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Total No. of Pages : 2

T.E. (CSE) (Part - II) (Semester - VI) Examination, May - 2019
COMPILER CONSTRUCTION (Revised)
Sub. Code : 66858

Day and Date : Monday, 13-05-2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions : 1) All questions are compulsory.

2) Figures to the right indicate full marks.

SECTION - I

Q1) a) Describe the use of DFA for a construction of a lexical analyzer. Illustrate with example. **[4]**

OR

a) Construct finite automata accepting the set of all strings ending with 101 where the Language is defined on {0, 1}. **[4]**

b) Enumerate and describe the different compiler construction tools. **[6]**

Q2) a) Compute the FIRST and FOLLOW sets for the grammar given below **[6]**

$E \rightarrow TE'$

$E' \rightarrow +TE' | \varepsilon$

$T \rightarrow FT'$

$T' \rightarrow *FT' | \varepsilon$

$F \rightarrow (E) | id$

OR

a) Explain different error-recovery techniques used in syntax analysis. **[6]**

b) Explain Specification of Tokens in Lexical Analysis. **[4]**

Q3) What are features of LR parser? Write the LR parsing algorithm. **[5]**

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SECTION - II

Q4) a) What are S attributed definitions? Explain with the help of an example. **[6]**

OR

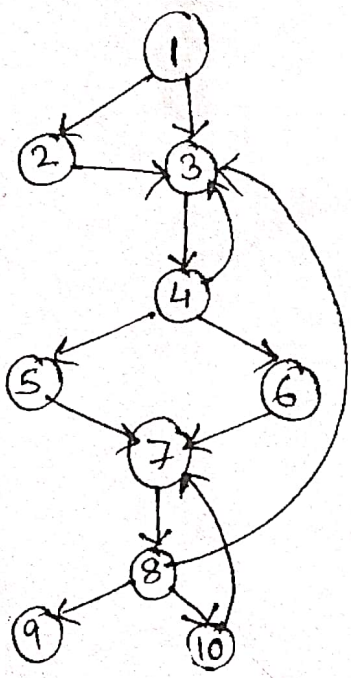
a) What is backpatching? Explain it with a suitable SDD. **[6]**

b) Generate three address code for the following block : **[4]**

a = b * (c + d)

e = ((a + b) * (a + c))

Q5) a) What is a dominator tree? Draw the dominator tree for the given flow graph. **[6]**



OR

a) What is peephole optimization? Describe different characteristics of peep-hole Optimization. **[6]**

b) Discuss different issues in design of code generator. **[4]**

Q6) What is a basic block? Draw DAG for the given basic block **[5]**

a=b+c

b=b–d

c=c+d

e=b+c

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Total No. of Pages : 2

T.E. (Computer Science and Engg.) (Semester - V) (Revised) Examination, May - 2019
NETWORK TECHNOLOGIES
Sub. Code : 66297

Day and Date :Wednesday, 15 - 05 - 2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions:
1) Q. 1 is compulsory.
2) Attempt any three questions from Q.2to Q.5.
3) Figures to the right indicate full marks.
4) Assume suitable data if necessary.

Q1) a) Explain broadcast and common control channels of GSM. **[6]**

b) Explain IEEE 802.11 MAC frame format. **[4]**

c) Explain design goals of MAC protocol for AD hoc wireless network. **[4]**

Q2) a) Explain the following GSM Identities.

i) MSISDN

ii) IMSI

iii) IMEI **[6]**

b) What is TDD? Explain Bluetooth multislot packet transmission. **[6]**

Q3) a) Explain MAC layer operation of IEEE 802.11.

i) Distributed control function.

ii) Point coordination function. **[6]**

b) Explain the following physical links used in Bluetooth.

i) Asynchronous connectionless link.

ii) Synchronous connection oriented link. **[6]**

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Q4) a) Explain weaknesses in WEP scheme. **[6]**

b) What are the applications of wireless sensor networks? **[6]**

Q5) a) Write a note on VPN. **[6]**

b) Explain the architecture of sensor node. **[6]**

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T.E. (CSE) (Part - III) (Semester - VI) (Revised) (New) Examination, May - 2019

OPERATING SYSTEM - II

Sub. Code : 66859

Day and Date : Wednesday, 15 - 05 - 2019 **Total Marks : 100**

Time : 10.00 a.m. to 01.00 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) List and explain major characteristics of the Unix file 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 finds the block on the hash queue, but its buffer is currently busy. **[9]**

