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1. Which of the following variable names are illegal in C syntax?

- I) *integral* II) *integer* III) *\_number1*  
 IV) *1stMidterm* V) *Top\_10*

- a) I and IV                      b) III and IV  
 c) II and IV                    d) **IV only**  
 e) III, IV, and V

2. What will be the value of *x* and *y* after execution of the following program segment?

```
int x=3, p=8;
float y = -3.1415;
x = 11 % x + 1 / x * 3.9 - (double) x ;
y = - (p / x) * (x / p);
```

- a) *x*: 3 *y*: -3.1415            b) *x*:1 *y*: -3.1415  
 c) ***x*: -1 *y*: 0.0**              d) *x*: 0 *y*: 0.0  
 e) *x*: 0.3 *y*: 1.0

3. What is the C equivalent of the following expression?

$$\log(\sin^2 x) + \frac{\cos^2 x}{1-x}$$

- a)  $\lg(\sin x)^2 + \cos^2 x / (1-x)$ ;  
 b)  $\log(\sin(x*x)) + (\cos x * \cos x) / 1-x$ ;  
 c)  $\log \sin x * x + \cos x / 1-x$ ;  
 d)  **$\log(\sin(x*x)) + \cos(x) * \cos(x) / (1-x)$** ;  
 e)  $\log \sin x^2 + \cos^2 x / 1-x$ ;

4. Given the variable declarations:

```
int x=5;
double y = 9.81, angle, result;
char City;
```

Give the choice which lists ALL of the following statements with invalid C syntax ?

- I) *x = pow(x, -1.0)*;  
 II) *2\*2 = 4*;  
 III) *result =squareroot(x\*\*2 - y\*\*2)*;  
 IV) *angle = atan(1.2)*;  
 V) *City = 'Kiev'*;  
 VI) *x = (double) x + (int) y*;

- a) **II, III and V**                      b) II and V  
 c) III and IV                        d) II,III and VI  
 e) I and II

5. The floating type constant 2.7182E-2 is equivalent to:

- a) -2.71822                      b) -22.7182                      c) 0.27182  
 d) -0.271822                    e) **0.027182**

6. Which of the following definition is not valid?

- a) `long my__int;`  
 b) `double _benim, Sayi;`  
 c) `float Mynumber_is9;`  
 d) **`string mystring;`**  
 e) `char X98char;`

7. What could be the output of the following expression?

```
printf("%d%c%c", 'A','b',67);
```

- a) Ab67                              b) 65b67                              c) 65bc  
 d) AbC                                e) **65bC**

8. How can we get the output: `\\n\\t`?

- a) `printf("\\n\\t' ' '");`  
 b) **`printf("\\\\n\\t\\' \\' '");`**  
 c) `printf("\\n\\t' ' '");`  
 d) `printf("\\\\n\\t\\' \\' '");`  
 e) `printf("\\\\n\\t\\' \\' \\' '");`

9. If you enter **97ca97** as input for the following expression what would be the output?

```
char a,b,c,d;
scanf("%d%c%c%c",&a,&b,&c,&d);
printf("%d%d%d%d",a,b,c,d);
```

- a) 97999997                      b) a9997a  
 d) 97ca97                        e) 999799a                      c)9799997

10. Which of the following is not a keyword in C?  
 a) else    b) do    c) goto    d) if    e) then

11. The syntax of ? operator in C is;  
 (CONDITION) ? TRUEVALUE : FALSEVALUE

What is the value of below statement?

```
(a < b) ? a : b ;
```

- a) minimum of a and b  
 b) maximum of a and b  
 c) a / b                              d) a + b                              e) Zero

12. What is the value of variable n after the execution of the following code?

```
int n = 2 ;
n = (double) n ;
```

- a) 2.0    b) **2**    c) 4.0    d) 4    e) 0

13. How many lines of output will be produced by the following code?

```
int i = 0 ;
while ( 'l' > 4 )
printf ( " i %d \n " , ++i ) ;
printf ( "last: i %d \n" , i ) ;
```

