2004-2005

C Programming

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_____   _____   _____

(   )

Section 1: Single Choice   2 mark for each item, total 20 marks

1. The precedence of operator _____ is the lowest one.
    A   ? :   B   ==   C   +=   D   &
2. _____ is correct if it is used as a character constant.
    A   '\'   B   '\080'   C   '%d'   D   0xa
3. According to the declaration: char c1=92,c2=92; the value of expression _____ is 0.
    A   c1^c2   B   c1&c2   C   ~c2   D   c1|c2
4. According to the declaration: int x=11; the value of expression (x++*1/3) is_____.
    A   3   B   4   C   0   D   3.667
5. The value of expression sizeof("\num=%d\t") is _____.
    A   7   B   8   C   9   D   10
6. In the following assignments or initialization, _____ is wrong.
    A   char s[ ]="hello";   B   char s[10]; s="hello";
    C   char *p="hello";   D   char *p; p="hello";
7. The following code fragment prints out _____.
    #define   MA(x, y)   (x)*(y)
    int i = 2;
    i = 3/MA(i, i+2)+5;
    printf("%d\n", i);
        A   5   B   8   C   9   D   11
8. static struct {
        int x, y[3];
      } a[3] = {{1,2,3,4},{5,6,7,8},{9,10,11,12}}, *p;
      p = a+1;
       The value of expression *((int *)(p+1)+2) is _____.
    A   3   B   7   C   10   D   11
9. After running the following code fragment, the value of s is _____.
    int i=5, s=0;

```
do   if (i%2) continue; else s+=i; while (--i);
```
    A   15   B   9   C   6   D   5

10. According to the declaration: int (*p)[10], p is a(n) _____.

    A   pointer   B   array   C   function   D   element of array

Section 2: Fill in the blanks   2 mark for each item, total 30 marks

1.   The value of expression 1+4/5+15<7+4%5+(8,10)   is _____.

2.   The value of expression !!10 is _____.

3.   The value of expression 3>2>1 is _____.

4.   The value of expression ~(-1<<1) is _____.

5.   The statement *for (i=1; i<=9; i++) printf("%3d", _____);*prints out the following numbers:

     1   4   7 10 13 16 19 22 25.

6.   According to the declaration: int a[10], *p=&a[1]+2; the last element of array a is p[__].

7.   Write the declaration_____ with typedef, which makes PA a synonym for a character pointer array, which contains 100 elements.

8.   The following code fragment prints out _____.

```
static int a[3][4]={{1,2,3},{4,5,6}};
printf("%d",a[0][5]);
```

9.   The following code fragment prints out _____.

```
char a[]={"678","45"},**p=a+1;
printf("%s,%c",*p,**p-1);
```

10. The following code fragment prints out _____.

```
int   *p,   *q,   k = 1, j=10 ;
p=&j; q = &k ; p = q ; (*p)++;
printf("%d",k);
```

11. The following program prints out _____.

```
#include <stdio.h>
void f(int *x,int *y)
{   int *p;
    p=x; x=y; y=p;
}
void main()
{   int x=1, y=2;
    f(&y, &x);
    printf("%d, %d", x, y);
}
```

12. The following program prints out _____.

```
#include <stdio.h>
#include <string.h>
main()
{   char   st[20]="hello\0world!";
```

```
        printf("%d,%d\n",strlen(st),sizeof(st));
    }
```

13. To execute the command: prog 123 456 ABC, the value of *(++argv[2]) is_____.

14. The following program fragment prints out _____.
```
    int i;
    int f(int x)
    {    static int k = 0;
        x+=k++;
        return x;
    }
    i=f(2);
    i=f(3);
    printf("%d",i);
```

15. The following program fragment prints out _____.
```
    int f(int x)
    {    return ((x>0)? x*f(x-1):3); }
    printf("%d",f(f(1)));
```

Section 3: Read each of the following programs and answer questions (marks for each item, total marks: 30)

1   The output of the following program is _____.
```
    #include <stdio.h>
    void main()
    {
        int i,j,k=19;
        while (i=k-1) {
            k-=3;
            if(k%5==0) { i++; continue; }
            else if(k<5) break;
            i++;
        }
        printf("i=%d,k=%d\n",i,k);
    }
```

