**Shri Shankaracharya Institute of Professional Management & Technology**

**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Month-February

**Sem- CSE 4th [A & B] Subject-Name-** Operating System **Subject-Code-** 322456(22)

Time Allowed: 2 hrs Max Marks: 40

*Note: - All Questions are compulsory.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| 1. | Explain the purpose and importance of system calls and discuss the calls related to process management, device management and communication in brief | [8] | Understanding | CO1 |
| 2. | Enumerate the different operating system structures and explain with neat sketch | [8] | Understanding | CO1 |
| 3. | Discuss about the functionality of system boot with respect to operating system | [8] | Understanding | CO1 |
| 4. | Show how Inter Process Communication takes place in operating system | [8] | Understanding | CO2 |
| 5. | What is Process Scheduling? Discuss about all the different types of Schedulers in detail. | [8] | Understanding | CO2 |
| 6. | Demonstrate FCFS, SJF, Priority(Non-Preemptive) and Round Robin(1 ms time quantum ) CPU scheduling Algorithm using below table. | [8] | Applying | CO2 |

| Process id | Arrival time | Burst time |
|---|---|---|
| P1 | 8 | 4 |
| P2 | 6 | 1 |
| P3 | 1 | 2 |
| P4 | 9 | 2 |
| P5 | 3 | 3 |

**Shri Shankaracharya Institute of Professional Management & Technology**

**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Month - February

**Sem- CSE 4th (A/B) Subject- Computational Mathematics Code- 322451(14)**

Time Allowed: 2 Hrs. Max Marks: 40

*Note:Aattempt All Question.*

| Q. N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | Apply Bisection method and find value of $\sqrt[3]{10}$ correct upto 2 places of decimals. | [2] | Applying | CO1 |
| B. | Applying Regula – Falsi method, find the smallest positive root of $x^2 - \log_e x - 12 = 0$, correct upto three decimal places. | [6] | Applying | CO1 |
| C. | Apply Newton – Raphsons method, find a root of the equation $x\sin x + \cos x = 0$ ,which is near $x = \pi$ correct upto 6 places. | [6] | Applying | CO1 |
| D. | Apply Lin Bairstow's method and obtain solution for $x^4 - x^3 + 6x^2 + 5x + 10 = 0$ , with $p_0 = 1.14$ , $q_0 = 1.42$ . Correct upto 3 places of decimals. | [6] | Applying | CO1 |
| | **Unit II** | | | |
| A. | In solving simultaneous equations by gauss jordan and gauss elimination method the coefficient matrix are reduced to (a) _____ and (b) _____ matrices respectively. | [2] | Remember, Understanding | CO2 |
| B. | Apply Gauss Jordan's method to find the sloution for $10x + y + z = 12$ , $2x + 10y + z = 13$ , $x + y + 5z = 7$ . | [6] | Applying | CO2 |
| C. | Using Crout's method solve the equations $x + y + z = 1$ , $4x + 3y - z = 6$ , $3x + 5y + 3z = 4$ | [6] | Applying | CO2 |
| D. | Find the solution using Gauss-Siedal method correct upto 3 places of decimals. $x + 3y + 10z = 24$, $2x + 17y + 4z = 35$, $28x + 4y - z = 32$. | [6] | Applying | CO2 |


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**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Month - February