- a) 0    b) 1    c) 2    d) 3    e) **infinite**

14. What is the output of the following code fragment?

```
int k = 10 , t ;
t = - k - - ;
printf ( " %d %d " , k , t ) ;
```

- a) 9 10    b) **9 -10**    c) -10 -11  
d) 9 -11    e) -10 -10

15. Assuming a, b, and c are of type "int", what is the equivalent of the following if-statement:

```
if (!(a<5 && a%2==0) )
printf("%d",b);
else
printf("%d",c);
```

- a) if (a>=5 && a%2==1) printf("%d",c);  
else printf("%d",b);  
b) if (!(a<5) && !(a%2==0)) printf("%d",b);  
else printf("%d",c);  
c) if (a>=5 || a%2 !=0) printf("%d",c);  
else printf("%d",b);  
d) **if (a>=5 || a%2 ==1) printf("%d",b);**  
**else printf("%d",c);**  
e) if (a<5 || a%2==0) printf("%d",c);  
else printf("%d",b);

16. What is the output of the following program segment?

```
x=2;
if (x>0)
{if (x>4) printf("A");} else
printf("AA");printf("AAA");
```

- a) **AAA**    b) AAAA    c) A  
d) AA    e) AAAAA

17. What is the output of the following program segment?

```
x = -1;
if (x++) printf("A");
else printf("B");
if (!x) printf("C");
```

- a) A    b) B    c) C    d) BC    e) **AC**

18. For what exact range of values of variables a and b, does the following code segment display the value 0?

```
m = -1;
if (a>20)
if (b<10)
if (a>=30)
m = 4;
else
m = 0;
else
m = 1;
else
m = 2;
printf("%d",m);
```

- a) a > 20    b) 20 ≤ a ≤ 30  
b ≥ 10    b ≤ 10  
c) **20 < a < 30**    d) a ≥ 30  
**b < 10**    b < 10  
e) 20 < a < 30  
b ≥ 10

19. Assuming that x, y and flag are integer type variables, which one implements "assign the value 1 to flag if x is an even number or y is multiple of x, 0 otherwise"?

- a) if (x%2==1 || x%y ==0) flag=1;  
else flag=0;  
b) if (x%2==0 && x%y ==0) flag=1;  
else flag=0;  
c) if (x%2==0 && y%x ==0) flag=1;  
else flag=0;  
d) **if (x%2==0 || y%x ==0) flag=1;**  
**else flag=0;**  
e) if (x%2==0)  
if (y%x ==0)  
flag=1;  
else flag=0;

20. What is the output of the following program segment?

```
x=2;
y=3;
if (x <2 && y >2)
    if (y >0)
        printf("A");
    else printf("B");
else if (y>1 || x >0)
    printf("C");
```

- a) A      b) B      c) **C**      d) AC  
e) no output

Use below program to answer question 21-24.

```
#include <stdio.h>
int main() {
    int a=0, b=0, c=0, f, g;
    scanf("%d%d%d", &f, &g, &h);
    c=0;
    for (a=g; a<f; a++)
        for (b=h; b<f; b++)
            c++;
    printf("%d\n", c);
}
```

21. Which one of the below is the output of the above program for the input 5 1 2?  
a) 1      b) 4      c) 10      d) **12**      e) 15

22. Which one of the below is the output of the above program for the input 5 2 1?  
a) 1      b) 4      c) 10      d) **12**      e) 15

23. Which one of the below is the output of the above program for the input 5 4 4?  
a) **1**      b) 4      c) 10      d) 12      e) 15

24. Which one of the below is the output of the above program for the input 5 3 3?  
a) 1      b) **4**      c) 10      d) 12      e) 15

Use below program for questions 25-26.

```
#include <stdio.h>
int main() {
    int a=0, b=0, c=0, f, g;
    scanf("%d%d", &f, &g);
    c=0;
    for (a=g; a<f; a++)
        for (b=g; b<a; b++)
            c++;
    printf("%d\n", c);
}
```

