

國立中央大學 資訊工程學系
九十八學年度 碩士在職專班 招生入學考試命題紙

科目： 計算機概論 (含資料結構) 第一頁 共五頁

以下單選題每題五分，答錯倒扣一分。

1. Which of the following *is true*?

- (a) We should use more global variables if possible while writing a program.
- (b) "std::cout" is a primitive type in C++.
- (c) "std::" in "std::cin" specifies a name that belongs to File "std".
- (d) Consider the following piece of code. It inserts the string "Hello" into the standard output, and it is correct.

```
std::cout >> "Hello";
```

- (e) None of the above.

2. Which of the following statement will make a C++ compiler complain? (The compiler will generate error/warning messages.)

- (a) if (x!=1) x=2;
- (b) if (x=1) x=0;
- (c) int _100g=100;
- (d) x=5%3;
- (e) None of the above

3. Consider the following piece of code:

```
int z=1;  
  
if (6 == 7 )  
    if ( 8 == 8 )  
        z=3;  
else z=5;  
  
std::cout << z << std::endl;
```

What value will be printed on the screen after execution of the above code?

- (a) 1
- (b) 3
- (c) 5
- (d) z
- (e) the above code generates syntax errors.

4. Assume that the size of an `int` variable and the size of a **pointer** are both 4. Now consider the right figure. What value will be printed on the screen after `main()` finishes?

- (a) 40
- (b) 10
- (c) 4
- (d) 1
- (e) None of the above

```
...  
void displaySize(int *);  
  
int main() {  
    int a[10];  
    displaySize(a);  
    return 0;  
}  
  
void displaySize(int * b) {  
    std::cout << sizeof(a)  
    << std::endl;  
}
```

5. Consider the right figure which shows a code piece. Let's assume that `Object` is a pre-defined C++ class. What is the correct order that the system invokes each Object's destructor?

- (a) obj1 obj2 obj3 obj4 obj5 obj6
- (b) obj3 obj4 obj2 obj6 obj5 obj1
- (c) obj6 obj5 obj4 obj3 obj2 obj1
- (d) obj5 obj6 obj2 obj4 obj3 obj1
- (e) None of the above

```
...  
void create(void);  
  
Object obj1;  
  
int main() {  
    Object obj2;  
    static Object obj3;  
    create();  
    return 0;  
}  
  
void create() {  
    static Object obj4;  
    {Object obj5;}  
    Object obj6;  
}
```

6. Which of the following is not correct in C++?

- (a) Standalone functions or entire classes may be declared to be **friends** of a class.
- (b) A **const** object cannot be modified by assignment (`=`). So it must be initialized.
- (c) You can initialize a **const** data member in **the body of the constructor**.
- (d) A **friend** function of a class is not a member function of that class.
- (e) A non-const member function cannot be called on a const object.

7. Which of the following is not correct in C++?

- (a) In private inheritance, the protected members in the base class become private members in the derived class.
- (b) In protected inheritance, the protected members in the base class become private members in the derived class.
- (c) In public inheritance, the private members of the base class are not accessible by the derived class.
- (d) In protected inheritance, the public members in the base class become protected members in the derived class.
- (e) In private inheritance, the private members of the base class are not accessible by the derived class.

8. Consider the piece of code on the right side. What will be printed on the standard output?

- (a) a is 4 and b is 3
- (b) a is 4 and b is 3
- (c) a is 3 and b is 4
- (d) a is 4 and b is 4
- (e) None of the above

```
public class c1{
    private void swap(Object x, Object y) {
        Object t = y; x = y; y = t;
    }

    public static void main(String[] args) {
        Integer a = new Integer(4);
        Integer b = new Integer(3);
        c1 var=new c1();
        c1.swap( a, b );
        System.out.println("a is " + a + " and b is "
            + b);
    }
}
```

9. A static method is one that can be used with a _____.
- (a) local variable
 - (b) global variable
 - (c) primitive type
 - (d) class name as a calling object
 - (e) All of the above.
10. The special syntax for invoking a constructor of the base class is:
- (a) super() (b) base() (c) parent() (d) child() (e) construct()
11. Class that has at least one abstract method is called an:
- (a) encapsulated class
 - (b) concrete class
 - (c) parent class
 - (d) private class
 - (e) abstract class

