

大同大學 九十二 學年度 轉學考試 試題

考試科目：計算機概論 系別：資訊工程學系 第 1 頁，共 6 頁

註：本次考試不可以參考自己的書籍及筆記； 不可以使用字典； 不可以使用計算器。

I. Choose the correct answer (single choice; 2 points each.)

1. Which of the following is not considered to be software?
 - a. Computer virus.
 - b. Operating system.
 - c. Search engine.
 - d. Word processor.
 - e. None of the above.
2. Which of the following features of a C program is incorrect?
 - a. A C statement must end with a semicolon (;).
 - b. A C program must begin with a MAIN() statement.
 - c. A C statement is case sensitive.
 - d. A C string literal is enclosed by double quotes (" ").
 - e. The program body must start from left brace ({) and end with right brace (}).
3. Which of the following has the least relevance to the others?
 - a. 0/1.
 - b. Analog.
 - c. Digital.
 - d. Discrete.
 - e. ON/OFF.
4. Which of the following is not an image format?
 - a. JPEG.
 - b. GIF.
 - c. BMP.
 - d. TIFF.
 - e. AVI.
5. Which of the following is not always correct?
 - a. Bit is short for binary digit.
 - b. A nibble contains four bits.
 - c. A byte consists of eight bits.
 - d. A word contains two bytes.
 - e. 1 MB is equal to 1K's 1KB.
6. Which of the following protocol has the least relevance to email service?
 - a. FTP.
 - b. MIME.
 - c. POP3.
 - d. SMTP.
 - e. TCP/IP.

大同大學 九十二 學年度 轉學考試 試題

考試科目：計算機概論 系別：資訊工程學系 第 2 頁，共 6 頁

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7. Which of the following is an unnecessary phase for a C program to be executed?
 - a. Assembling.
 - b. Compiling.
 - c. Linking.
 - d. Loading.
 - e. Preprocessing.
8. Which of the following is not considered to be a high-level language?
 - a. Assembly.
 - b. Basic.
 - c. C++.
 - d. Java.
 - e. Pascal.
9. Which of the following registers in a CPU contains the address of the next instruction to be executed?
 - a. Accumulator.
 - b. Index register.
 - c. Instruction register.
 - d. Program counter.
 - e. Status register.
10. Which of the following memories has the fastest access speed?
 - a. Cache.
 - b. Flash.
 - c. Register.
 - d. RAM.
 - e. ROM.
11. Which of the following is not included in the management of an operating system?
 - a. CPU management.
 - b. Database management.
 - c. File management.
 - d. Memory management.
 - e. Process management.
12. Which of the following steps is not included in a processing cycle (machine cycle) of a computer?
 - a. Decoding the instruction.
 - b. Executing the instruction.
 - c. Fetching the next instruction.
 - d. Obtaining the data if necessary.
 - e. Resetting the instruction register.

大同大學 九十二 學年度 轉學考試 試題

考試科目：計算機概論 系別：資訊工程學系 第 3 頁，共 6 頁

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13. A (An) _____ translates the language statement and then execute it immediately.
- a. interpreter
 - b. compiler
 - c. editor
 - d. linker
 - e. preprocessor
14. A (An) _____ system allows multiple users to interact with a computer at the same time.
- a. batch processing
 - b. on line processing
 - c. real time processing
 - d. time sharing
 - e. distributed processing
15. A typical process life cycle in an operating system does not contain _____ state.
- a. waiting
 - b. running
 - c. ready
 - d. terminated
 - e. polling
16. The Internet uses the _____ to translate computer and domain names into IP addresses.
- a. DHCP
 - b. DNS
 - c. TCP/IP
 - d. gateway
 - e. web browser
17. The abstract data type with push and pop operations is called _____.
- a. heap
 - b. list
 - c. queue
 - d. stack
 - e. tree
18. The only language that a computer can directly understand is called that computer's _____.
- a. assembly language
 - b. imperative language
 - c. machine language
 - d. programming language
 - e. pseudo language

大同大學 九十二 學年度 轉學考試 試題

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19. The hexadecimal equivalent of the octal number 605 is _____.
a. 146 b. 158 c. 170 d. 185 e. 1A8

20. Given the Huffman encoding table on the right, the bit string 1101110001011 is deciphered into an English word _____.
a. ELATE
b. ELECT
c. ECLAT
d. RACER
e. SARS

Huffman Code	Character
00	A
11	E
010	T
0110	C
0111	L
1000	S
1011	R

II. Answer the following questions.

- (5 points) The von Neumann architecture is still the basis for computers today. The major characteristic of the architecture is that the units that process information are separate from the units that store information. Draw the von Neumann architecture with its main logic units and the links (\rightarrow) between them.
- (6 points) (a). Using 7 bits, what is the range of integers that you can represent in two's complement? (b). Using two's complement, convert -26 and 13 to binary and add them up.

