

Seat No.	
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T.E.(Computer Science and Engineering)
(Semester-V) Examination, May - 2017
COMPUTER GRAPHICS
Sub. Code : 66293

Day and Date : Monday, 15-05-2017

Total Marks : 50

Time : 9.00 a.m. to 11.00 a.m.

- Instructions :
- 1) Q.No.3 and Q.No.6 are compulsory. Attempt any one from Q.No.1 and Q.No.2 and any one from Q.No.4 and Q.No.5
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data if necessary.

Q1) a) Explain with the help of transformation matrix 3D Scaling and Shearing transformations. [6]

b) Evaluate the Bresenham's line drawing algorithm for line (0, 0) to (8, 8). [6]

Q2) a) What are plane geometric projections? Explain axonometric projections. [6]

b) Explain Sutherland cohen subdivision method for line clipping. [6]

Q3) a) Explain Real time scan conversion technique. [7]

b) Explain antialiasing techniques. [6]

Q4) a) What are B-spline curves? Explain convex hull property of B-spline curve. [6]

b) Explain the ordered-dither halftoning method to generate different intensity variations. [6]

P.T.O.

- Q5)** a) Explain Z-buffer algorithm. State advantages and disadvantages. [6]
b) Explain the methods for controlling motion in computer animation. [6]
- Q6)** a) Explain specular reflection model for calculating surface intensity at a given point. [7]
b) What is Morphing? Explain the process of morphing. [6]



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T.E. (Computer Science and Engineering) (Semester-V)
(Theory) Examination, May - 2017
SYSTEM PROGRAMMING
Sub. Code : 66294

Day and Date : Tuesday, 16-05-2017

Total Marks : 100

Time : 10.00 a.m. to 1.00 p.m.

- Instructions :**
- 1) Question No.4 and 8 are compulsory.
 - 2) Answer any two questions from Question No.1, 2 and 3.
 - 3) Answer any two questions from Question No.5, 6 and 7
 - 4) Figures to right indicate full marks.

- Q1)** a) What is meant by intermediate representation of program? Explain in detail. [8]
b) Discuss language processing activities in detail. [8]
- Q2)** a) Write in detail pass structure of an assembler. [8]
b) Explain Pass I of a two pass assembler. [8]
- Q3)** a) State and explain various advanced macro facilities with an example each. [8]
b) Discuss in detail, along with sketch/block diagram, the design of a macro preprocessor. [8]
- Q4)** Write a short notes on: (6 marks each) [18]
a) LEX and YACC LPDT's.
b) Assembly Language Statements.
c) Macro Definition and Call.

P.T.O.

- Q5)** a) What is program Relocation and how it is performed? [8]
b) Discuss in detail; steps in program Development. [8]
- Q6)** a) Explain Code Optimization in compilation. Brief about Local & Global Code optimization. [8]
b) Explain Compilation of expression. [8]
- Q7)** a) Explain structure & design of an Editor with neat Diagram. [8]
b) Write and Explain Linking Algorithm. [8]
- Q8)** Write a short notes on (Solve any three 6 mark each). [18]
a) Loader in MS-DOS.
b) Command Dialog.
c) Parameter passing mechanism.
d) Programming Environments.



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T.E. (Computer Science and Engineering) (Part-III)
(Semester-V) (Revised) Examination, May - 2017
OBJECT ORIENTED MODELING AND DESIGN (Theory)
Sub. Code : 66295

Day and Date : Wednesday, 17-05-2017
Time : 9.00 a.m. to 11.00 a.m.

Total Marks : 50

- Instructions :**
- 1) **All the Questions are compulsory, provided internal options in each question.**
 - 2) **Figures to the right indicate full marks.**

- Q1)** Attempt any two questions out of three. **[2×7=14]**
- a) Explain advanced link and association concepts.
 - b) Explain scenario and event trace diagram. Draw event trace diagram for phone call.
 - c) Explain breaking a system into subsystem with respect to system design.
- Q2)** Attempt any two questions out of three. **[2×6=12]**
- a) What is model? Explain the purpose of modeling.
 - b) Explain data flow diagram with example.
 - c) List and explain the steps involved in designing algorithms.
- Q3)** Attempt any two questions out of three. **[2×6=12]**
- a) Explain adornments that apply to associations.
 - b) Explain interaction diagram, its contents and common uses.
 - c) Write note on-deployment diagrams.
- Q4)** Attempt any two questions out of three. **[2×6=12]**
- a) Explain different UML diagrams with their purpose.
 - b) What is use case diagram? Draw use case diagram for credit card validation system.
 - c) Explain types of components and standard stereotypes that apply to components.



