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**T.E. (Computer Science and Engg.) (Semester - V)  
Examination, November - 2017  
SYSTEM PROGRAMMING  
Sub. Code: 66294**

**Day and Date :Saturday, 11 - 11 - 2017  
Time :10.00 a.m. to 1.00 p.m.**

**Total Marks : 100**

- 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) Explain the fundamentals of language specification. [8]**  
b) Explain Pass I of a two pass assembler. [8]
- Q2) a) State and discuss the advanced macro facilities with an example each.[8]**  
b) Discuss language processing activities in detail. [8]
- Q3) a) List and discuss elements of assembly language programming. [8]**  
b) Explain different data structures of the macro preprocessor with its contents in detail. [8]
- Q4) Write a short note on (6 marks each): [18]**
- a) Macro Expansion.
  - b) Intermediate Code Forms.
  - c) LEX and YACC LPDT's.

**P.T.O.**

- Q5)** a) Explain use of Interpreters. What are Pure and Impure Interpreters? [8]  
b) Explain code optimization in compilation. Brief about Local and Global code optimization. [8]
- Q6)** a) Give the Structure of UI with neat diagram. [8]  
b) Write and Explain Linking Algorithm. [8]
- Q7)** a) Explain about the Tools used in Enhancement of Program Performance.[8]  
b) What is Command Dialog? Explain ways to implement Command Dialogs. [8]
- Q8)** Write a short note on: (Solve any three: each carries 6 marks.) [18]  
a) Program Development.  
b) Two passes of Linker.  
c) Program Relocation.  
d) Memory Allocation in Compilers.



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**T.E. (Computer Science & Engineering) (Semester-V)  
(Revised) Examination, November - 2017  
COMPUTER GRAPHICS (Theory)  
Sub. Code : 66293**

Day and Date : Thursday, 09-11-2017

Total Marks : 50

Time : 9.30 a.m. to 11.30 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)** What is scaling? Explain in detail 2D scaling transformation. [6]
- b) Write and explain Bresenham's line drawing algorithm in first octant. [6]
- Q2) a)** Explain in detail the rotation of object about the arbitrary axis in space. [6]
- b) Explain Run Length Encoding (RLE) scan conversion method. [6]
- Q3) a)** Explain midpoint subdivision algorithm for line clipping with example. [7]
- b) Write a note on windowing and view porting. [6]
- Q4) a)** Explain parametric representation of cubic spline curve segment. [6]
- b) What is key frame animation? Explain different methods of key frame animation. [6]

**P.T.O.**

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- Q5) a)** Explain diffuse reflection model for calculating surface intensity at a given point. [6]
- b) What is halftoning. Explain halftone approximation method for a 3 by 3 pixel grid on a bilevel system. [6]
- Q6) a)** Explain Warnock algorithm for hidden surface removal. [7]
- b) What is warping? Explain feature-based image warping method. [6]



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**T.E. (CSE) (Semester - V) (Revised)**  
**Examination, November - 2017**  
**NETWORK TECHNOLOGIES**  
**Sub. Code : 66297**

**Day and Date : Wednesday, 22 - 11 - 2017**

**Total Marks : 50**

**Time : 9.30 a.m. to 11.30 a.m.**

- Instructions :**
- 1) **Question Number One is compulsory.**
  - 2) **Attempt any THREE questions from Question No. TWO to FIVE.**
  - 3) **Figures to the right indicate full marks.**
  - 4) **Assume data wherever necessary.**

- Q1) a)** Explain issues in designing a MAC protocol for AD HOC Wireless Networks. **[6]**
- b) Explain FCCH and SCH channels in GSM operation. **[4]**
- c) What is VPN? Explain VPN protocols. **[4]**
- Q2) a)** What is GSM? Explain the role of HLR and VLR in GSM service operations. **[6]**
- b) What is Handoff operations? Explain inter BSC handoff. **[6]**
- Q3) a)** What is WLAN? Explain various standards in WLAN defined by IEEE. **[6]**
- b) Explain sensor network node architecture. **[6]**
- Q4) a)** Draw and explain Bluetooth piconet architecture. **[4]**
- b) Explain WEP protocol. **[4]**
- c) How sensor network is useful in environmental monitoring. **[4]**

**P.T.O.**

- Q5) a)** What is location updating in GSM. Explain various steps involved in normal location updating. [6]
- b) Compare WLAN and WPAN networks. [3]
- c) Explain necessity of security in wireless network. [3]



