E| Sem-V (CBSGS) / INFT / Computer Graphics & Virtual Reality / NOV-2017.

Q.P Code: 23469

[Time: 3 Hours] **[Marks: 80]**

NB : 1) **Question 1** is **compulsory**.
2) Attempt any **three** questions from the **remaining** questions.
3) **Assume** suitable **data** wherever applicable.

1	(a)	Explain various image representation techniques.	5
	(b)	Explain parallel and perspective projections	5
	(c)	Explain the differences between computer graphics and virtual reality	5
	(d)	Explain any test to determine whether the point is inside or outside of polygon.	5
2	(a)	Explain graphics rendering pipeline for virtual reality.	10
	(b)	Explain Sutherland Hodgeman polygon clipping algorithm. State its drawbacks and explain how it can be solved.	10
3	(a)	What is the significance of modeling in virtual reality? Explain any modeling technique.	10
	(b)	With respect to 3D transformations, describe the steps to be carried out when an object is to be rotated about an axis that is not parallel to any of the coordinate axis. Specify all the required matrices. State your assumptions clearly.	10
4	(a)	State mathematical equation for Bezier curve. Find the Bézier curve which starts at $\{x_0, y_0\} = \{2, 2\}$ and ends at $\{x_3, y_3\} = \{4, 1\}$ which has the control points $\{x_1, y_1\} = \{0, 1\}$ and $\{x_2, y_2\} = \{3, -1\}$, respectively.	10
	(b)	Write a function to fill a region boundary by different colour boundaries using connected approach. Explain the algorithm with example	10
5	(a)	Consider a triangle ABC whose coordinates are A (1, 2), B (3, 4), C (5, 2). Perform the following transformations: (Specify the matrices that are used) 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 Y axis iv) Scale the given triangle uniformly by 2 units in X and Y direction v) Reflect the given triangle about X=Y	10
	(b)	Draw a line from (-10, 15) to (-20, 25) using Bresenham's line drawing algorithm.	10
6		Write short note on **(any four)** (a) Fractals (b) Types of virtual reality systems. (c) Color models (d) B-spline curve (e) Application of virtual reality	20

4 and 8

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SEM-V (CBSGS) - INFT T3325 / T0526 OPERATING SYSTEMS NOV-2017

Q. P. Code:-24599

(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 Answer any four

a) Compare and contrast between thread and process 05

b) What is system call? Explain any four system calls 05

c) Explain internal & external fragmentation 05

d) Explain various RAID levels 05

e) Write short note on File Access methods 05

Q.2 a) What are the four conditions that create deadlock? Explain dead lock prevention and avoidance techniques. 10

b) Draw and Explain various states of process with the help of state transition diagram. 10

Q.3 a) Calculate the Hit and faults using FIFO, Optimal and LRU page replacement policies for the following page sequence (2,3,5,4,2,5,7,3,8,7) assume page frame size is 3. 10

b) What is semaphore? Explain different types of the semaphores. 10

Q.4 a) Explain objectives and functions of OS. 10

b) What is scheduling? Give different scheduling policies and their comparison. 10

Q.5 a) What is thread? Explain user level and kernel level thread. 10

b) What is paging? Explain how logical address converted into physical address. 10

Q.6 Write short note on (any four) 20

a) I-node

b) Android OS

c) Producer consumer problem

d) Inter process communication

e) Process control Block

E | Sem-V (CBSGS) | INFT | Microcontroller & Embedded Systems | Nov-2017

Q. P. Code : 23701

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

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. Figures to right indicate marks.

Q. 1. Solve any **four** out of five. (20)

1. a. What are the design metrics of Embedded Systems?
   b. Describe the instructions of 8051 , JNC and MUL with one example.
   c. 8051 microcontroller with XTAL frequency = 11.0592 MHz. Find the TH value needed to have the following baud rates of 9600.
   d. Describe the feature of ARM that makes it suitable for embedded system.
   e. What is semaphore? Explain the use of semaphore with respect to embedded operating systems.