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T.E. (Computer Science & Engineering) (Part-III)
(Semester-V) (Revised) Examination, May - 2017
COMPUTER ALGORITHM
Sub. Code : 66296

Day and Date : Thursday, 18-05-2017
Time : 10.00 a.m. to 1.00 p.m.

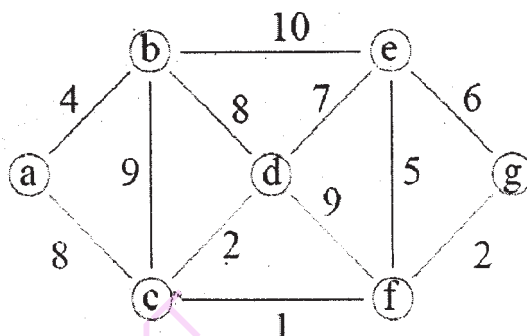
Total Marks : 100

- Instructions :**
- 1) Questions 4 and 8 are compulsory.
 - 2) Attempt any four questions from remaining questions.
 - 3) Figures to the right indicate full marks.
 - 4) Assume suitable data wherever necessary.

- Q1) a)** Explain space and time complexity with suitable example. [8]
b) Find an Optimal Solution to the Knapsack instance, $n=4$, $m=30$, profit $(p_1, p_2, p_3, p_4) = (27, 20, 24, 15)$ and weights $(w_1, w_2, w_3, w_4) = (15, 10, 18, 10)$. [8]

- Q2) a)** Explain Merge Sort Algorithm with example. Show that its complexity is $O(n \log n)$. [8]
b) Let $n=4$ and probabilities with which identifiers $(a_1, a_2, a_3, a_4) = (\text{do, if, int, while})$ are searched are - $p(1:4) = (4, 4, 2, 2)$ and probabilities of unsuccessful searches are $q(0:4) = (3, 4, 1, 1, 1)$. Design optimal binary search tree using dynamic programming. [8]

- Q3) a)** Apply Prim's and Kruskal's Algorithm to find minimum Spanning Tree for following graph. [8]



Connected graph

- b)** Explain solution to all pair shortest path problem using dynamic programming. [8]

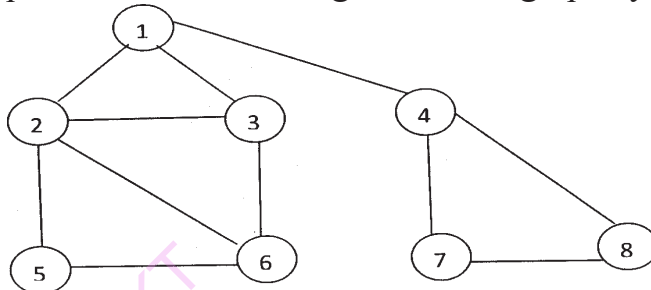
P.T.O.

Q4) Write short note on (Solve any three): [18]

- a) Randomized Algorithm
- b) Binary Search Algorithm
- c) Huffman Code
- d) 0/1 Knapsack Problem

Q5) a) Show that CNF satisfiability is reducible to directed Hamiltonian cycle. [8]
 b) What are connected components and spanning trees? How is BFS algorithm used to find whether graph is connected or not. [8]

Q6) a) Explain solution to Graph Coloring problem using backtracking. [8]
 b) Explain how to find Articulation point using DFS. Identify articulation points for the following undirected graph by using DFS spanning tree. [8]



Q7) a) Explain backtracking solution to n-Queens problem. [8]
 b) Describe and give example of prefix computational model with PRAM. [8]

Q8) Write short note on: [18]

- a) Define the following terms:
 - i) Deterministic and non-deterministic algorithms
 - ii) Decision and Optimization Problems
 - iii) P and NP Problems
- b) Butterfly Network
- c) MESH Computational Model.



