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2406E0180

Candidate's Seat No :_____

M.C.A. (Sem.-2) (Old) Examination
Object Oriented Concepts & Programming
June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

SECTION – I

Q-1 Attempt the following: (Any **THREE**) **[15]**

i) Describe the important concepts of Object Oriented System.
ii) Explain *cin* and *cout* with necessary figures. Explain constructor and its types with suitable example.
iii) What is inline function? List down its merits and demerits.
iv) Explain Operator overloading used in C++ in detail.

Q-2 Write a program to perform addition of values of different data types using function overloading. **[04]**

OR

Q-2 Write a program that will read m X n matrix from keyboard and perform the addition on it. **[04]**

Q-3 Differentiate the following (Any **TWO**): **[06]**

i) Data Abstraction and Encapsulation
ii) Reference Variable and Pointer variable
iii) Class Template and Function Template

SECTION – II

Q-4 Attempt the following: (Any **THREE**) **[15]**

i) Explain Exception handling techniques used in C++ program in detail.
ii) What is Polymorphism? Explain how it is achieved at runtime.
iii) Explain String class and string manipulation functions used in C++.
iv) Explain merits of Binary file used in C++. Explain the functions used to read and write Binary file.

Q-5 Write short notes on followings. (Any **TWO**) **[06]**

i) Member Initialization List
ii) Inheritance
iii) Manipulators

Q-6 Explain followings briefly: **[04]**

i) Static member function
ii) Friend Function
iii) Abstract Base Class
iv) Namespace

E194-2

SECTION - II

Q-3 Attempt the following (any three) **15**

1. Explain the Web Database Architecture with diagram and stages.
2. Explain subquery operator "all" with example.
3. What do you mean by cookies? What are the typical uses of cookies?
4. List and explain any five File Modes with their name and use.
5. Write only use of the following functions for PDO:

   query II. exec III. prepare IV. bindvalue v. II. execute

Q-4 Attempt the follwing (any five) **10**

1. What are the four levels of privilege available in MySQL?
2. What do you mean by anomalies? Write only name of various anomalies in a relation.
3. Write only name of any four aggregate functions of MySQL.
4. List and explain wild card characters that are typically used with like operator in Mysql?
5. Differentiate Enum and Set data type of MySQL.
6. Write only name of any four storage engines supported by MySQL.
7. Write only name of various types of Join.

2106E0175

Candidate's Seat No :_____

M.C.A. (Sem.-2) Examination

Objected Oriented Concepts & Programming

June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

SECTION – I

Q-1 Attempt the following: (Any **THREE**) **[09]**

i) Differentiate Procedural Programming and Object Oriented Programming. Also list down the important features of Object Oriented Programming.

ii) Explain *cin* and *cout* with necessary figures. Explain cascading of insertion and extraction operator.

iii) Explain Friend function in detail. List advantages and disadvantages of Friend function used in C++.

iv) Explain Constructor used in C++ in detail. Also discuss why destructor is equally important to be used in C++ programs.

Q-2 Write a program to compute area of square, rectangle, triangle and circle using the concept of function overloading. **[08]**

OR

Q-2 Define Reference variable. Compare it with pointer variable. Write a function codelet for swapping two integer type of variables. **[08]**

Q-3 Differentiate the following (Any **TWO**): **[08]**

i) Encapsulation and Date abstraction

ii) Static data member and Static member function

iii) Class Template and Function Template

SECTION – II

Q-4 Attempt the following: (Any **THREE**) **[09]**

i) Differentiate between static and dynamic allocation of memory. Also explain what do you understand by memory leaks? How this can be avoided?

ii) Explain Inheritance and its types in detail with example.

iii) Define namespace, nested namespace and its purpose. Also explain the use of *using* keyword with namespace.

iv) Explain merits of Binary file used in C++. Explain the functions used to read and write Binary file.

v) Explain *string* class and manipulation of string objects with suitable example.

Q-5 Write short notes on followings. (Any **TWO**) **[08]**

i) Exception Handling Techniques

ii) Polymorphism

iii) Manipulators

Q-6 Explain the followings briefly: **[08]**

i) Class and Object

ii) Type Conversion and Type Casting

iii) Virtual base class and Abstract base class

iv) Virtual Function and Pure virtual function

2006E0168

Candidate's Seat No :_____

M.C.A. (Sem.-2) Examination
Advanced Programming Concepts
June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

Instructions:

1. Write point-wise answers in legible and clear handwriting. Answer each question on new page.
2. Figures to right indicate full marks. All acronyms carry their usual meaning.
3. Assume suitable data wherever necessary and specify it clearly in your answers.

