

There are 40 questions (each 2.5 points) for a total of 100 points.

Exam Type: **A**

All questions are multiple choice, **no points will be lost for wrong answers.**

Do not forget to mark your student ID and exam type correctly to the answer sheet. Otherwise, your answers will not be graded.

Assume that all necessary libraries were added properly (by using "include" statements).

Default return type of the "main" function is "int". Assume that the statement "return 0;" is added to programs if necessary.

Name: _____ **Student ID:** _____ **Section:** _____ **Signature:** _____

1) What is the output of the following program?

```
int compute(int a, int b, int c)
{ if(b=c+(2*a))
  printf("result = %d", b*6);
  else if((a=b+c))
  printf("result= %d", a*6) ;
  else
  printf("result= 0"); }
```

```
main()
{ compute(-2, 5, 4);}
```

a) 0 b) -12 **c) 24** d) 30 e) -10

2) What is the output of the following program?

```
main()
{ char first,second;
  int i;
  first='A';
  second='E';
  i=first-second;
  if((first>second) && (i))
  printf("YELLOW");
  else if ((first<second) && (!(i)))
  printf("RED");
  else
  printf("WHITE"); }
```

a) YELLOW b) RED **c) WHITE**
d) None of them e) Run-time Error

3) What is the output of the following program?

```
main()
{ char top,bot;
  int a,b;
  top='P';
  bot='T';
  a=55;
  b=166;
  top= (char)((b/a)+'J'+(top>bot));
  printf("%c",top); }
```

a) top b) J c)K **d) M** e) None of them

4) What is the output of the following program?

```
main()
{ int i,j,a,b,c,d;
  a=1; b=-4; c=2; d=-3;
  if((a>b+c&&d)==(a>(b+c)&&d))
  printf("THIS");
  else if((a>b+c&&d)==((a>b)+c&&d))
  printf("THAT");
  else if((a>b+c&&d)==(a>b+(c&&d))
  printf("NOT");
  else
  printf("DOT"); }
```

a) THIS b) THAT c)NOT d) DOT e) 0

5) How many times CENG will be printed?

```
main()
{ int i=1;
  do{
    printf("CENG\n");
  }while(i<5 || !(i++)); }
```

a) 0 b) 4 c) 5 d) 6 **e) more than 6**

6) What is the output of the following program?

```
void f(int x, int y)
{ printf("%d%d", x, y);
  x=3;
  { int y=3;
    printf("%d%d", x, y);
  }
  printf("%d%d", x, y); }
```

```
main()
{ int x=1, y=2;
  f(x,y);
  printf("%d%d", x, y); }
```

a) 12121212 b) 12333312 **c) 12333212**
d) 12333333 e) 12123312

7) What is the output of the following program?

```
main()
{ int x=0;
  if (x++) printf("before x=%d", x);
  else { printf("after x=%d", x-1); if (!x)
  printf("00"); } }
```

a) before x=0 b) before x=1 c) **after x=0**
d) after x=-1 e) after x=100

8) Which one of the following declarations is not valid for C?

a) unsigned char **b) shortint** c) float
d) long int e) unsigned int

9) What is the output of the following program?

```
int y=0;
void f(int x)
{ ++x;
  y++; }
main()
{ int x=0;
  f(x);
  printf("%d %d", x, y); }
```

a) 0 0 **b) 0 1** c) 1 0 d) 1 1 e) Error

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10) What is the output of the following program?

```
main()
{ float x;
  x = -5*(22/7.);
  printf("%6.2f", x); }
```

- a) Error b) .71 c) -15 d) 15.71 e) -15.71

11) What is the output of the following program?

```
main()
{ int i, j, count;
  for (count =i=0; i<10; i++)
    for (j=0; j<i; j++)
      { if (j%2) continue;
        count++; }
  printf("%d", count); }
```

- a) 10 b) 25 c) 45 d) 100 e) infinite

12) What is the output of the following program?

```
main()
{ int a=0, b=0, c=0, d;
  d = a++ && b++ || c++;
  printf("%d%d%d%d", a, b, c, d); }
```

- a) 1111 b) 1000 c) 1110 d) 1010 e) 1011

13) What is the output of the following program?

```
main()
{ int a=5, b=5, x=5;
  switch(a+b/5)
  { case 2: a++; b++;
    case x: a--; b--;
    case ++x: a=b=0;
    case 10: a++;
    default: b++; }
  printf("%d %d %d", a, b, x); }
```

- a) 6 6 5 b) 1 1 5 c) 0 0 6 d) 1 1 6 e) Error

14) What is the output of the following program?

```
int f(int a)
{ a = a * a;
  printf("%d ", a);
  return a; }
```

```
main()
{ int a = 4;
  printf("%d ", a);
  printf("%d ", f(a));
  printf("%d ", a); }
```