25. Which one of the below is the output of the above program for the input 5 1?

- a) 3      b) **6**      c) 10      d) 12      e) 15

26. Which one of the below is the output of the above program for the input 5 1?

- a) **3**      b) 6      c) 10      d) 12      e) 15

Use below program to answer to questions 27-30.  
/\* The following program finds the maximum of f positive integers.

```
Find values for  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$ . */
#include <stdio.h>
int main() {
    int a=0, b=0, c=0, d=0, e=0, f, g, h;
    scanf("%d",&f);
    g=  $\alpha$ ; // g stores the maximum,
            // initialize to ?
            // h is the counter
    for (h=1;  $\beta$ ;  $\delta$ ) // expression?
        // what happens to h?
        { scanf("%d",&a); // read a number
          if (a>g) g=  $\gamma$ ; // assignment?
        }
    printf("max is %d\n",g);
}
```

27. What should replace  $\alpha$ ?

- a) **0**      b) 1  
c) 10      d) Maximum integer  
e) Anything

28. Which expression should replace  $\beta$ ?

- a) g<h      b) g<=h      c) h<f  
d) **h<=f**      e) g<f

29. Which expression should replace  $\gamma$ ?

- a) 0      b) g+a      c) **a**      d) h      e) g+h

30. Which expression should replace  $\delta$ ?

- a) h = 0      b) h = a      c) h = g  
d) h += g      e) **h += 1**

31. What is the value of x after the execution of the below statements?

```
int x = 4;
x /= x - 2;
```

- a) 0      b) -1      c) **2**      d) 1      e) 4

32. What will be the output of the below code segment?  
`m=0;`  
`do {`  
`m=m-2;`  
`} while (m>5)`  
`printf("%d",m);`

a) 0    b) 2    c) -2    d) 5    e) 7

33. What will be the output of the below code segment?  
`m=0;`  
`while (m>5)`  
`m=m-2;`  
`printf("%d",m);`

a) 0    b) 2    c) -2    d) 5    e) 7

34. What will be the value of dif at the end of following code segment?  
`int m=1;`  
`int myvar,dif;`  
`while(m<=2)`  
`myvar=m++;`  
`dif=m-myvar;`

a) 0    b) 1    c) -1    d) 2    e) -2

Use below program to answer to questions 34-35.

```
counter1 =0
counter2=0;
while (counter1 <3 ) {
    while ( (counter2+counter1)%2==0)
        printf("%d",counter2++);
    counter1++;
}
```

35. How many times will the printf statement be executed?

a) 3    b) 4    c) 7    d) 0    e) 2

36. What will be the value of the counter2 after the execution of the above code segment?

a) 3    b) 0    c) 2    d) 4    e) 1

37. What is the value of \_n\_ after execution of the below switch statement?

```
switch (c = 1) {
    case 1: n = 0;
    case 0: n += 1;
    case 2: n = n * 2;
}
```

a) 0    b) 1    c) 2    d) 3    e) 4

38. What is the value of \_n\_ after execution of the below switch statement?

```
int n=0;
switch (n++) {
    case 0: n += 1;
    case 1: n += 2;
    case 2: n += 3;
    default:
```

a) 0    b) 1    c) 3    d) 7    e) 6

39. What is the value of \_n\_ after execution of the below switch statement?

```
int n=0;
switch (3) {
    case 3: n = 1;
    case 2: n = 2;
    case 1: n = 3;
    default: n = -1;
}
```

a) 0    b) 1    c) 2    d) 3    e) -1

40. What is the output of the following code segment?

```
int a;
a=3;
switch(a) {
    case 2: printf("i");
    break;
    case 3: printf("ii");
    case 4: printf("zz");
    break;
    default: printf("iii");
}
```

a) i    b) ii    c) iiiii    d) iizz    e) zz