2   When input: *AabD <ENTER>*, The output of the following program is _____.
```
    #include <stdio.h>
    void main()
    {
        char s[81];
        int i=0;
        gets(s);
```

```
        while (s[i]!='\0'){
            if(s[i]<= 'z'&&s[i]>= 'a')
                s[i]= 'z'+'a'-s[i];
            i++;
        }
        puts(s);
    }
```
3 The output of the following program is _____.
```
    #include   <stdio.h>
    int x,y,z,w;
    void p(int x, int *y)
    {    int z;
         ++x;
         ++*y;
         z=x+*y;
         w+=x;
         printf("%2d%2d%2d%2d#", x,*y,z,w);
    }
    void main()
    {    x=y=z=w=2;
         p(y, &x);
         printf("%2d%2d%2d%2d\n", x,y,z,w);
    }
```
4 The output of the following program is _____.
```
    #include <stdio.h>
    #define F(k)          k+3.14
    #define P(a)          printf("a=%d\n", (int)(a))
    #define P1(a)         P(a);putchar('\n');
    #define P2(a, b)      P(a);P1(b);
    void main()
    {
        int x = 1;
        {
            int x = 2;
            P(x*F(2));
        }
        {
            for (; x < 10; x += 50)
                P2(x, 9.15*x+32);
        }
```

}

5   When input: ***this is a test.<ENTER>***, The output of the following program is _____.
    ```
    #include <stdio.h>
    #define TRUE 1
    #define FALSE 0
    int change(char *c,int status);
    void main()
    {
        int flag=TRUE;
        char ch;
        do{
            ch=getchar();
            flag=change(&ch,flag);
            putchar(ch);
        } while(ch!='.');
        printf("\n");
    }
    int change(char *c,int status)
    {
        if(*c==' ') return TRUE;
        if(status&&*c<='z'&&*c>='a') *c+='A'-'a';
        return FALSE;
    }
    ```

6   There are three text files *f1*,*f2* & *f3*, each of them contains some characters as following:

file name	contents
f1	*aaa!*
f2	*bbb!*
f3	*ccc!*

    Compiling the following C source codes, and linking the related object codes, an executable
    command file *ex12.exe* will be produced. To execute the command at DOS prompt: ***ex12 f1
    f2 f3***<**ENTER**>,the output is: _____.
    ```
    #include <stdio.h>
    main(int argc, char *argv[])
    {
        FILE *fp;
        void sub(FILE *);
        int i=1;
        while (--argc>0)
            if ((fp=fopen(argv[i++],"r"))==NULL) {
                printf("Cannot open file!\n");
    ```

```
            exit(1);
        } else {
            sub(fp);
            fclose(fp);
        }
}
void sub(FILE *fp)
{
    char c;
    while((c=getc(fp))!='!') putchar(c+1);
}
```

Section 4: According to the specification, complete each program (2 mark for each blank, total: 20 marks)

1   The following program is to calculate the value of "**e**" according to the formula
$e = 1 + \dfrac{1}{1!} + \dfrac{1}{2!} + \dfrac{1}{3!} + \Lambda$, while the value of the last item must be less than 10^{-6}.

```
#include <stdio.h>
main()
{
    int i;
    double e,item;
      (1)  ;
    item=1.0;
    for (i=1;  (2)  ;i++) {
        item/=(double)i;
        e+=  (3)  ;
    }
    printf("e=%f\n",e);
}
```

2   The following program deletes the non-nested comments which be included between */*/ and */*/
from the C source program file **exam.c**, and stores the results in the file **exam.out**.

```
#include <stdio.h>
void delcomm(FILE *fp1,FILE *fp2)
{
    int c,i=0;
    while((  (4)  )!=EOF)
        if (c=='\n')
            fprintf(fp2,"\n");
        else
```

```
                    switch(i){
                        case 0:
                            if(c=='/') i=1;
                            else fprintf(fp2,"%c",c);
                            break;
                        case 1:
                            if(c=='*') i=2;
                            else {
                                fprintf(fp2,"/%c",c);
                                i=0;
                            }
                            break;
                        case 2:
                            if(c=='*') i=3;
                            break;
                        case 3:
                            i=(c=='/')?  (5)  ;
                            break;
                    }
    }
    void main()
    {
        FILE *fp1,*fp2;
        fp1=fopen("exam.c","r");
        fp2=fopen("exam.out","w");
        delcomm(  (6)  );
          (7)  ;
        return;
    }
```

3 Given: the pointer **head** points to the first node of the simple list. The following function **del()**
   deletes the first node which value is equal to **num** from the simple list.

```
    #include <stdio.h>
    struct student {
        int info;
        struct student *link;
    };
    struct student *del(struct student *head,int num)
    {
        struct student *p1,*p2;
        if(head==NULL)
```

```c
            printf("\nlist null!\n");
        else {
            p1=head;
            while(   (8)   )     {
                    p2=p1;
                    p1=p1->link;
            }
            if(num==p1->info){
                if(p1==head)   (9)   ;
                else     (10)   ;
                printf("delete:%d\n",num);
            } else
                printf("%d not been found!\n",num);
        }
        return(head);
    }
```