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II/IV B.Tech (Supplementary) DEGREE EXAMINATION**April, 2017****Third Semester****Time:** Three Hours**Common for CSE & IT****Computer Graphics****Maximum : 60 Marks***Answer Question No.1 compulsorily.*

(1X12 = 12 Marks)

Answer ONE question from each unit.

(4X12=48 Marks)

(1X12=12 Marks)

1 Answer all questions

- What is spline?
- Which filling algorithm is efficient?
- Define Computer graphics
- Why do we need geometric transformations in Computer graphics?
- Difference between perspective and parallel projections?
- What is a polygon mesh?
- Define light?
- Why we need smooth curves?
- What is rendering?
- What is stretch?
- What is Hypermedia?
- What are the various application areas of Computer graphics?

UNIT I

- Briefly explain aliasing? 5M
 - Explain about DDA line drawing algorithm in detail? 7M

(OR)
- Discuss about CRT 5M
 - Explain about ellipse drawing algorithms in detail? 7M

UNIT II

- What is viewing pipeline? 6M
 - What are composite transformations? Give examples 6M

(OR)
- What is filling? Explain flood fill algorithm? 7M
 - Explain about reflection and shear with examples 5M

UNIT III

- Explain about 3D transformations 6M
 - Explain about Bspiline curve? 6M

(OR)
- What are polygon surfaces? 6M
 - What are quadratic surfaces? 6M

UNIT IV

- Explain about computer animation functions and languages 7M
 - What is 3D clipping? 5M

(OR)
- Briefly explain about computer animation 6M
 - Explain view volume? 6M

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II/IV B.Tech (Supplementary) DEGREE EXAMINATION

APRIL , 2017

THIRD SEMESTER

Time: Three Hours

Object Oriented Programming using C++

CSE & IT

Maximum : 60 Marks

Answer Question No.1 compulsorily.

(1X12 = 12 Marks)

Answer ONE question from each unit.

(4X12=48 Marks)

(1X12=12 Marks)

- 1 Answer all questions
 - a) Define inline Functions
 - b) What an Object
 - c) Define function overloading
 - d) Define Exception Handling
 - e) What is Virtual Function
 - f) Which operators cannot overloaded in C++
 - g) What are Casting Operators
 - h) Write a Simple program on getline() function
 - i) What is virtual base class
 - j) What is general form of C++ program
 - k) Write benefits of templates
 - l) What is a stream

UNIT I

- 2 a) Explain the features of OOP Concepts 4M
- b) Define a simple class for student with 4 properties and any two simple methods 4M

(OR)

- 3 a) Write a C++ program which implements Nested classes 8M

UNIT II

- 4 a) Write a C++ program to implement function overloading 4M
- b) Define friend function and explain how to use friend function for overloading 4M

(OR)

- 5 a) Define Inheritance? Explain the concept of multiple base classes with example 8M

UNIT III

- 6 a) Define pure virtual functions? Explain the concept of Early and late binding with Example 8M

(OR)

- 7 a) Explain the applications of Generic Functions 4M
- b) Write a simple program on Exception handling 4M

UNIT IV

- 8 a) Explain Stream classes for file I/O with example programs 8M

(OR)

- 9 a) Explain any two Standard template Libraries in C++ 8M

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II/IV B.Tech (Supplementary) DEGREE EXAMINATION

April, 2017

Common for CSE & IT

Third Semester

DISCRETE MATHEMATICAL STRUCTURES

Time: Three Hours

Maximum : 60 Marks

Answer Question No.1 compulsorily.

(1X12 = 12 Marks)

Answer ONE question from each unit.

(4X12=48 Marks)

1 Answer all questions

(1X12=12 Marks)

- Define power set.
- Define the equivalence relation?
- What is the co-efficient of x^6 in $(1+x+x^2+\dots)^2$.
- In how many ways can a committee of 7 be chosen from 11 students?
- Simplify $A \cap (A - \bar{A}) \cup (\bar{A} - A)$.
- Differentiate permutation and combination
- Define the chromatic number of a tree?
- Is the poset $(Z^+, |)$ a lattice? If so justify?
- Draw the truth table of $(\sim p) \vee \sim(\sim q)$.
- Define Isomorphisms?
- Write the application of Recurrence Relation?
- What is difference between graph and subgraph?