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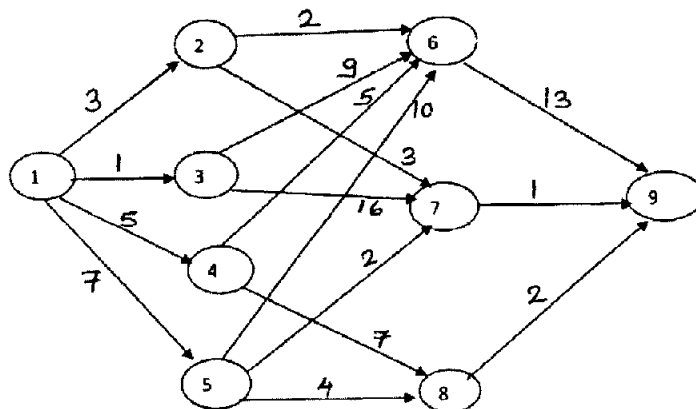
**T.E. (CSE) (Part - III) (Semester - V) (Revised)**  
**Examination, November - 2017**  
**COMPUTER ALGORITHMS**  
**Sub. Code: 66296**

**Day and Date :Monday, 20 - 11 - 2017**  
**Time :10.00 a.m. to 1.00 p.m.**

**Total Marks : 100**

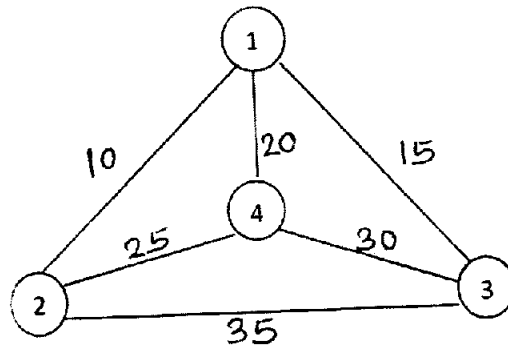
- Instructions :**
- 1) Question No. 4 and 8 are compulsory.
  - 2) Attempt any four questions from remaining questions.
  - 3) Figures to the right indicate full marks.
  - 4) Assume suitable data wherever necessary.

- Q1) a)** Explain Job sequencing with deadlines. Also calculate the optimal solution for  $n=5$  jobs, where profits  $(p_1, p_2, p_3, p_4, p_5) = (100, 19, 27, 25, 15)$  and deadlines  $(d_1, d_2, d_3, d_4, d_5) = (2, 1, 2, 1, 3)$ . **[8]**
- b) Prove that complexity of quick sort in best case is  $O(n \log n)$  and that in worst case is  $O(n^2)$ . **[8]**
- Q2) a)** Give solution to Knapsack problem using greedy solution. **[8]**
- b) Find the minimum cost path from  $s$  to  $t$  in the multistage graph given below using forward approach. **[8]**



**P.T.O.**

- Q3) a) Solve the instance of Travelling sales person problem to find tour of minimum cost. [8]



- b) What is an Algorithm? What are the characteristics of the algorithm? [8]

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

- a) Difference between Priori and Posteriori analysis.
- b) Randomized algorithms
- c) Knapsack 0/1
- d) Greedy Method

- Q5) a) Explain breadth first search and depth first search with suitable example. [8]

- b) Explain solution to knapsack problem using back-tracking. [8]

- Q6) a) What is node cover decision problem? Show that clique decision problem is reducible to node cover decision problem. [8]

- b) Explain non deterministic satisfiability and non deterministic clique problem. [8]



**Q7) a)** What is deterministic list ranking problem in PRAM? Explain with example. **[8]**

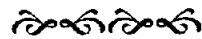
b) Explain prefix sum computation with the help of Mesh and Hypercube. **[8]**

**Q8) Write short note on:** **[18]**

a) Hamiltonian Cycle

b) Articulation Point

c) Butterfly network.





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

Day and Date : Tuesday, 14-11-2017

Total Marks : 50

Time : 9.30 a.m. to 11.30 a.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.**

**[7 × 2 = 14]**

- a) Explain OMT models in detail.
- b) Explain the following terms
  - i) State generalization
  - ii) Control Flows
- c) Write note on - Design associations

**Q2) Attempt any two questions out of three.**

**[6 × 2 = 12]**

- a) Explain the following terms.
  - i) Generalization
  - ii) Class Descriptors
- b) Draw and explain Event trace diagram for ATM Scenario.
- c) Explain the impacts of Object Oriented Approach.

**P.T.O.**

**Q3)** Attempt any two questions out of three.

**[6 × 2 = 12]**

- a) Explain Structural things of UML.
- b) Explain kinds of events with respect to behavioural modeling.
- c) Explain deployment diagram, its contents and uses.

