台灣聯合大學系統93學年度學士班轉學生考試命題紙

科目：計算機概論　類組別：B-3　共 8 頁第 1 頁　*請在試卷答案卷（卡）內作答

本份試題總分 100，作答時請務必按照題號順序

一、 選擇題（共 30 題，每題 1 分）

1. In _____ transmission, the channel capacity is shared by both communicating devices at all times.
   (a). Simplex
   (b). Half-duplex
   (c). Full-duplex
   (d). Half-simplex
2. In asynchronous transmission, the gap time between bytes is _____ .
   (a). Fixed
   (b). Variable
   (c). A function of the data rate
   (d). Zero
3. In 16-QAM, there are 16 _____.
   (a). Combinations of phase and amplitude
   (b). Amplitudes
   (c). Phases
   (d). Bps
4. In cyclic redundancy checking, the divisor is _____ the CRC.
   (a). The same size as
   (b). 1 bit less than
   (c). 1 bit more than
   (d). 2 bits more than
5. If odd parity is used for ASCII error detection, the number of 0s per 8-bit symbol is _____.
   (a). Even
   (b). Odd
   (c). Indeterminate
   (d). 42
6. Flow control is needed to prevent _____.
   (a). Bit errors
   (b). Overflow of the sender buffer
   (c). Overflow of the receiver buffer
   (d). Collision between sender and receiver
7. When a primary device asks a secondary device if it has data to send, this is called _____.
   (a). Polling
   (b). Selecting
   (c). Reserving
   (d). Backing off

8. The access method for wireless LANs as defined by IEEE 802.11 is based on _____.
   (a). CSMA
   (b). CSMA/CD
   (c). CSMA/CA
   (d). Token passing
9. A Bluetooth network can have _____ master(s).
   (a). One
   (b). Two
   (c). Three
   (d). Eight
10. A bridge has access to the _____ address of a station on the same network.
   (a). Physical (MAC)
   (b). Network
   (c). Service access point
   (d). Logical port
11. In data communications, ATM is an acronym for _____.
   (a). Automated Teller Machine
   (b). Automatic Transmission Model
   (c). Asynchronous Telecommunication Method
   (d). Asynchronous Transfer Mode
12. A subnet mask in class B has nineteen 1s. How many subnets does it define?
   (a). 8
   (b). 32
   (c). 64
   (d). 128
13. Given the IP address 180.25.21.172 and the subnet mask 255.255.192.0, what is the subnet address?
   (a). 180.25.21.0
   (b). 180.25.0.0
   (c). 180.25.8.0
   (d). 180.0.0.0
14. On a network that uses NAT, the _____ has a translation table.
   (a). Switch
   (b). Router
   (c). Server
   (d). None of the above
15. If the fragment offset within an IP header has a value of 100, it means that _____.
   (a). The datagram has not been fragmented
   (b). The datagram is 100 bytes in size
   (c). The first byte of the datagram is byte 100
   (d). The first byte of the datagram is byte 800

16. In distance vector routing a router sends out information _____.
    (a). At regularly scheduled intervals
    (b). Only when there is a change in its table
    (c). Only when a new host is added
    (d). Only when a new network is added
17. An ACK number of 1000 always means that _____.
    (a). 999 bytes has been successfully received
    (b). 1000 bytes has been successfully received
    (c). 1001 bytes has been successfully received
    (d). None of the above
18. Which of the following does UDP guarantee?
    (a). Sequence numbers on each user datagram
    (b). Acknowledgements to the sender
    (c). Flow control
    (d). None of above
19. A signaling protocol that helps IP create a flow is called _____.
    (a). Integrated Services
    (b). Differentiated Services
    (c). RSVP
    (d). Multicast trees
20. Slow start is used in conjunction with _____ as a TCP congestion control strategy.
    (a). Additive increase
    (b). Additive decrease
    (c). Multiplicative increase
    (d). Multiplicative decrease
21. A _____ server serves multiple clients simultaneously.
    (a). Connection-oriented iterative
    (b). Connection-oriented concurrent
    (c). Connectionless iterative
    (d). Connectionless concurrent
22. A Domain Name System (DNS) response is classified as _____ if the information comes from as cache memory.
    (a). Authoritative
    (b). Unauthoritative
    (c). Iterative
    (d). Recursive
23. In the email address johnson@mail.ncu.edu.tw, what is the domain name?
    (a). johnson
    (b). mail.ncu.edu.tw
    (c). johnson@mail.ncu.edu.tw
    (d). (a) and (b)

24. Hypertext documents are linked through _____.
    (a). DNS
    (b). Tags
    (c). Pointers
    (d). Homepages
25. In HTTP protocol, when a user needs to retrieve a document from the server; the request line contains the _____ method.
    (a). GET
    (b). HEAD
    (c). POST
    (d). PUT
26. 已知某一程式內容如下：

```
#include <stdio.h>
int main(void) {
    int *p, q;
    q = 199;
    p = &q;
    printf("%d    ", *p);
    printf("%d", p);
    return 0;   }
```