Q2) a) List various fields of disk modes. Also explain algorithm "iget" for allocation of in-core inodes. **[8]**

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

Q3) a) Consider the following program.

```
#include<fcntl.h>
main()
{   int fdl, fd2;
    char bufl[512], buf2[512];
    fd1=open("/etc/passwd",O_RDONLY);
    fd2=open("/etc/passwd", O_RDONLY);
    read(fdl, bufl, sizeof(bufl));
    read(fd2, buf2, sizeof(buf2));
}
```

With the help of above program explain how a process can open a file more than once and read it via different file descriptors. **[8]**

b) What is the use of dup system call? Explain with a diagram how data structures are updated after the use of Dup. **[8]**

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Q4) a) State and explain the algorithm "bread" for reading a disk block. Also focus on advantages and disadvantages of the buffer cahce. **[8]**

b) Explain the use of chown and chmod system calls. Discuss issues in file system maintenance in brief. **[8]**

Q5) a) Which are major regions in virtual address space of a process? Explain in detail with a neat diagram. **[8]**

b) State and explain the algorithm "psig" for handling signals. **[8]**

Q6) a) Explain the scenario of swapping process out in detail. **[8]**

b) Explain the procedure of saving of the context with respect to interrupts and exceptions. **[8]**

Q7) a) What is the use of fork system call? Explain the sequence of operations that kernel executes for fork. **[8]**

b) What are streams? Explain the process of pushing a module on a stream. **[8]**

Q8) Write a short note (any three) **[18]**

a) u area and its fields.

b) Region table.

c) Functions of clock interrupt handler.

d) Demand paging.

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Total No. of Pages : 2

T.E. (Computer Science and Engineering) (Semester - VI) (Revised) Examination, May - 2019

Database Engineering

Sub. Code : 66860

Day and Date : Friday, 17 - 05 - 2019 **Total Marks : 50**

Time : 09.30 a.m. to 11.30 a.m.

Instructions :
1) **Attempt any two questions from question no. 1, 2 and 3.**
2) **Attempt any two questions from question no. 4, 5 and 6.**
3) **Figures to the right indicate full marks.**

Q1) a) What are the different levels of data abstraction? **[6]**

b) Explain the following : **[7]**

i) Super key ii) Primary Key

iii) Candidate Key iv) Foreign Key

Q2) a) Write SQL queries to perform given tasks on following schema. **[6]**

Sailors(sid: integer, sname: string, rating: integer, age: real)

Boats(bid: integer, bname: string, color: string)

Reserves(sid: integer, bid: integer)

i) Find the names of sailors who have reserved at least one boat

ii) Find the names of sailors who have not reserved a red boat

iii) Find the name and age of the oldest sailor

iv) Find the age of youngest sailor who is at least 18 years old

b) Explain different data models. **[6]**

Q3) a) Find closure and canonical cover for given set of functional dependencies. **[6]**

$\{A \rightarrow B, A \rightarrow C, CG \rightarrow H, CG \rightarrow I, B \rightarrow H\}$

b) Compare 3NF with BCNF. **[6]**

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Q4) a) Compare ordered indexing with hashing. Give index definition in SQL. **[6]**

b) What are the different physical storage media used for data storage? Compare all with respect to performance and cost. **[6]**

Q5) a) Explain two phase locking protocol with its variants. **[6]**

b) Explain conflict serializability and view serializability. **[6]**

Q6) a) Explain timestamp ordering protocol for concurrency control. **[6]**

b) Explain log based recovery mechanism. **[7]**

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Total No. of Pages : 1

T.E. Computer Science and Engineering (Semester - V) (Revised) Examination, May - 2019

OBJECT ORIENTED MODELING AND DESIGN

Sub. Code : 66295

Day and Date : Monday, 13-05-2019 **Total Marks : 50**

Time : 02.30 p.m. to 04.30 p.m.

