

SPECIALTY: COMPUTER ENGINEERING
OPTION: E-COMMERCE AND DIGITAL MARKETING
EXAM PAPER: ALGORITHMIC AND PROGRAMMING
CODE: EDM19
CREDIT VALUE: 4
DURATION: 3 HOURS
NATURE OF EXAM: WRITTEN

SECTION A: Web Programming (30 marks)

1. Create a JavaScript object **person** with 4 variables: firstName:"John", lastName:"Doe", age:50, eyeColor:"blue". Then display: John is 50 years old
2. Declare two string variables, and then apply concat, charAt, substring, toLowerCase, toUpperCase, split, indexOf
3. Write a JavaScript program to add items in an blank array and
4. Write a JavaScript program to display the reading status (i.e. display book name, author name and reading status) of three books of your choice.

Ex:

Title: Steve Jobs

Author: Walter

Readingstatus: completed

SECTION B: Object Oriented Programming (40 marks)

Circle only one answer in each MCQ (10 marks)

1. Which of the following is the most general exception handler that catches exception of 'any type'?
a. catch(std::exception) b. catch(std::any_exception) c. catch(...) d. catch()
2. In a group of nested loops, which loop is executed the most number of times?
a. the outermost loop b. the innermost loop c. all loops are executed the same number of times
d. cannot be determined without knowing the size of the loops
3. What is the Difference between struct and class in terms of Access Modifier?
a. By default all the struct members are private while by default class members are public.
b. By default all the struct members are protected while by default class members are private.
c. By default all the struct members are public while by default class members are private.
d. By default all the struct members are public while by default class members are protected.
6. Inline functions are invoked at the time of
a. Run time b. Compile time c. Depends on how it is invoked d. Both

b and c above

5. What is shallow copy?

- a. A shallow copy creates a copy of the dynamically allocated objects too.
- b. A shallow copy just copies the values of the data as they are.
- c. A shallow copy creates a copy of the statically allocated objects too
- d. Both b and c above

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7. Which of the following below is /are a valid iterator type?

- a. Input Iterator b. Backward Iterator c. Forward Iterator d. Both a and c above

8. What defines a general set of operations that will be applied to various types of data?

- a. Template class b. Function template c. Class template d. Both a and c above

9. Under which of the following circumstances, synchronization takes place?

- a. When the file is closed b. When the buffer is empty c. Explicitly, with manipulators
- d. both a and c

10. Which of the following functions below can be used Allocate space for array in memory?

- a. calloc() b. malloc() c. Realloc() d. both a and b

Structural Questions (30 marks)

11. The program on the opposite page contains several **errors**! Correct the errors and ensure that the program can be executed.

12. Create a C++ program that defines a string containing the following character sequence:
`I have learned something new again!` and displays the length of the string on screen.
Read two lines of text from the keyboard. Concatenate the strings using " * " to separate the two parts of the string. Output the new string on screen.

SECTION C: Algorithmic (30 marks)

Circle only one answer in each MCQ (5 marks)

1. What is the implicit pointer that is passed as the first argument for nonstatic member functions?

- a. 'self' pointer b. std::auto_ptr pointer c. 'Myself' pointer d. 'this' pointer

2. Which of the following operators can be overloaded?

- a. . (dot or member access operator) b. & (address-of operator) c. sizeof operator

d. ?: (conditional operator)

3. Which of the following operator cannot be overloaded?

a. #NAME? b. == (equality operator) c. -> (row operator) d. :: (scope resolution operator)

4. Which of the following operators below allow to define the member functions of a class outside the class?

a. :: b. ? c. :? d. %

5. Which of the following is not a valid conditional inclusions in preprocessor directives

a. #ifdef b. #ifndef c. #endif d. #elif

Structural Questions (25)

6. Explain what Space complexity of an algorithm means 2marks

7. An algorithm execution time can be said to be worst case, average case, or best case. Define these notations (2x3=6marks)

8. Write an algorithm that receives three numbers and displays the maximum of these numbers using

i. Pseudocode

8. Write a function named "location_of_target" that takes as its arguments the following:

- (1) an array of integer values;
- (2) an integer that tells how many integer values are in the array;
- (3) an integer "target value".