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T.E. (CSE) - I (Semester - V) (Revised)**Examination, May - 2017****NETWORK TECHNOLOGIES****Sub. Code :66297****Day and Date : Friday, 19 - 05 - 2017****Total Marks : 50****Time : 09.00 a.m. to 11.00 a.m.**

- Instructions :**
- 1) **Question No.1 is compulsory.**
 - 2) **Solve any three questions from Q. No. 2 to Q. No. 5.**
 - 3) **Figures to the right indicates full marks.**
 - 4) **Assume data wherever necessary.**

- Q1) a)** What is GSM ? Explain GSM network architecture. [6]
- b) What is BSSID ? How it is useful in WLAN technology. [4]
- c) Explain WEP protocol. [4]
- Q2) a)** Explain sensor node architecture. [4]
- b) Explain the node mobility issue in designing of routing protocols for wireless networks. [3]
- c) Determine the frequency reuse distance for a cell radius of twenty kilometers and a cluster size of 7. [3]
- d) How TDMA time slot is encoded with normal signal burst. [2]
- Q3) a)** What is the role of location updating in GSM ? Explain normal location updating with necessary diagram. [6]
- b) Explain Distribution Station Services (DSS) in WLAN. [4]
- c) What are passive attacks ? Explain any one with example. [2]

P.T.O.

- Q4)** a) What is sensor network ? Explain components of sensor network. [4]
b) Explain induced traffic issue in transport layer protocol design for wireless network. [4]
c) Explain the concept of time division duplex. [4]
- Q5)** a) Draw and explain Bluetooth scatternet architecture. [6]
b) Explain various design goals of a transport layer protocol for wireless network. [6]



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T.E. (CSE) (Prat - VI) (Semester - VI) Examination, April - 2017

COMPILER CONSTRUCTION (New)

Sub. Code : 66858

Day and Date : Wednesday, 26 - 04 - 2017

Total Marks : 50

Time : 02.00 p.m. to 04.00 p.m.

Instructions: 1) All questions are compulsory.

2) Figures to the right indicate full marks.

SECTION - I

Q1) a) Explain how to recognize the tokens. **[4]**

b) Consider the following grammar

$S \rightarrow CC$

$C \rightarrow cC$

$C \rightarrow d$

Find the canonical collection of sets of LR(1) items and construct the action goto table. **[6]**

Q2) a) List and explain various compiler construction tools. **[4]**

b) Write the code for recursive descent parser for the following grammar.

$S \rightarrow AbS$

$A \rightarrow a \mid da$

[6]

OR

b) What are conflicts in Shift-Reduce parser? Explain with the help of an example. **[6]**

Q3) What is Left recursion? Explain elimination of left recursion with example. **[5]**

OR

Explain input buffering in Lexical analysis. Give an example lexeme involving exactly two l's for the given pattern: $(0l+2l+02)^*(1+ \wedge)(1+ 22)$ **[5]**

P.T.O.

SECTION - II

- Q4)** a) Give
- Syntax Tree
 - DAG for the expression $a + a*(b-c) + (b-c)*d$ [4]
- b) What is syntax directed definition? Explain the construction of syntax tree for Expressions using syntax directed definitions with the help of an example. [6]

OR

- b) Write an SDD to show how backpatching can be used to generate three address code for Boolean expressions and flow-of-control statements and explain. [6]
- Q5)** a) Using code generation algorithm, generate the target code for the expression $a = (a-b) + (a-c) + (a-c)$. Also show the values of Register descriptor and address descriptor as code generation progresses. [4]

OR

- a) Explain optimization of basic blocks. [4]
- b) What is peephole optimization? Describe different transformations that are characteristics of Peephole Optimization. [6]
- Q6)** With reference to code generation, what is basic block? Describe an algorithm to partition, three address sequences into basic blocks. [5]

OR

Explain Loops in flow graphs. [5]

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SL - 1018

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T.E. (CSE) (Semester - VI) (Part -III) (Revised) (New)

Examination, April - 2017

OPERATING SYSTEM-II

Sub. Code : 66859

Day and Date : Friday, 28 - 04 - 2017

Total Marks : 100

Time : 02.00 p.m. to 05.00 p.m.