**Sem- CSE 4th (A/B) Subject- Computational Mathematics Code- 322451(14)**

Time Allowed: 2 Hrs. Max Marks: 40

*Note:Aattempt All Question.*

| Q. N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | Apply Bisection method and find value of $\sqrt[3]{10}$ correct upto 2 places of decimals. | [2] | Applying | CO1 |
| B. | Applying Regula – Falsi method, find the smallest positive root of $x^2 - \log_e x - 12 = 0$, correct upto three decimal places. | [6] | Applying | CO1 |
| C. | Apply Newton – Raphsons method, find a root of the equation $x\sin x + \cos x = 0$ ,which is near $x = \pi$ correct upto 6 places. | [6] | Applying | CO1 |
| D. | Apply Lin Bairstow's method and obtain solution for $x^4 - x^3 + 6x^2 + 5x + 10 = 0$ , with $p_0 = 1.14$ , $q_0 = 1.42$ . Correct upto 3 places of decimals. | [6] | Applying | CO1 |
| | **Unit II** | | | |
| A. | In solving simultaneous equations by gauss jordan and gauss elimination method the coefficient matrix are reduced to (a) _____ and (b) _____ matrices respectively. | [2] | Remember, Understanding | CO2 |
| B. | Apply Gauss Jordan's method to find the sloution for $10x + y + z = 12$ , $2x + 10y + z = 13$ , $x + y + 5z = 7$ . | [6] | Applying | CO2 |
| C. | Using Crout's method solve the equations $x + y + z = 1$ , $4x + 3y - z = 6$ , $3x + 5y + 3z = 4$ | [6] | Applying | CO2 |
| D. | Find the solution using Gauss-Siedal method correct upto 3 places of decimals. $x + 3y + 10z = 24$, $2x + 17y + 4z = 35$, $28x + 4y - z = 32$. | [6] | Applying | CO2 |

**Shri Shankaracharya Institute of Professional Management & Technology**

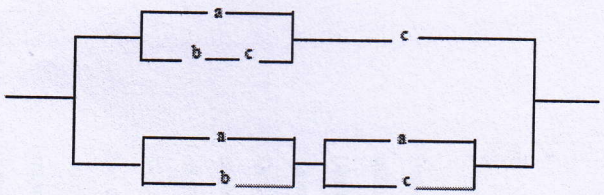
**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Date -17 Feb.

**Sem- CSE 4th (A+B) Subject- Discrete Mathematics Code-322452(14)**

Time Allowed: 2 hrs Max Marks: 40

*Note: - All questions are compulsory.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| 1. | Define Quantifiers and<br>Write the following statement in symbolic form:<br>"If either jerry takes calculus or ken takes sociology, then lorry will take English." | [2] | Apply | CO1 |
| 2. | Define logical equivalence and prove that $(p \rightarrow q) \wedge (r \rightarrow q) \Leftrightarrow (p \vee r) \rightarrow q$. | [6] | Apply | CO1 |
| 3. | Explain DNF and CNF. Express the Boolean function into DNF<br>$f(x,y,z) = [(x + y') + (y + z')'] + yz$ | [6] | Apply | CO1 |
| 4. | Draw the following network into simplified form:<br>  <br> | [6] | Apply | CO1 |
| | **Unit II** | | | |
| 1. | Define ordered pair and Cartesian product and if A= {a, b}, B= {2, 3} and C= {3, 7} then find $A \times (B \cap C)$. | [2] | Apply | CO2 |
| 2. | Define equivalence relation. If R be a relation R=$\{(x,y): x \in z, y \in z, x - y \text{ is an even integer}\}$ prove that R is an equivalence relation. | [6] | Apply | CO2 |
| 3. | Define lattice and prove that $(P(S), \subseteq)$ is a lattice , where $P(S)$ is power set of S. | [6] | Apply | CO2 |
| 4. | If $f: X \rightarrow Y$ and $g: Y \rightarrow Z$ be one-one onto mapping, then prove that the mapping $g \circ f: X \rightarrow Z$ is also one-one onto and $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$. | [6] | Apply | CO2 |