Q. 2. a) Discuss Smart Card Reader System in detail. (10)

b) Illustrate scheduling algorithms of tasks in real time systems (10)

Q. 3. a) Explain multiple register load and store instructions of ARM7 processor. (10)

b) Write assembly language program to generate a rectangular waveform of frequency 1KHz and 50% duty cycle at pin P1.7 using 8051. Assume 8051 operating frequency 12MHz. (10)

Q. 4. a) Write assembly language program for 8051 microcontroller to transfer message "ARM7" serially at baud rate of 2400 in mode 1. (10)

b) Explain with one example each, the addressing modes of 8051 microcontroller. (10)

Q. 5. a) Define and classify the embedded systems also list major application areas of embedded systems. (10)

b) Give details of Barrel Shifter of ARM7 processor and the various operations carried out by the same. (10)

Q. 6. a) List functions of Kernel. Also explain different types of kernel. (10)

b) Explain interrupt structure of 8051 microcontroller in detail. (10)

Advanced Database Management System / NOV-2017

Q. P. Code: 23442

Time: 3 hours **Marks: 80**

N. B: 1. Question 1 is compulsory.
2. Attempt any three out of remaining.
3. Assume suitable data if required.

Qu-1 **Attempt any four questions**

a) Consider a suitable relation schema and perform nested query and query using group by clause. 5

b) Explain ECA Model. 5

c) What is view? Discuss the difference between a view and base relation. 5

d) Define a lock and describe the types of locks used in concurrency control. 5

e) List differentiation between OLTP and OLAP 5

Qu-2 a) What is SQLJ used for? Describe the two types of iterators available in SQLJ. 10

Qu-2 b) Differentiate between static and dynamic SQL? Which one is more efficient? 10

Qu-3 a) Describe ARIES recovery algorithm with example. 10

b) Explain Indexing Technique in the database. 10

Qu-4 a) Find the cost of data transfer over the network for following details. Employee table is at site 1 with 10,000 rows. Each row size is 100 bytes. Department table is at site 2 with 100 rows. Each row size is 35 bytes. Find optimum solution for data transfer if following query is executed from site 3. 10
Query: For each employee retrieve the emp_name and dept_name where employee works.
Size of result tuple is 40 bytes.

b) Explain different ways of concurrency control in DDBMS 10

Qu-5 Consider a data ware house for a hospital where there are three dimensions: 20
1) Doctor 2) Patient and 3) Time
And two measures count and charge.
Using above example perform following
i) STAR schema
ii) Snowflake schema
iii) Rollup & Drilldown operations
iv) Pivot operation
v) Slice and Dice operations

Qu-6 Explain the following concepts with the help of example.

a) SQL Injection 5

b) Mandatory Access Control 5

c) Statistical Database 5

d) Timestamp Ordering Protocol 5

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TE / Sem V (CBSGS) / IWT / Open Source Tech. / NOV.17

Q.P. Code :25137

[Time: Three Hours] **[Marks:80]**

Please check whether you have got the right question paper.

N.B:
1. Question.No.1 is compulsory.
2. Solve any 3 from remaining.
3. Assume suitable data where ever necessary.

Q.1 Attempt the following: **20**

a. Compare open source softwares with closed source softwares.
b. How to secure servers with Iptables.
c. Explain backup related commands in Linux.
d. Describe role of Intent in Android Programming.

Q.2 a) Explain various open source software licenses. **10**

b) Write note on sed. Show how can it be used in following cases **10**

i) As replacement for head command.

ii) As utility for deleting all occurrences of string "UNK" from input.

Q.3 a) Explain commands for new user creation in Linux. **10**

b) Explain use of wget and curl commands to get website contents. **10**

Q.4 a) Write a note on process management in Linux. Explain relevant commands. **10**

b) Explain grep, cut, tr, sort and uniq commands with two options and their example usage. **10**

Q.5 a) Explain Apache web server configuration in Linux **10**

b) Explain Linux File system hierarchy. Explain role of any five directories. **10**

Q.6 Write short notes on following (any four)

a) Publishing the Android application **05**
b) Android Activity Life-Cycle **05**
c) Daemon process **05**
d) Role of init signal. **05**
e) Logical Volume Manager **05**

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