Android libraries used in Android Architecture. | 5 |
| | (c) Describe the role of intent in Android programming. | 5 |
| | (d) Explain SmsManager class in Android development. | 5 |
| 6 | Write a short note on :- | |
| | (a) Location -based services | 20 |
| | (b) Iptables | |
| | (c) init initialization in Linux OS | |
| | (d) Backup commands in Linux OS | |