Section-I (25 marks)

Q. 1 Choose the correct answer for the following questions: **[10]**

1) Which of the following fopen() statements are illegal?

a) fp = fopen("abc.txt", "r");
b) fp = fopen("/home/user1/abc.txt", "w");
c) fp = fopen("abc", "w");
d) none of the mentioned

2) The correct syntax to access the member of the i^{th} structure in the array of structures is? Assume below structure is declared in the program.

```
struct temp
{
  int b;
}s[50];
```

a) s.b.[i];
b) s.[i].b;
c) s.b[i];
d) s[i].b;

3) What is the correct syntax to declare a function foo() which receives an array of structure in function?

a) void foo(struct *var);
b) void foo(struct *var[]);
c) void foo(struct var);
d) none of the mentioned

4) What will be the output of the following C code?

```
#include <stdio.h>
 struct student
 {
    char *name;
 };
 struct student s[2];
 void main()
 {
```

P.T.O.

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```
    s[0].name = "alan";
    s[1] = s[0];
    printf("%s%s", s[0].name, s[1].name);
    s[1].name = "turing";
    printf("%s%s", s[0].name, s[1].name);
}
```

a) alan alan alan turing
b) alan alan turing turing
c) alan turing alan turing
d) run time error

5) What will be the output of the following C code?

```
#include <stdio.h>
int main()
{
    const int ary[4] = {1, 2, 3, 4};
    int *p;
    p = ary + 3;
    *p = 5;
    printf("%d\n", ary[3]);
}
```

a) 4
b) 5
c) Compile time error
d) 3

6) Consider fp is a declared file pointer.The following usage of fseek function will move the file pointer to which location:
fseek(fp, -10, 2)

a) go backward 10 bytes from current position
b) go backward 10 bytes from the end
c) Compile error
d) Runtime error

7) EOF is an integer type defined in stdio.h and has a value _____.
a) 1
b) 0
c) NULL
d) – 1

8) Choose the statement which is incorrect with respect to dynamic memory allocation.
a) Memory is allocated in a less structured area of memory, known as heap
b) Used for unpredictable memory requirements
c) Execution of the program is faster than that of static memory allocation
d) Allocated memory can be changed during the run time of the program based on the requirement of the program

9) The type of linked list in which the node does not contain any pointer or reference to the previous node:
a) Circularly singly linked list
b) Singly linked list
c) Circular doubly linked list
d) Doubly linked list

10) The advantage of using linked lists over arrays is that _____.
a) Linked list is an example of linear data structure
b) Insertion and deletion of an element can be done at any position in a linked list
c) Linked list can be used to store a collection of homogenous and heterogeneous data types
d) The size of a linked list is fixed

Q. 2 Answer any FIVE questions from below: **[15]**

1) What are the advantages and disadvantages of using pointers in your program?

2) Define structure? What is the purpose to declare a structure? Explain with code.

3) Write a C program to access and find the sum of all the elements of the following 2D array using pointer.