12. Which of the following is **not true**?

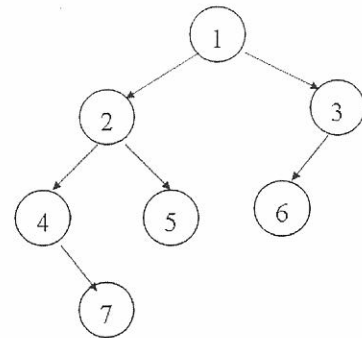
- (a) The throw operator causes a change in the flow of control.
- (b) When an exception is thrown, the code in the surrounding try block continues executing and then the catch block begins execution.
- (c) The finally block contains code to be executed whether or not an exception is thrown in a try block.
- (d) The two most important things about an exception object are its type and the message that it carries in an instance variable of type String.
- (e) A Java program can catch multiple exceptions.

13. Which of the following **is true** about data structure?

- (a) A hash table is a data structure in which operations, such as insertion and deletion, can be done anywhere in it.
- (b) All the members of a record must be the same type
- (c) A queue is a Last-In-First-Out data structure.
- (d) A tree is a variable-size, sequenced collection of elements.
- (e) None of the above.

14. Given the following figure, which of the following choices is a correct post-order traversal?

- (a) 1 2 4 7 5 3 6
- (b) 1 2 3 4 5 6 7
- (c) 7 4 5 2 6 3 1
- (d) 4 7 2 5 1 6 3
- (e) None of the above



15. Which of the following sequence is a correct pre-order traversal on the tree in question 14. ?

- a) 1 2 4 7 5 3 6
- b) 1 2 3 4 5 6 7
- c) 1 2 4 5 7 3 6
- d) 7 4 5 2 6 3 1
- e) 4 7 2 5 1 6 3

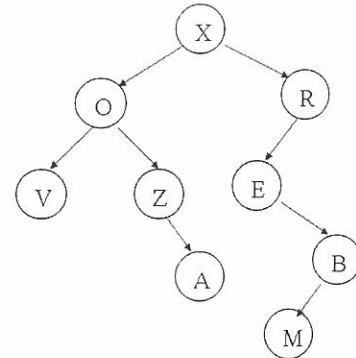
16. A collision may occur when a data is hashed into a file or a table. Which of the following **is true** about collision resolution?

- (a) In **linked list resolution**, the first record is stored in the home address, but it contains a pointer to the second record, and so on and so on.
- (b) In **open addressing resolution**, a hashing entry (node) can accommodate

more than one record.

- (c) **Bucket Hashing** creates a one-to-one mapping.
- (d) Theoretically, **linked list resolution** eventually encounters the problem of collision even though there exist empty records in the hash table (file).
- (e) None of the above.

17. Consider the figure on the right side. Which of the following **is not true** using the tree terminology?



- (a) Z and E are siblings.
- (b) Both R and E are ancestors of B.
- (c) M is a descendant of R.
- (d) B is not a leaf node.
- (e) This is a binary tree.

18. What kind of sorting algorithm will process the input data "1 5 3 4 9 6" as follows?

	Sorted		Unsorted
After Pass 1:	1		5 3 4 9 6
After Pass 2:	1 3		5 4 6 9
After Pass 3:	1 3 4		5 6 9
After Pass 4:	1 3 4 5		6 9
After Pass 5:	1 3 4 5 6 9		

- (a) insertion sort
- (b) selection sort
- (c) bubble sort
- (d) quick sort
- (e) merge sort

19. Which of the following sorting algorithms has the best order of worst-case time complexity?

- a) insertion sort
- b) selection sort
- c) bubble sort
- d) heap-sort
- e) they are all the same order.

20. The compiler needs to maintain environments for function execution, and each function environment is a continued memory space. What kind of data structure usually is used to maintain function environments, especially many function calls existed?

- a) hash table
- b) queue
- c) linked-list
- d) map
- e) stack