若數字 199 所指到的記憶體位址爲 1000，則上述程式應會顯示爲
    (a). 199　1000
    (b). 1000　199
    (c). 199　199
    (d). 1000　1000
27. 在虛擬記憶體的設計中，下列哪一項不是決定分頁(page)大小的考慮因素？
    (a). Size of the page table
    (b). Internal fragmentation
    (c). CPU speed
    (d). Input/Output time
28. 在 UNIX 中，file descriptor 0 通常代表
    (a). STD_IN
    (b). STD_OUT
    (c). STD_ERR
    (d). 以上皆非
29. 在 UNIX 中，下列哪一項資訊不在 disk inode 記載的範圍之內？
    (a). owner uid
    (b). creation time
    (c). pointers to blocks
    (d). file name

30. 下列那一項不是造成死結（deadlock）的必要條件？
    (a). Mutual exclusion
    (b). Hold and wait
    (c). No priority
    (d). No premption

二、 填充題 （共 10 題，每題 2 分）

1. Every Java applet begins execution at the function _____.
2. The escape sequence \n represents the _____ character which causes the cursor to position to the beginning of the next line on the screen.
3. _____ (True or False): A C program that prints three lines of output must contain three "printf" statements.
4. In C, the _____ statement which is placed in a repetition structure or a "switch" causes immediate exit from the structure.
5. _____ (True or False): An array can store many different types of values.
6. To simulate call by reference when passing a non-array variable *parm* to a function of C, it is necessary to pass_____ to the function.
7. Automatically reclaiming dynamically allocated memory in Java is called _____.
8. _____ (True or False): Records in random-access files must be of uniform length.
9. _____ (True or False): If the file-position pointer points to a location in a sequential file other than the beginning of the file, the file must be closed and reopened to read from the beginning of the file.
10. Give an example of exceptions in Java: _____.

三、 程式題 （共 2 題，配分 15）

1. 寫出下列程式的執行結果（5 分）

```
public class Program1 {
    public Program1()
    {
        System.out.println(cal(10, 25));
     }
    public static void main (String args[])
    {
        Program1 program = new Program1();
     }
     public int cal(int a, int b)
     {
         if (b == 1) return a;
         else return a + cal(a, b-1);
      }
}
```

2. 畫出執行後的用戶介面 。(5 分)
說明這個程式的用意及其操作。(5 分)

```
import java.awt.*;
import java.awt.event.*;
import javax.swing.*;

public class MultipleSelectionTest extends JFrame {
    private JList colorList, copyList;
    private JButton copyButton;
    private final String colorNames[] = { "Black", "Blue", "Cyan",
        "Dark Gray", "Gray", "Green", "Light Gray", "Magenta", "Orange",
        "Pink", "Red", "White", "Yellow" };

    public MultipleSelectionTest()
    {
        super( "Multiple Selection Lists" );
        Container container = getContentPane();
        container.setLayout( new FlowLayout() );
        colorList = new JList( colorNames );
        colorList.setVisibleRowCount( 5 );
        colorList.setSelectionMode(
            ListSelectionModel.MULTIPLE_INTERVAL_SELECTION );
        container.add( new JScrollPane( colorList ) );
        copyButton = new JButton( "Copy >>>" );
        copyButton.addActionListener(
            new ActionListener() {    // anonymous inner class
                public void actionPerformed( ActionEvent event )
                {
                    // place selected values in copyList
                    copyList.setListData( colorList.getSelectedValues() );
                }
            } // end anonymous inner class
        ); // end call to addActionListener
        container.add( copyButton );
        copyList = new JList( );
        copyList.setVisibleRowCount( 5 );
        copyList.setFixedCellWidth( 100 );
        copyList.setFixedCellHeight( 15 );
        copyList.setSelectionMode(
            ListSelectionModel.SINGLE_INTERVAL_SELECTION );
        container.add( new JScrollPane( copyList ) );
        setSize( 300, 130 );
        setVisible( true );
    } // end constructor MultipleSelectionTest

    public static void main( String args[] )
    {
        MultipleSelectionTest application = new MultipleSelectionTest();
        application.setDefaultCloseOperation( JFrame.EXIT_ON_CLOSE );
    }
} // end class MultipleSelectionTest
```

四、 問答題（共 4 題，配分 35）

1. 在資料庫中，關係(Relation) R 的屬性(Attribute) K 若爲 R 的一個候選鍵(Candidate key)，則 K 必須滿足兩項與時間無關的特性，請概略說明這兩個特性爲何？(6 分)

2. 多數的資料庫管理系統是允許並行運作(Concurrency)的，此時若沒有適當的控制機制，將有可能出現哪三種錯誤？請列出即可，不須說明。(9 分)

3. 給定下列的字母使用頻率表：

字母：	A	B	C	D	E
頻率：	10	15	20	30	35

(a) 下列訊息 ABCCDE 的賀夫曼碼(Huffman code)爲何？(5 分)

(b) 請簡單扼要說明你獲得答案的過程？(5 分)

4. 根據下圖，請回答下列問題

(a) 從 node 4 到 node 4，長度小於 4 的所有路徑共有幾條？(5 分)

(b) 從 node 2 到 node 1，長度小於 5 的所有路徑共有幾條？(5 分)

註: (b)小題需附計算過程，才給分。