```
int nums[3][4] = {
        {1, 2, 3, 4},
        {5, 6, 7, 8},
        {9, 10, 11, 12}};
```

4) Define a structure type struct Employee that would store the employee name, date of joining and salary. Using this structure, write a program to read this information for one person from the keyboard and print on the screen.

5) Differentiate between structure and union with example.

6) Explain passing structure to a function and returning structure from a function using example.

P.T.O.

Section-II (25 marks)

Q. 3 Answer any FIVE questions from below: [15]

1) What is a file and what are the advantages of storing the data in files in a C program?

2) Explain the use of fprintf( ) and fscanf() functions for file IO with sample code. How they are different from gets/puts functions for file IO.

3) What is the difference between static memory allocation and dynamic memory allocation? Explain the use of following dynamic memory allocation functions: calloc() and realloc().

4) Explain how the following types of error handling can be performed in a file IO program with sample code:
   a) Trying to read beyond the end of the file
   b) Device overflow
   c) Trying to use a file that is not opened

5) Give differences between linear array and linked list? Give some applications of linked list.

6) Write algorithm or steps to insert and delete first node from the linked list.

Q. 4 Write C programs for below problems: [10]

1) Use dynamic memory allocation to accept the values of two matrices of any dimension from the user and write user defined functions to perform following operations:
   a) Addition of two matrices
   b) Multiplication of two matrices

2) Define a structure Complex to represent complex numbers having two data members: float real and double imaginary
   Define functions to add and multiply two complex numbers as arguments and return the resulting complex number as return type.

   Struct Complex add(Struct Complex n1, Struct Complex n2);
   Struct Complex multiply(Struct Complex n1, Struct Complex n2);

   Multiply logic is
   C3.real = c1.real * c2.real – c1.img*c2.img;
   C3.img = c1.real * c2.img + c1.img*c2.real;

3) Write a file IO program which writes a sequence of integer values entered by the user in the file named Numbers.dat. Read the integers from the file, sorts them and write all ODD numbers in Odd.dat and all even numbers in Even.dat file in sorted manner.

2406E0182

Candidate's Seat No : _____

M.C.A. (Sem.-2) Examination

Computer Oriented Numerical Methods

June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

SECTION - I

Que 1 Answer the following: (9)

a) Explain significant digits, round-off error and truncation error.

b) Explain Descarte's Rule for finding the number of real roots of a polynomial equation.

c) Explain the method of least squares for fitting a curve.

Que 2

a) Given $xy' = x - y^2$, y(2) = 1, evaluate y(2.1) and y(2.2) correct to four decimal places using Taylor series method. (4)

b) Evaluate the following integral by Gauss-Legendre's two-point quadrature (4)

$$\int_0^2 (1+x)dx$$

OR

Que 2

a) Find the root of the equation $f(x) = x^3 - 5x + 1$ using Newton Raphson method correct upto 4 decimal places in the interval [0,1]. (4)

b) Find the solution of the system of equations using Gauss – Seidel method (4)

$45x + 2y + 3z = 58$

$-3x + 22y + 2z = 47$

$5x + y + 20z = 67$

Que 3

a) Find f'(2.5), f''(2.5) for the data of the function $f(x) = e^x + 1$ (4)

X	1.0	1.5	2.0	2.5
f(x)	3.7182	5.4817	8.3891	13.1825

b) Using Simpson's 3/8 rule, evaluate with 3 subintervals (4)

$$\int_1^2 \frac{dx}{5x+3}$$

OR

Que 3

a) Consider the initial value problem $y' - x(y+1)$, y(0) = 1. Compute y(0.2) with h = 0.1 using Euler method. (4)

b) Why do we use predictor-corrector methods for solving differential equations? (4)

P. T. O.

E182-2

SECTION II

Que 4

a) When does Gauss elimination method fail? How do we avoid computation error in it? Explain. (3)

b) What is the geometrical interpretation of trapezoidal rule and Simpson's one-third rule for numerical integration? (6)

Que 5

a) Evaluate the root of the equation using False position method (4)

$\cos x - xe^x = 0$

b) Solve the following system by Gauss elimination method (4)

$2x + 2y + 4z = 18$

$x + 3y + 2z = 13$

$3x + y + 3z = 14$

OR

Que 5

a) In what sense is the Regula-falsi method similar to the secant method? What is the basic difference between them? (4)

b) Determine the straight line $y = a + bx$ which fits the following data (4)

x	-2	-1	0	1	2	3	4
y	1	2	3	3	4	5	6

Que 6

a) Determine the largest eigen value and the corresponding eigen vector of the following matrix, using the power method by taking $X_0 = [1,1,1]^T$ (4)

$$\begin{bmatrix} 25 & 1 & 2 \\ 1 & 3 & 0 \\ 2 & 0 & 4 \end{bmatrix}$$