**Shri Shankaracharya Institute of Professional Management & Technology**

**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Month-February

**Sem- CSE 4th [A]** **Subject- OOP using C++** **Code- 322455(22)**

Time Allowed: 2 hrs Max Marks: 40

*Note: - Attempt any 5 Question. All Carry 8 Marks.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| 1. | Define Class and Object. Compare the Procedure-Oriented and Object-Oriented programming? | [8] | Remember | CO1 |
| 2. | Explain Friend function. The following main function should be able to swap the data member of objects ob1 and ob2. The data members should private. Construct a class with a complete program.<br>Line No. C++ Code Line No. C++ Code<br>1. main( ) 7. ob2.fill(20);<br>2. { 8. swapAB (ob1,ob2);<br>3. clrscr( ); 9. ob1.show( );<br>4. A ob1; 10. ob2.show();<br>5. B ob2; 11. getch( );<br>6. ob1.fill (10); 12. } | [8] | Create | CO2 |
| 3. | Define Constructor. Write a program to perform addition and subtraction of two complex number using Constructor Overloading. | [8] | Create | CO3 |
| 4. | Define Function Overloading. Explain Call by Address and Call by Reference with suitable example. | [8] | Understanding | CO1 |
| 5. | Define Friend class. Implement a program in C ++ to add the contents of an object of `A' , `B' and 'C', implementing the concept of friend class. | [8] | Applying | CO2 |
| 6. | Describe Static. Write a program to assign unique ID numbers to all the objects when member function setID( ) is called. Display the ID numbers when member function getID( ) is called. Display total number of objects created using static member function showTotal( ) | [8] | Applying | CO2 |
| 7. | Explain in brief<br>a. Local Class<br>b. Empty Class<br>c. Nested Class | [8] | Remember | CO2 |


**Shri Shankaracharya Institute of Professional Management & Technology**

**Department of Computer Science & Engineering**

Class Test – I Session- Jan – June, 2020 Month-February

**Sem- CSE 4th [A]** **Subject- OOP using C++** **Code- 322455(22)**

Time Allowed: 2 hrs Max Marks: 40

*Note: - Attempt any 5 Question. All Carry 8 Marks.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| 1. | Define Class and Object. Compare the Procedure-Oriented and Object-Oriented programming? | [8] | Remember | CO1 |
| 2. | Explain Friend function. The following main function should be able to swap the data member of objects ob1 and ob2. The data members should private. Construct a class with a complete program.<br>Line No. C++ Code Line No. C++ Code<br>1. main( ) 7. ob2.fill(20);<br>2. { 8. swapAB (ob1,ob2);<br>3. clrscr( ); 9. ob1.show( );<br>4. A ob1; 10. ob2.show();<br>5. B ob2; 11. getch( );<br>6. ob1.fill (10); 12. } | [8] | Create | CO2 |
| 3. | Define Constructor. Write a program to perform addition and subtraction of two complex number using Constructor Overloading. | [8] | Create | CO3 |
| 4. | Define Function Overloading. Explain Call by Address and Call by Reference with suitable example. | [8] | Understanding | CO1 |
| 5. | Define Friend class. Implement a program in C ++ to add the contents of an object of `A' , `B' and 'C', implementing the concept of friend class. | [8] | Applying | CO2 |
| 6. | Describe Static. Write a program to assign unique ID numbers to all the objects when member function setID( ) is called. Display the ID numbers when member function getID( ) is called. Display total number of objects created using static member function showTotal( ) | [8] | Applying | CO2 |
| 7. | Explain in brief<br>a. Local Class<br>b. Empty Class<br>c. Nested Class | [8] | Remember | CO2 |

**Shri Shankaracharya Institute of Professional Management & Technology**
**Department of Computer Science & Engineering**
Class Test – I Session- Jan – June, 2020 Month- February
**Sem- CSE 4th [ B] Subject- C++ Code- 322455(22)**

Time Allowed: 2 hrs Max Marks: 40

*Note: - In Unit I attempt any five questions from A to G.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | a) Abstract class.<br>b) Local Class.<br>c) Visibility Mode.<br>d) Constructor. | [8] | Understanding | CO2 |
| B. | What is a static variable? Write a program that counts the number of objects created by the class. | [8] | Applying | CO2 |
| C. | Explain function overloading? Explain with example? | [8] | Understanding | CO2 |
| D. | Write a program to print details of 5 students and print the toppers name using array of objects. | [8] | Applying | CO2 |
| E. | What is data hiding? Explain with example how we access private data members. | [8] | Applying | CO1 |
| F. | What is copy constructor? Explain constructor overloading with example? | [8] | Applying | CO3 |
| G. | What is friend function? Explain with example and problem with friend function? | [8] | Applying | CO2 |