- Instructions :**
- 1) **Question No. 1 and Question No. 8 are compulsory. Solve any four questions from remaining questions.**
 - 2) **Figures to the right indicate full marks.**
 - 3) **Clearly mention your assumed data wherever necessary.**

Q1) a) With a neat block diagram of the system kernel, explain architecture of the Unix system [9]

b) With a neat schematic of hash queue headers and free list updates, explain the following scenario for the buffer retrieval: The kernel cannot find the block on the hash queue, so it allocates a buffer from the free list. [9]

Q2) a) Explain the process of conversion of pathname to i-node with algorithm "namei". [8]

b) What is super block? List and explain various fields of super block. [8]

Q3) a) Consider the following program. [8]

```
#include<fcntl.h>
```

```
Main ()
```

```
{
```

```
    int fd1, fd2;
```

```
    char buf1[512],buf2[512];
```

```
    fd1=open("/etc/ passwd", O_RDONLY);
```

```
    fd2=open("/etc/ passwd", O_RDONLY);
```

```
    read(fd1, buf1, sizeof(buf1));
```

```
    read(fd2, buf2, sizeof(buf2));
```

```
}
```

P.T.O.

with the help of above program explain how a process can open a file more than once and read it via different file descriptors.

- b) What are pipes? Explain the algorithm "pipe" for creation of unnamed pipes. [8]

Q4) a) State and explain the algorithm "alloc" for allocating disk blocks. [8]

- b) Explain the mount system call. Draw the file system tree before and after Mount. List various entries of the mount table [8]

Q5) a) Explain in detail process state transitions with a neat diagram. [8]

- b) What is the significance of signals in Unix? Enlist the categories of signals those are defined in system V Unix. [8]

Q6) a) Explain with a diagram, the mapping of process space onto the swap device. [8]

- b) Briefly explain the functions of line disciplines. Explain call sequence and data flow through line discipline. [8]

Q7) a) What is context of a process? Explain with diagram components of the context of the process. [8]

- b) State and explain the algorithm "start" for booting the system. [8]

Q8) Write short note (any three) [3 × 6 = 18]

- a) Process table entries
- b) The shell
- c) ioctl system call
- d) System boot and the init process



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T.E.(Computer Science and Engineering) (Part-III)
(Semester-VI) (Revised) Examination, May - 2017
DATABASE ENGINEERING (Theory)
Sub. Code : 66860

Day and Date : Tuesday, 02-05-2017

Total Marks : 50

Time : 2.00 p.m. to 4.00 p.m.

- Instructions :
- 1) All the questions are compulsory, provided internal options in each question.
 - 2) Figures to the right indicate full marks.

Q1) Attempt any two questions out of three. **[2×7=14]**

- a) Explain Entity-Relationship Model (E-R) in detail.
- b) Write SQL queries to perform given tasks on following schema
 Student (snum: integer, sname: string, major: string, level: string, age: integer)
 Class (cname: string, room: string, fid: integer)
 Enrolled (snum: integer, cname: string)
 Faculty (fid: integer, fname string, deptid: integer)
 - i) Find the names of all classes that meet in room R 128.
 - ii) Find the names of all juniors (Level = JR) who are enrolled in a class taught by I. Teach.
 - iii) Find the names of faculty members who teach in every room in which some class is taught.
 - iv) Print the Level and the average age of students for that Level, for all Levels except JR.
- c) What is closure of set of functional dependencies? Find closure of set of functional dependencies for given set of functional dependencies.
 $\{A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H\}$

P.T.O.

Q2) Attempt any two questions out of three.

[2×6=12]

- a) Explain different levels of data abstraction.
- b) Explain different Data Manipulation Language (DML) Statements.
- c) Explain Fourth Normal Form with example.

Q3) Attempt any two questions out of three.

[2×6=12]

- a) What is data dictionary? Explain Data Dictionary Storage.
- b) Explain Timestamp based Protocol for Concurrency Control.
- c) What are the different types of failure?