**Q4)** Attempt any two questions out of three.

**[6 × 2 = 12]**

- a) Explain class diagram, its properties, contents and common uses.
- b) Explain following terms with respect to activity diagram.
  - i) Action states
  - ii) Transitions
  - iii) Branching
- c) Write a note on - frameworks.



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**T.E. (CSE) (Part - III) (Semester - VI) (Revised) (Theory)**  
**Examination, November - 2017**  
**COMPILER CONSTRUCTION**  
**Sub. Code: 66858**

Day and Date : Wednesday, 01 - 11 - 2017

Total Marks : 50

Time : 2.30 p.m. to 4.30. p.m.

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

**SECTION-I**

**Q1) a) How to specify and recognize the Tokens. [6]**

OR

List and describe different Cousins of Compiler. [6]

b) Describe Tokens Patterns and Lexeme. [4]

**Q2) a) Explain the Role of Lexical analyzer. [6]**

OR

What are the features of LR Parser. Write the algorithm for LR parsing. [6]

b) Explain Removing Left recursion and Left factoring of Grammar with the help of example. [4]

**Q3) Write an algorithm for operator precedence parsing and explain. [5]**

**P.T.O.**

**SECTION-II**

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

OR

Define Dependency Graph. Describe methods for evaluating the semantic rules. [6]

b) What are the principle sources of code optimization? [4]

**Q5) a)** What is basic block? Give an algorithm to convert Three Address Statements into basic blocks with example. [6]

OR

What is Backpatching? Write the SDD that uses backpatching for Intermediated code generation of Boolean expressions and Flow of control statements. [6]

b) Explain various transformations on Basic Blocks. [4]

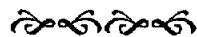
**Q6)** Draw DAG for basic block: [5]

$$a = b + c$$

$$b = a - d$$

$$c = b + c$$

$$d = a - d$$



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**T.E. (CSE) (Part -III) (Semester - VI) (Revised) (Theory)**  
**Examination, November - 2017**  
**DATABASE ENGINEERING**  
**Sub. Code:66860**

**Day and Date :Friday, 03 - 11 - 2017**  
**Time :2.30 p.m. to 4.30 p.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) Give advantages and disadvantages of DBMS
- b) Write SQL queries to perform given tasks on following schema  
Sailors (sid: integer, sname: string, rating: integer, age: real)  
Boats (bid: integer, bname: string, color: string)  
Reserves (sid: integer, did: 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.
- c) What is functional dependency? Give different types of functional dependencies.

**P.T.O.**

Q2) Attempt any two questions out of three.

[2×6=12]

- a) Compare database systems with traditional file based systems.
- b) Explain different Data Definition Language (DDL) Statements.
- c) Explain Third Normal Form and Boyce-Codd Normal Form.

Q3) Attempt any two questions out of three.

[2×6=12]

- a) What are the different physical storage media used for data storage?
- b) Explain Two-Phase Locking Protocol for Concurrency Control.
- c) Explain how records can be organized in files.

4) Attempt any two questions out of three.

[2×6=12]

- a) Compare Dense and Sparse indices
- b) Explain Optimistic Concurrency Control Mechanism.
- c) Explain Log-based Recovery Mechanism.

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**T.E. (Computer Science and Engineering) - II (Semester - VI)**  
**Examination, November - 2017**  
**OPERATING SYSTEM-II**  
**Sub. Code : 66859**

Day and Date : Thursday, 02 - 11 - 2017

Total Marks : 100

Time : 2.30 p.m. to 5.30 p.m.

- Instructions :
- 1) Figures to the right indicate full marks.
  - 2) Solve any two questions from Q.1 to Q.3.
  - 3) Solve any two questions from Q.4 to Q.6.

- Q1)** a) Explain the architecture of UNIX System Kernel. [8]  
b) Explain scenarios for retrieval of a buffer from the buffer cache. [10]  
c) What is Inode? List Fields from disk inode. [7]
- Q2)** a) Calculate the Maximum size of a file in the UNIX system, if disk block size is 512 byte and a block is identified by 32 bit integer. [8]  
b) What is remembered inode? How is it useful in inode assignment to a file? [8]  
c) Explain Following System calls: [9]  
i) Open.  
ii) Read.  
iii) Pipe.
- Q3)** a) Explain the use of User File Descriptor Table, File Table and Inode Table in UNIX File system. [8]  
b) Explain bwrite algorithm. [7]  
c) What is Super Block? List fields from the Super Block. [5]  
d) Explain the structure of a directory file in UNIX. [5]