**Shri Shankaracharya Institute of Professional Management & Technology**
**Department of Computer Science & Engineering**
Class Test – I Session- Jan – June, 2020 Month- February
**Sem- CSE 4th [ B] Subject- C++ Code- 322455(22)**

Time Allowed: 2 hrs Max Marks: 40

*Note: - In Unit I attempt any five questions from A to G.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | a) Abstract class.<br>b) Local Class.<br>c) Visibility Mode.<br>d) Constructor. | [8] | Understanding | CO2 |
| B. | What is a static variable? Write a program that counts the number of objects created by the class. | [8] | Applying | CO2 |
| C. | Explain function overloading? Explain with example? | [8] | Understanding | CO2 |
| D. | Write a program to print details of 5 students and print the toppers name using array of objects. | [8] | Applying | CO2 |
| E. | What is data hiding? Explain with example how we access private data members. | [8] | Applying | CO1 |
| F. | What is copy constructor? Explain constructor overloading with example? | [8] | Applying | CO3 |
| G. | What is friend function? Explain with example and problem with friend function? | [8] | Applying | CO2 |

**Shri Shankaracharya Institute of Professional Management & Technology**
**Department of Computer Science & Engineering**
Class Test – I Session-Jan-June, 2020 Month-February
**Sem- CSE 4th [A & B] Subject- Computer Systems Architecture Code- 322454(22)**
Time Allowed: 2 hrs Max Marks: 40

***Note: - Question A is compulsory in both Unit and attempt any two from B, C & D.***

| Q.N. | Questions | Marks | Levels of Bloom's Taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | Write Diffrence between Organization and Architecture. | [4] | Understanding | CO1 |
| B. | Exlain all the Addressing modes with example. | [8] | Understanding | CO1 |
| C. | Explain Hardwired and microprogrammed contro unit with block diagram. | [8] | Understanding | CO1 |
| D. | An instruction is stored in at memory location 400 .The address part of the instruction is stored at location 401.The address field of the instruction has value 500 in it.A processor register R contains the value 200 in it.Evaluate the Effective address for the following:<br>1)Direct Mode<br>2)Immediate Mode<br>3)Realtive Mode<br>4)Register Indirect Mode<br>5)Index Mode as R as Index Register. | [8] | Applying | CO1 |
| | **Unit II** | | | |
| A. | Draw the Memory Hierarchy. | [4] | Remebering | CO3 |
| B. | Explain the Cache Direct Mapping. | [8] | Understanding | CO3 |
| C. | Explain Main Memory in Detail | [8] | Remebering | CO3 |
| D. | Exlpain Von Neuman Architecture. | [8] | Understanding | CO3 |

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**Department of Computer Science & Engineering**
Class Test – I Session-Jan-June, 2020 Month-February
**Sem- CSE 4th [A & B] Subject- Computer Systems Architecture Code- 322454(22)**
Time Allowed: 2 hrs Max Marks: 40

***Note: - Question A is compulsory in both Unit and attempt any two from B, C & D.***

| Q.N. | Questions | Marks | Levels of Bloom's Taxonomy | COs |
|---|---|---|---|---|
| | **Unit I** | | | |
| A. | Write Diffrence between Organization and Architecture. | [4] | Understanding | CO1 |
| B. | Exlain all the Addressing modes with example. | [8] | Understanding | CO1 |
| C. | Explain Hardwired and microprogrammed contro unit with block diagram. | [8] | Understanding | CO1 |
| D. | An instruction is stored in at memory location 400 .The address part of the instruction is stored at location 401.The address field of the instruction has value 500 in it.A processor register R contains the value 200 in it.Evaluate the Effective address for the following:<br>1)Direct Mode<br>2)Immediate Mode<br>3)Realtive Mode<br>4)Register Indirect Mode<br>5)Index Mode as R as Index Register. | [8] | Applying | CO1 |
| | **Unit II** | | | |
| A. | Draw the Memory Hierarchy. | [4] | Remebering | CO3 |
| B. | Explain the Cache Direct Mapping. | [8] | Understanding | CO3 |
| C. | Explain Main Memory in Detail | [8] | Remebering | CO3 |
| D. | Exlpain Von Neuman Architecture. | [8] | Understanding | CO3 |

