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?
   \[ \text{int } x = 3, p = 8; \]
   \[ \text{float } y = -3.1415; \]
   \[ x = 11 \% x + 1 / x * 3.9 - (\text{double}) x; \]
   \[ y = - (p / x) * (x / p); \]
   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?
   \[ \cos^2 x \log (\sin x^2) + \frac{\text{---------}}{1 - x} \]
   a) \( \log (\sin x)^2 + \cos^2 x / (1-x) \)
   b) \( \log (\sin x^2 + (\cos x \times \cos x) / 1-x) \)
   c) \( \log \sin x^2 + \cos x \cos x / (1-x) \)
   d) \( \log (\sin x^2) + \cos(x) \cdot \cos(x) / (1-x) \)
   e) \( \log \sin x^2 + \cos^2 x / 1-x \)

4. Given the variable declarations:
   \[ \text{int } x = 5; \]
   \[ \text{double } y = 9.81, \text{angle, result}; \]
   \[ \text{char City}; \]

   Give the choice which lists ALL of the following statements with invalid C syntax?
   I) \( \text{pow}(x, -1.0) \)
   II) \( 2^2 = 4 \)
   III) \( \text{result} = \text{sqrt}\text{root}(x^2 - y^2) \)
   IV) \( \text{angle} = \text{atan}(1.2) \)
   V) \( \text{City} = \text{‘Kiev’}; \)
   VI) \( \text{x} = (\text{double}) \times + (\text{int}) \text{y}; \)
   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) -2.7182  b) -22.7182  c) 0.27182  
   d) -0.27182  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:
   \[ \text{printf(“%d%c%c”, ‘A’, ‘b’, 67);} \]
   a) Ab7  b) 65b7  c) 65bc  d) AbC  e) 65bC

8. How can we get the output: \( \text{\n\t’ ‘ ‘ ‘ ‘} \)?
   a) \( \text{printf(“\n\t’ ‘ ‘ ‘ ‘};} \)
   b) \( \text{printf(“\n\t’ ‘ ‘ ‘ ‘};} \)
   c) \( \text{printf(“\n\t’ ‘ ‘ ‘ ‘};} \)
   d) \( \text{printf(“\n\t’ ‘ ‘ ‘ ‘};} \)
   e) \( \text{printf(“\n\t’ ‘ ‘ ‘ ‘};} \)

9. If you enter \( 97ca97 \) as input for the following expression what would be the output?
   char a, b, c, d;
   \[ \text{scanf(“%d%c%c%c”, &a, &b, &c, &d);} \]
   \[ \text{printf(“%d%d%d%c”, a, b, c, d);} \]
   a) 97999997  b) a9997a  c) 9799979  d) 97ca97  e) 997999a  c) 9799979

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:
    \[ \text{(CONDITION) ? TRUEVALUE : FALSEVALUE} \]
    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?

```c
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?

```c
int i = 0;
while ( 'I' > 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?

```c
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:

```c
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?

```c
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?

```c
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?

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

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

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”?

```c
if (x%2==0 || y%x ==0) flag=1;
else flag=0;
```

- 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) ( y%x ==0 )
    flag=1;
  else flag=0;
20. What is the output of the following program segment?
\[\begin{align*}
x &= 2; \\
y &= 3; \\
&\text{if } (x < 2 \&\& y > 2) \\
&\quad \text{if } (y > 0) \\
&\quad \quad \text{printf("A");} \\
&\quad \quad \text{else printf("B");} \\
&\quad \text{else if } (y > 1 \| x > 0) \\
&\quad \quad \text{printf("C");}
\end{align*}\]

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 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 1?
   a) 3    b) 6    c) 10    d) 12    e) 15

Use below program to answer to questions 27-30.
#include <stdio.h>

/* The following program finds the maximum of _f_ positive integers. 
Find values for \(\alpha\), \(\beta\), \(\gamma\), \(\delta\). */

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?
```c
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?
```c
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?
```c
int m=1;
int myvar,dif;
while(m<=2)
  myvar=m++;
dif=m-myvar;
```

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

35. How many times will the printf statement be executed?
```c
counter1 =0
counter2=0;
while (counter1 <3 ) {
  while ( (counter2+counter1)%2==0)
    printf("%d",counter2++);
  counter1++;
}
```

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?
```c
```

a) 3  b) 0  c) 2  d) 4  e) 1

37. What is the value of _n_ after execution of the below switch statement?
```c
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?
```c
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?
```c
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?
```c
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