UNIT I

- State the principle of mathematical induction?
- Use mathematical induction to prove if F_n is the n^{th} Fibonacci number, then

4M

$$F_n = \frac{1}{\sqrt{5}} \left[\left(\frac{1+\sqrt{5}}{2} \right)^{n+1} - \left(\frac{1-\sqrt{5}}{2} \right)^{n+1} \right] \text{ For all integers } n \geq 0.$$

8M

(OR)

- Write about the methods of proof of an implication.
- Prove or disprove the validity of the given arguments:

6M

$$\text{i. } p \rightarrow (q \rightarrow r)$$

$$\text{ii. } \sim p \leftrightarrow q$$

$$\sim q \rightarrow \sim p$$

$$q \rightarrow r$$

$$p$$

$$\sim r$$

$$\therefore r$$

$$\therefore p$$

6M

UNIT II

- Find the co-efficient of X^{16} in $(1+X^4+X^8)^{10}$.

3M

$$\text{b) Compute the co-efficient of } \sum_{r=0}^{\infty} d_r X^r = \frac{X^2 - 5X + 3}{X^4 - 5X^2 + 4}$$

9M

(OR)

- A computer password consists of letter followed by 4 characters (letters) and 3 digits. Find out the number of possible passwords.
- How many integral solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 \leq 19$

5M

7M

UNIT III

- Find a general expression for a solution to the recurrence relation $a_n - 7a_{n-1} + 10a_{n-2} = 7 \cdot 3^n + 4^n$ for $n \geq 2$ using undetermined coefficients method.
- Solve the recurrence relation $a_n - 3a_{n-1} - 4a_{n-2} = 0$ for $n \geq 2$ and $a_0 = a_1 = 1$ by using characteristic roots.

6M

6M

(OR)

- Consider the relation $R = \{(a,b), (b,c), (b,d), (d,d), (c,c), (a,c)\}$

- Draw a diagram for the relation R.

- Draw the diagram for the inverse R, R^{-1}

6M

- Give an example of a non empty set and a relation on the set that satisfies each of the following combinations of properties; draw a di-graph of the relation

- Symmetric and transitive, but not reflexive.

- Symmetric and reflexive, but not transitive.

- Transitive and reflexive, but not Symmetric.

- Transitive and reflexive, but not antisymmetric.

6M

- v. Transitive and antisymmetric, but not reflexive.
- vi. Antisymmetric and reflexive, but not transitive.

CS/IT 215

UNIT IV

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|-------------|----|--|----|
| 8 | a) | State and prove euler's formula? | 5M |
| | b) | Prove that every simple planar graph is 5-colorable. | 7M |
| (OR) | | | |
| 9 | a) | What is Hamiltonian Circle? Give two Hamiltonian circuits in K_5 that have no edges in common. | 7M |
| | b) | Using warshall's algorithm find the adjacency matrix of the transitive closure of the relation $R=\{(a,a),(a,d),(b,a),(b,b),(c,c),(d,d)\}$. | 5M |

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II/IV B.Tech (Supplementary) DEGREE EXAMINATION**April, 2017****Third Semester****Time:** Three Hours**Common for CSE & IT****Data Structures****Maximum : 60 Marks***Answer Question No.1 compulsorily.***(1X12 = 12 Marks)***Answer ONE question from each unit.***(4X12=48 Marks)****(1X12=12 Marks)**

1. Answer all questions
 - a) Define Data Structure?
 - b) Difference between SLL and DLL?
 - c) List out the applications of linked list?
 - d) What is stack?
 - e) To Convert given infix to postfix $((a + b) * (c + d))$?
 - f) Write steps of shell sort?
 - g) What is binary tree?
 - h) Define Balancing Factor?
 - i) Mention name of different routines in AVL Trees?
 - j) Define hash function?
 - k) Write names of different graph traversal algorithms?
 - l) Define min and max heaps?

UNIT I

2. a) Explain different performance measures of computer program? **7M**
- b) Describe different classifications of data structures? **5M**

(OR)

3. a) Explain different routines of SLL with the help of examples? **8M**
- b) Construct DLL for different locations of insertions with neat diagrams? **4M**

UNIT II

4. a) Define stack? Explain all stack operations with the help of examples? **9M**
- b) Describe different applications of stacks? **3M**

(OR)

5. Write an algorithm for merge sort? To sort the given elements using merge sort technique? **12M**
5, 20, 3, 15, 30, 25, 10, 12, 28, 52, 35, 2.

UNIT III

6. a) Construct the BST for the following elements? **6M**
3, 2, 1, 6, 5, 4, 7, 9, 8, 12, 10
- b) Construct and explain the procedure for expression tree for the given expression **6M**
 $(a + b) / (c + d) * (e - f)$

(OR)

7. Write and Explain AVL tree single and double rotations? **12M**

UNIT IV

8. a) Define Heap sort? Explain heap sort technique for the following elements? **9M**
5, 20, 10, 15, 25, 35, 18, 22, 32, 2
- b) Explain linear probing? **3M**

(OR)

9. Explain different graph traversal techniques with the help of example? **12M**