Instructions : 1) **All the questions are compulsory.**
2) **Figures to the right indicate full marks.**

Q1) Answer any two :

a) Explain the three models of OMT. **[7]**

b) Draw top level data flow diagram for ATM. Expand ATM performed transaction process to low level data flow diagram. **[7]**

c) Explain in detail actions taken by designer in design optimization. **[7]**

Q2) Answer any two :

a) Write note on : **[6]**
i) Metadata.
ii) Candidate key.

b) Draw and explain the state diagram for phone line. **[6]**

c) Explain how association can be used in object design. **[6]**

Q3) Answer any two :

a) Explain adornments that apply to associations. **[6]**

b) Explain include and Extend relationship in use case diagram with suitable example. **[6]**

c) Explain deployment diagram, its contents and uses. **[6]**

Q4) Answer any two :

a) Explain different UML diagrams with their purpose. **[6]**

b) What is component? Give difference between components and classes. **[6]**

c) Write a note on frameworks. **[6]**

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T.E. (Computer Science and Engg.) (Semester - V)

Examination, April - 2019

SYSTEM PROGRAMMING

Sub. Code : 66294

Day and Date : Saturday, 27 - 04 - 2019 **Total Marks : 100**

Time : 02.30 p.m. to 05.30 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 Language Processor? Explain in detail Language Processing Activities. **[8]**

b) Discuss in detail fundamentals of Language specifications. **[8]**

Q2) a) Explain Intermediate Representation with an illustrative example. **[8]**

b) How the problem of Forward Reference is resolved in Assembler? **[8]**

Q3) a) Write about MACRO Definition and Call with syntax and Example. **[8]**

b) Discuss in detail, along with sketch/block diagram, the design of a macro Preprocessor. **[8]**

Q4) Write short note on : **[18]**

a) Toy Compiler.

b) Advanced macro facilities.

c) LEX and YACC LPDT's.

Q5) a) What is the Role of Operand Descriptor in the choice of instruction in target Code of Toy code generator. **[8]**

b) Discuss in detail with example; Triples and Quadruples. **[8]**

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Q6) a) Explain Memory Allocation in Block Structured Language. **[8]**

b) Write in detail; Execution of Overlay structured programs. **[8]**

Q7) a) What is Relocation? Discuss Role of Relocation factor to perform Relocation. **[8]**

b) Give the Structure of UI with neat Diagram. **[8]**

Q8) Write short note on: (Solve any three) **[18]**

a) Steps in Program Development.

b) Debug Monitor.

c) Compilation of Control Structures.

d) Text Editor

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T.E. (Computer Science & Engineering) (Semester - V)
Examination, April - 2019
COMPUTER GRAPHICS
Sub. Code : 66293

Day and Date :Thursday, 25 - 04 - 2019 **Total Marks : 50**
Time : 02.30 p.m. to 04.30 p.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) Derive the transformation matrix for reflecting the object through an arbitrary plane in a three dimensional space. **[6]**

b) What is scan conversion. Explain real time scan conversion using sorted active edge list method. **[6]**

Q2) a) Explain Bresenham' s incremental circle generation algorithm for first quadrant. **[6]**

b) Describe the process of window to viewport transformation. **[6]**

Q3) a) Consider the clipping window $X_L = -1$, $X_R = +1$, $Y_B = -1$ and $Y_T = +1$ and the line From $P_1(-3/2,-1)$ to $P_2(3/2,2)$. Clip the line using Sutherland cohen subdivison algorithm. **[7]**

b) Explain Orthographic projections in detail. **[6]**

Q4) a) Explain the Warnock algorithm with example. **[6]**

b) Explain the methods for controlling motion in computer animation. **[6]**

Q5) a) What is halftoning? Explain halftone approximation method for a 3 by 3 pixel grid on a bi-level system. **[6]**

b) Explain Gouraud Shading method for rendering a polygon surface. **[6]**

Q6) a) Given B0[1,1], B1[2, 3], B2[4 ,3], B3[3, 1] the vertices of a Bezier polygon, determine points on the curve for t = 0, 0.35, 0.85,1. **[7]**

b) What is Animation sequence? Explain its four components. **[6]**

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T.E. (CSE) (Part - I) (Semester - V) (Revised) Examination, May - 2019

COMPUTER ALGORITHM

Sub. Code : 66296

Day and Date : Monday, 06 - 05 - 2019 **Total Marks : 100**

Time : 02.30 p.m. to 05.30 p.m.