Q4) Attempt any two questions out of three.

[2×6=12]

- a) Explain Dynamic Hashing with Example.
- b) Explain Lock-based Protocol for Concurrency Control with advantages and disadvantages.
- c) Explain the use of Shadow Paging in Recovery with example.

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T.E.(Computer Science and Engineering) (Semester-VI)
Examination, May - 2017
STORAGE NETWORKS
Sub. Code : 66861

Day and Date : Thursday, 04-05-2017

Total Marks : 100

Time : 2.00 p.m. to 5.00 p.m.

- Instructions :**
- 1) **Figures to the right indicate full marks.**
 - 2) **Question no. 4 & Question no. 8 are compulsory.**
 - 3) **Attempt any Two Questions from Q.1 to Q.3 and from Q.5 to Q.7.**

- Q1) a)** Explain key characteristics of Data Center Elements? **[8]**
- b) The average I/O size of an application is 64 KB. The following specifications are available from the disk manufacture: average seek time = 5 ms, 7,200 rpm, transfer rate = 40 MB/s. Determine the maximum IOPS that could be performed with the disk for this application. **[8]**
- Q2) a)** Describe iSCSI Protocol Stack? **[8]**
- b) List out the benefits of NAS? **[8]**
- Q3) a)** Explain the different Fibre Channel Topologies? **[8]**
- b) An application has 1,000 heavy users at a peak of 2 IOPS each and 2,000 typical users at a peak of 1 IOPS each, with a read/write ratio of 2:1. It is estimated that the application also experiences an overhead of 20 percent for other workloads. Calculate the IOPS requirement for RAID 1, RAID 3, RAID 5, and RAID 6.? **[8]**
- Q4) Write a note on (Attempt any Three)** **[18]**
- a) Components of Intelligent Storage System.
 - b) FC-2: Data transfer.
 - c) Components of NAS.
 - d) Direct Access File System (DAFS).

P.T.O.

- Q5)** a) Demonstrate Asymmetric storage virtualization with diagram? [8]
b) Discuss the limitations of non-virtualized storage networks? [8]
- Q6)** a) Explain BC Planning Lifecycle? [8]
b) Illustrate the various business/technical considerations for implementing a backup solution? [8]
- Q7)** a) Explain LVM-Based Replication with clean & neat diagram? [8]
b) Describe Backup Granularity? [8]
- Q8)** Write a note on (Attempt any Three) [18]
a) Uses of Local Replicas.
b) Restore & Restart Consideration in backup.
c) Virtualization in I/O path.
d) Storage security framework.



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T.E.(C.S.E) (Part-II) (Semester-VI)
Examination, May - 2017
INFORMATION SECURITY (Theory)
Sub. Code : 66862

Day and Date : Saturday, 06-05-2017

Total Marks : 50

Time : 2.00 p.m. to 4.00 p.m.

Instructions :

- 1) Q.3 and Q.6 are compulsory.
- 2) Solve any one out of Q.1 and Q.2, also solve any one from Q.4 and Q.5.

Q1) a) List and explain the security mechanisms defined in X.800. [6]
 b) Explain key generation in DES algorithm with neat diagram. [6]

Q2) a) Explain the RSA algorithm. Perform encryption & decryption using RSA algorithm if $p = 5$, $q = 11$, $e = 3$, $M = 9$ [6]
 b) State the requirements for a Hash function. Explain Simple Hash Functions. [6]

Q3) a) Compare [6]
 i) Block Cipher and Stream Cipher
 ii) Confusion and Diffusion
 b) Explain Diffie-Hellman key exchange. Also explain in detail man-in-the-middle attack on Diffie-Hellman Key exchange. [7]

Q4) a) Explain Digital Signature Standard using Digital signature algorithm (DSA). [6]
 b) What are the differences between Kerberos version 4 and version 5? [7]

P.T.O.

- Q5)** a) Draw the SSL protocol stack. Explain its architecture. [6]
b) Describe the different types of Intrusion detection system. [6]

Q6) Write a short note on any two. [12]

- a) S/MIME
b) SET Participants
c) Unix Password scheme