**P.T.O.**

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- Q4)** a) Explain the context of a process. [8]  
b) Explain the process state transition in UNIX. [8]  
c) Explain the algorithm for handling the interrupt. [9]
- Q5)** a) What is a signal? Explain checking and handling of the signal. [8]  
b) Explain the real and effective user ID of a process. [9]  
c) Explain the process scheduling parameters in UNIX. [8]
- Q6)** a) Explain allocation of Swap space. [8]  
b) Explain page stealer process. [8]  
c) Explain switch table in device driver interface. [9]



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**T.E. (CSE) (Part - II) (Semester - VI) Examination, November - 2017**  
**INFORMATION SECURITY**  
**Sub. Code: 66862**

**Day and Date : Tuesday, 07 - 11 - 2017**

**Total Marks : 50**

**Time : 2.30 p.m. to 4.30 p.m.**

- Instructions :**
- 1) **Q.3 and Q.4 are compulsory.**
  - 2) **Solve any one out of Q.1, Q.2 and Solve any one out of Q.5, Q.6.**
  - 3) **Assume suitable data wherever necessary.**

- Q1) a) List & Explain the security services defined in X.800. [6]**  
 b) Explain the DES encryption with neat block diagram. [6]
- Q2) a) Explain the RSA algorithm. Perform encryption & decryption using RSA algorithm if  $p=11$ ,  $q=3$ ,  $e=11$ ,  $M=7$  [6]**  
 b) What is Message Authentication Code? Explain generation of MAC based on DES. [6]
- Q3) a) Compare [6]**  
 i) Symmetric and Asymmetric ciphers  
 ii) Differential and Linear cryptanalysis  
 b) Explain Diffie-Hellman key exchange algorithm with example. [4]  
 c) Define the following terms w. r. t Avalanche effect: [3]  
 i) SIC  
 ii) BIC  
 iii) GA

**P.T.O.**

- Q4)** a) Explain in detail different approaches to Digital Signatures. [6]  
b) What is certificate format in X.509 standard? [7]
- Q5)** a) Draw general format of PGP message and explain every field of it in detail. [6]  
b) List types of firewalls. Explain any one in detail. [6]
- Q6)** Write a short note on any two. [12]  
a) IPSec Authentication Header.  
b) SET Participants.  
c) Trusted System.



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

**Examination, November - 2017**

**STORAGE NETWORKS**

**Sub. Code : 66861**

**Day and Date : Monday, 06-11-2017**

**Total Marks : 100**

**Time : 2.30 p.m. to 5.30 p.m.**

- Instructions :**
- 1) Attempt any three questions from each section.**
  - 2) Figure to the right indicate full marks.**
  - 3) Assume suitable data wherever necessary.**

**SECTION-I**

- Q1) a) Explain the following in relation with Information Lifecycle. [8]**
- i) Information Lifecycle Management (ILM).**
  - ii) Information Lifecycle Management (ILM) Implementation.**
  - iii) ILM Benefits.**
- b) The average I/O size of an application is 128 KB. The following specifications are available from the disk manufacturer: average seek time = 2.5 ms, 7,200 RPM, transfer rate = 60 MB/s. Determine the maximum IOPS that could be performed with this disk for this application. Taking this case as an example, explain the relationship between disk utilization and IOPS. [8]**

- Q2) a) Describe SCSI Command Model in direct attached storage. [8]**

**OR**

- a) Describe Fibre Channel Architecture. [8]**
- b) Explain Benefits of Network Attached Storage[NAS]. [8]**

**P.T.O.**

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- Q3) a)** Describe FCIP, FCIP Topology and FCIP Performance and Security. [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)** Solve ANY TWO of the following questions.

- a) Describe different RAID levels with its advantages and disadvantages. [9]
- b) Explain Cache component of an Intelligent Storage System with following reference. [9]
- i) Structure of Cache
  - ii) Read Operation with Cache
  - iii) Write Operation with Cache
  - iv) Cache Implementation
  - v) Cache Management
  - vi) Cache Data Protection.
- c) Describe Data Center Infrastructure. [9]

### SECTION-II

- Q5) a)** Explain Backup and Restore Operations. [8]
- b) Describe BC Planning Lifecycle. [8]
- Q6) a)** Explain symmetric storage virtualization with its advantages and disadvantages. [8]
- b) Describe BC Planning Lifecycle in business continuity. [8]

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- Q7) a)** Explain Storage Virtualization on various levels of storage network. **[8]**
- b) Describe various Backup purpose and backup considerations in storage networks. **[8]**

**Q8) Solve ANY TWO of the following questions.**

- a) Explain Failure Analysis in BC, BC terminology and Business Impact Analysis. **[9]**
- b) Explain implementation considerations in Storage virtualization. **[9]**
- c) Describe different Backup Granularity and Recovery Considerations.**[9]**