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) What is algorithm? Explain different characteristics of algorithm. **[8]**

b) Prove that the average case complexity of Quick Sort is O(nlogn). **[8]**

Q2) a) Give solution to Optimal Merge Pattern using greedy solution. **[8]**

b) Solve the following instance of reliability design problem with 3 stages. Cost of the system is 175. Cost of device in stage 1 is 40, stage 2 is 25 and stage 3 is 35. Reliabilities for the three devices are 0.75, 0.85, and 0.6 respectively. Number of devices available in stage 1 are 3, stage 2 are 3, and stage 3 are 2. **[8]**

Q3) a) Find optimal solution to given Knapsack problem using Greedy method.
N = 6, m = 20
(P1, P2, P3, P4, P5, P6): (12, 5, 15, 7, 6, 18) (w1, w2, w3, w4,w5,w6): (2, 3, 5, 7, 1, 5). **[8]**

b) Explain travelling sales person problem to find tour of minimum cost. **[8]**

Q4) Write short note on : **[18]**

a) Difference between Priori and Posteriori analysis.

b) Single Source Shortest Path.

c) Greedy solution for minimum cost spanning trees.

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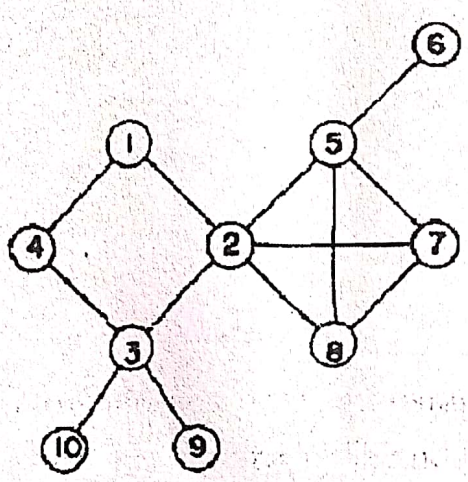
Q5) a) Explain solution to knapsack problem using back-tracking. **[8]**

b) Explain packet routing in square mesh and linear array. **[8]**

Q6) a) How DFS can be used to find an articulation point. Identify articulation points for the following undirected graph by using DFS spanning tree. **[8]**



b) Describe and give example of prefix computational model with PRAM. **[8]**

Q7) a) Draw and explain permutation tree for 4 queen problem using back-tracking. **[8]**

b) What is Non deterministic algorithm? Explain non deterministic searching and sorting algorithm. **[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) Game tree

c) Data concentration with mesh and Hypercube.

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T.E. (Computer Science & Engineering) (Part - III) (Semester - VI) Examination, May - 2019

STORAGE NETWORKS (New)

Sub. Code : 66861

Day and Date : Tuesday, 21 - 05 - 2019 **Total Marks : 100**

Time : 10.00 a.m. to 01.00 p.m.

Instructions :
1) **Question No.4 and 8 is compulsory.**
2) **Attempt any two questions from question no. 1, 2 and 3.**
3) **Attempt any two questions from question no. 5, 6 and 7.**
4) **Figures to the right indicate full marks.**

Q1) a) Explain different Components of Storage System Environment. **[8]**

b) Consider a disk I/O system in which an I/O request arrives at the rate of 100 IOPS. The disk service time is 8ms. Compute the following: **[8]**

i) Utilization of I/O controller

ii) Response Time

iii) Average Queue Size

iv) Total time spent by a request in a queue

Q2) a) Explain FC-1:8b/10b encoding, ordered sets and link control protocol. **[8]**

b) Explain iSCSI Discovery and iSCSI Names. **[8]**

Q3) a) Explain the different components of NAS. **[8]**

b) List and Explain factors affecting NAS Performance and Availability. **[8]**

Q4) Write a short note on (Any Three) : **[3 × 6 = 18]**

a) Disk Drive Interfaces in DAS

b) Hot Spares

c) SAN Evolution

d) NAS File-Sharing Protocols

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Q5) a) Explain Asymmetric storage virtualization with advantages and disadvantages. [8]

b) Explain Storage virtualization on Block Level and File Level. [8]

Q6) a) Explain Information Availability in detail. [8]

b) Explain Backup and Restore operations with suitable diagram. [8]

Q7) a) Explain Storage Array-based Replication. [8]

b) Explain Restore and Restart Considerations. [8]

Q8) Write a short note on (Any Three) : **[3 × 6 = 18]**

a) Storage virtualization and its objectives

b) BC Technology Solutions

c) BC Planning Lifecycle

d) Uses of Local Replicas

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