b) Using appropriate interpolation, find y at x =0.5 (4)

x	-2	-1	0	1	2	3
y	15	5	1	3	11	25

OR

Que 6

a) Compute values of y (0.1) and (0.2) by 4th order Runge-Kutta method, correct to five significant figures. (4)

$dy/dx = x+y$, $y(0) = 1$

b) Using Newton's divided difference interpolate at x = 0.5 and x = 3.1 (4)

x	-2	-1	0	1	3	4
f(x)	9	16	17	18	44	81

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2506E0189

Candidate's Seat No : _____

M.C.A. (Sem.-2) Examination

Relational Database Management System-2

June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

Instructions: Draw Diagrams wherever necessary.
Make Assumptions wherever necessary.

SECTION - I

Q-1 Explain the following terms with an appropriate example: 9
a. Thrashing
b. Linear Search
c. Hash Index

Q-2 Attempt the following : 8
a. Explain steps in Query Processing with diagram and appropriate query example 4
b. Discuss the simple techniques used to develop algorithms for each operator 4

OR

Q-2 Attempt the following : 8
a. Discuss the four important properties of transaction to maintain data 4
b. Discuss Query Optimization with diagram 4

Q-3 Attempt the following : 8

a. For each of the following SQL queries, for each relation involved, list the attributes that must be examined to compute the answer. 5
All queries refer to the following relations:
Emp(eid:integer, did:integer, sal: integer, hobby:char(20))
Dept(did:integer,dname:char(20),floor:integer,budget:real)

1.SELECT * FROM Emp E
2. SELECT * FROM Emp E, Dept D
3. SELECT * FROM Emp E, Dept D WHERE E.did = D.did
4. SELECT E.eid, D.dname FROM Emp E, Dept D WHERE E.did = D.did

b. Compare: Dense Index and Sparse Index. 3

OR

Q-3 Attempt the following: 8

A. Fill in the Blanks 5

1. A sequence of primitive operations that can be used to evaluate a query is _____ or _____ plan 3
2. Index structures are referred to a _____
3. Sorting of Relation that do not fit in memory is called _____.
4. An _____ says that expression of two forms are equivalent

B. Define : Phantom Problem

[Contd.]

SECTION - II

P.T.O

SECTION - II E189-2

Q-4 Explain the following Terms with an appropriate example. 9
a. CLR
b. Loser Transaction
c. Fuzzy Checkpoint

Q-5 Attempt the following: 8
a. Define: Access Control. Explain Mandatory Access Control with example. 4
b. What happens if system crashes during Analysis phase? Explain with appropriate example and diagram 4

Q-5 **OR**

Attempt the following: 8
a. Discuss Transaction Management with reference to Bell-Lapadula protocol. 4
b. Discuss Thomas Write Rule in detail 4

Q-6 Attempt the following: 8
a. Explain Strict 2PL 4
b. Explain deferred update and immediate update recovery techniques. 4

OR

Q-6 Attempt the following: 8
a. Attempt the following: 5

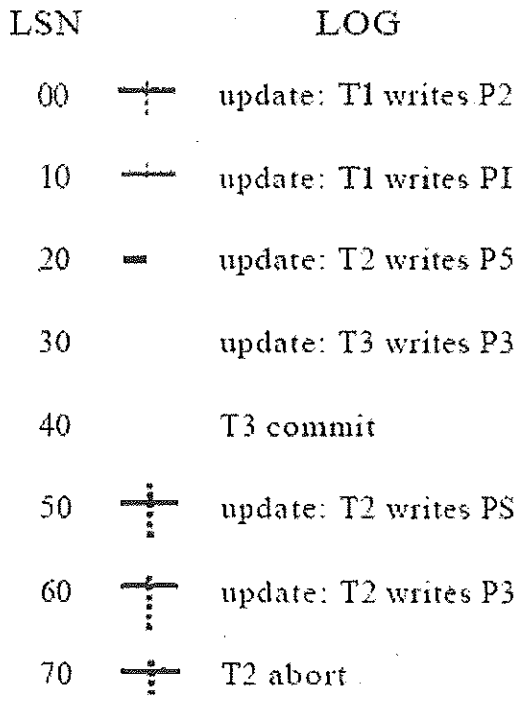

Figure: Aborting a Transaction

a) Extend the figure to show prevLSN and UndonextLSN values.
b) Describe the actions taken to rollback transaction T2.
c) Show the log after *T2* is rolled back, including all prevLSN and undonextLSN values in log records.

b. Define : Shared Nothing Architecture with diagram 3

2606E0194

Candidate's Seat No :_____

M.C.A. (Sem.-2) Examination
Web Application Development
June 2019

Time : 3-00 Hours] **[Max. Marks : 50**

Instructions:
1. Write each section in separate answer sheet.
2. Numbers to the right indicate full marks of the question.
3. Make appropriate assumption whenever necessary.

SECTION – I

Q-1 Attempt the following (any five) **10**

1. What are the two differences between a class constant and static method and static property?
2. What is a jagged array? Write one example of jagged array.
3. Explain explode function with its general syntax and example.
4. What do you mean by superglobal variable? Write only name of any two superglobal variables.
5. Write only name of any four character classes used in POSIX style regular expression.
6. What will be output of the following code:

```
$value = 7.24;
$ceil = ceil($value);
echo "<br> $ceil ";
$floor = floor($value);
echo "<br> $floor ";
```

7. What is difference between require( ) and include( )? What is difference between require( ) and require_once( )?

Q-2 Attempt the following (any three) **15**

1. What are the PHP's strength? Explain any three PHP's strength compare to its competitors.
2. List and explain any five built-in methods of Exception class.
3. Explain the meaning of following for Object-Oriented concepts in PHP:
   I. class II. object III. interface IV. overriding V. polymorphism
4. Explain with example use of the functions in PHP
   i. empty ii. Isnumeric iii. Shuffle iv. Isset v. file_exists
5. What do you mean by time stamp? What is unix epoch? What date range is stored using the time stamp? What is Y2K38 problem? What is one way to solve Y2K38 problem?

P.T.O