**Shri Shankaracharya Institute of Professional Management & Technology**
**Department of Computer Science & Engineering**
Class Test – I Session- Jan – June, 2020 Month- February
**Sem- CSE 4th[ A& B] Subject- Data Structure Code- 322453(22)**
Time Allowed: 2 hrs Max Marks: 40

***Note:*** *- Solve All the questions from Part 1 and Part 2.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Part I** | | | |
| I. | **Which if the following is/are the levels of implementation of data structure**<br>**a.** Abstract level **b.** Application level<br>**c.** Implementation level **d.** All of the above | [2] | Understanding | CO1 |
| II. | **Which of the following case does not exist in complexity theory**<br>**a.** Best case **b.** Worst case<br>**c.** Average case **d.** Null case | [2] | Applying | CO1 |
| III. | **Arrays are best data structures**<br>**a.** for relatively permanent collections of data<br>**b.** for the size of the structure and the data in the structure are constantly changing<br>**c.** for both of above situation **d.** for none of above situation | [2] | Applying | CO1 |
| IV. | **Two dimensional arrays are also called**<br>**a.** tables arrays **b.** matrix arrays<br>**c.** both of above **d.** none of above | [2] | Applying | CO1 |
| | **Part II** | | | |
| I. | Why Asymptotic notation is used? Describe Bigoh, Omega and Theta Notation. | [8] | Applying | CO1 |
| II. | Define polish notation. Convert the following infix expression to postfix expression using stack.<br>( (A+B) *D)^(E-F) | [8] | Applying | CO2 |
| III. | Consider the 25×4 matrix array SCORE. Suppose Base (SCORE)=200 and there are w=4 words per memory cell. Let the programming language store two-dimensional array using row-major order. Find out the address of SCORE [12,3] , SCORE[16,4] and SCORE[10,3]. | [8] | Applying | CO1 |
| IV. | Write an algorithm to insert a node at the Beginning of the Linked list | [8] | Applying | CO1 |


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Class Test – I Session- Jan – June, 2020 Month- February
**Sem- CSE 4th[ A& B] Subject- Data Structure Code- 322453(22)**
Time Allowed: 2 hrs Max Marks: 40

***Note:*** *- Solve All the questions from Part 1 and Part 2.*

| Q.N. | Questions | Marks | Levels of Bloom's taxonomy | COs |
|---|---|---|---|---|
| | **Part I** | | | |
| I. | **Which if the following is/are the levels of implementation of data structure**<br>**a.** Abstract level **b.** Application level<br>**c.** Implementation level **d.** All of the above | [2] | Understanding | CO1 |
| II. | **Which of the following case does not exist in complexity theory**<br>**a.** Best case **b.** Worst case<br>**c.** Average case **d.** Null case | [2] | Applying | CO1 |
| III. | **Arrays are best data structures**<br>**a.** for relatively permanent collections of data<br>**b.** for the size of the structure and the data in the structure are constantly changing<br>**c.** for both of above situation **d.** for none of above situation | [2] | Applying | CO1 |
| IV. | **Two dimensional arrays are also called**<br>**a.** tables arrays **b.** matrix arrays<br>**c.** both of above **d.** none of above | [2] | Applying | CO1 |
| | **Part II** | | | |
| I. | Why Asymptotic notation is used? Describe Bigoh, Omega and Theta Notation. | [8] | Applying | CO1 |
| II. | Define polish notation. Convert the following infix expression to postfix expression using stack.<br>( (A+B) *D)^(E-F) | [8] | Applying | CO2 |
| III. | Consider the 25×4 matrix array SCORE. Suppose Base (SCORE)=200 and there are w=4 words per memory cell. Let the programming language store two-dimensional array using row-major order. Find out the address of SCORE [12,3] , SCORE[16,4] and SCORE[10,3]. | [8] | Applying | CO1 |
| IV. | Write an algorithm to insert a node at the Beginning of the Linked list | [8] | Applying | CO1 |