Note: No point will be given if you give the answer without calculation.

- (7 points) (a). Draw the logical diagrams of AND, OR, NOT and XOR gates. (b). Use the four kinds of gates to draw a circuit diagram corresponding to the following Boolean expression: $A'B \oplus (B+C)'$ (c) What will be the result if $A = B = C = 1$.

Note: No point will be given if you give the answer without calculation.

- (8 points) What will the following program print?

Note: all the needed header files are supposed to have been included properly.

```
int i = 1;
int a() { return (i); }
int b(int *j) { auto int i = 3; return ( *j = i += *j ); }
int c(int j) { return ( j = i++ ); }
int d(int j) { static int i = 2; return ( j = i-- ); }

int main()
{
    auto int i;
    i = a();    b(&i);    c(i);    d(i);
    printf( "%d", i );    printf( "%d", b(&i) );
    printf( "%d", c(i) );    printf( "%d ", d(i) );

    return 0;
}
```

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大同大學 九十二 學年度 轉學考試 試題

考試科目：計算機概論 系別：資訊工程學系 第 5 頁，共 6 頁

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5. (9 points) What will the following program print?

Note: all the needed header files are supposed to have been included properly.

```
struct S1 {
    char *s;
    int i;
    struct S1 *s1p;
};

void s( struct S1 *, struct S1 *);

int main()
{
    struct S1 a[] = {
        { "abcd", 1, a + 1 },
        { "efgh", 2, a + 2 },
        { "ijkl", 3, a }
    };
    struct S1 *p[3];
    int i;

    for ( i = 0; i < 3; i++ ) p[i] = a[i].s1p;

    s(*p, a);    s(p[0], p[0]->s1p);
    printf( "%s", (*p[0]).s );
    printf( "%s", (++(*p))->s1p->s );
    printf( "%s", ++(*(++(*p)->s1p)).s );
    return 0;
}

void s( struct S1 *p1, struct S1 *p2)
{
    char *temp;

    temp = p1->s;  p1->s = p2->s;  p2->s = temp;
}
```

6. (10 points) What will the following program print?

Note: all the needed header files are supposed to have been included properly.

```
void printfParens(int, int);

char a[] = "ABCDEF";
int s[][6] = { {0,0,0,2,2,2},
               {0,0,1,2,2,2},
               {0,0,0,2,2,2},
               {0,0,0,0,3,4},
               {0,0,0,0,0,4}  };
```

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註：本次考試不可以參考自己的書籍及筆記； 不可以使用字典； 不可以使用計算器。

```
void main()
{
    printfParens(0, 5);
}

void printfParens(int i, int j)
{
    if (i == j)
        printf("%c", a[i]);
    else {
        printf("[");
        printfParens(i, s[i][j]);
        printfParens(s[i][j]+1, j);
        printf("]");
    }
}
```

7. (15 points) The following program contains two versions of function strlen (strlen1 and strlen2) that take a string as an argument and return the number of characters in the string, not including the terminating null character. Function strlen1 should use array subscripting and function strlen2 should use pointers and pointer arithmetic. Complete the two functions so that it will print the output as follows.

The length of "Tatung" is 6.

The length of "University" is 10.

Note:

1. Do not modify the program itself. You can only add code to the function body.
2. Do not use any function in the C standard library. You need not make any function call in your code.
3. All the needed header files are supposed to have been included properly.

```
int strlen1(char *);
int strlen2(char *);
```

```
int main()
{
    char string1[] = "Tatung", *string2 = "University";

    printf("%s\\\"%s\\\"%s%d.\\n%s\\\"%s\\\"%s%d.\\n",
        "The length of ", string1, " is ", strlen1( string1 ),
        "The length of ", string2, " is ", strlen2( string2 ) );
    return 0;
}
```

```
int strlen1(char s[]) { /* Complete the function with array scripting */ }
int strlen2(char *s) { /* Complete the function with pointers and pointer arithmetic*/ }
```

(The End)