- a) 4 16 4 4 b) 4 4 16 4 c) 4 16 16 16 d) 4 16 16 4 e) 4 16 4 16

15) How many times the "*" character is printed?

```
main()
{ int i,j;
  for (i=0; i<10; i++)
    for (j=0; j<=3; j++)
      printf("*"); }
```

- a) 13 b) 30 c) 33 d) 40 e) 44

16) Which one is equivalent to the above piece of code, provided that expressions α and β do not modify variables?

```
if ( $\alpha$ )
if ( $\beta$ )  $\Gamma$ 
else  $\Gamma$ 
a) if ( ( $\alpha$  && ( $\beta$ ) )  $\Theta$  else  $\Gamma$ 
b) if ( ( $\alpha$  || ( $\beta$ ) )  $\Theta$  else  $\Gamma$ 
c) if ( $\beta$ ) if ( $\alpha$ )  $\Theta$  else  $\Gamma$ 
d) if ( $\alpha$ )  $\Gamma$  else if ( $\beta$ )  $\Theta$ 
e) none of these
```

17) Which of the following is correct?

- a) $(a == b == c) == (a == b \&\& c)$ is a tautology (i.e., it will always return 1, meaning 'true' regardless of the values of a, b and c).
b) $a = !(a = !a)$ evaluates to the value of a, regardless of the initial value of a.
c) $(!!a ? !a : a)$ will always evaluate to 0 (zero) for any value of a.
d) $a != b$ and $a = !b$ are equivalent in C.
e) In $(a + 2 == b \&\& c++)$, variable c is always incremented.

18) What is the output of the following program?

```
main()
{int a=2, b=3, c=4;
  printf("%d", (c>b)?(b>a?c:(a>c?a:c)):(b>a?b:a)); }
```

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

19) What is the output of the following program?

```
main()
{ int i=3,j=-1;
  for (i=5; i < 10; i++)
  { printf("%d",i); i++;
    for (j=0; j < 2; j++)
      printf("*"); } }
```

- a) 579 b) 5**7**9 c) 5**7**9** d) **7**9** e) *****

20) What is the output of the following program?

```
main()
{ int i=3,j=2, b=1, c=2;
  b= b + j + (++c) + (--i);
  printf("%d", b); }
```

- a) 8 b) 9 c) 7 d) 0 e) 6

21) What is the output of the following program?

```
main()
{ int a = 10, b = 11;
  int c = (a < b)? a : b;
  printf("%d", ++c); }
```

- a) 10 b) 9 c) 11 d) 12 e) 13

22) What is the output of the following program?

```
int fun(int i)
{ return (i++); }
main()
{ int i; i = fun(10);
  printf("%d\n", --i); }
```

- a) 9 b) 10 c) 11 d) 8 e) 12

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23) What is the output of the following program?

```
main()
{ int x = 2, y = 0, z = -1;
  z = y || ++x+2;
  printf("%d\n", x); }
```

- a) 0
- b) 1
- c) 2
- d) 3
- e) Run-time Error because y and z is not printed

24) What is the output of the following program?

```
main()
{ int x;
  switch(x=3.2)
  { case 0: printf("zero\n"); break;
    case 1: printf("one\n"); break;
    case 2: printf("two\n"); break;
    case 3: printf("three\n"); break;
    default: printf("default\n"); break; } }
```

- a) zero
- b) one
- c) three
- d) default
- e) Compile-time Error

25) What is the output of the following program?

```
float power(float val, unsigned pow)
{ float ret_val=1.0, j;
  unsigned i;
  for(i=0; i<pow; i++)
  ret_val *= val+val;
  return(ret_val);
  j=7;
  return j; }
```

```
main()
{ float x;
  x=power(3, 2);
  printf("%.2f", x); }
```

- a) 7.00
- b) 9.00
- c) 21.00
- d) 36.00
- e) Compile-time Error

26) What is the output of the following program?

```
main()
{ int a=1;
  if (a!=1)
  if (a==1)
  { a++; }
  else if (++a) ++a;
  else a--;
  else --a-1;
  a--;
  printf("%d", a); }
```

- a) -1
- b) 1
- c) 2
- d) 3
- e) Compile-time Error

27) Which of the following expressions equivalent to the this boolean expression: $!(A < 5 \ \&\& \ B \ != \ C)$

- a) $A > 5 \ || \ B \ != \ C$
- b) $A >= 5 \ \&\& \ B \ == \ C$
- c) $!(A < 5) \ || \ (B \ != \ C)$
- d) $A >= 5 \ || \ B \ == \ C$
- e) $A < 5 \ \&\& \ B \ == \ C$

28) What is the output of the following program?

```
int func(int x, int y)
{ if(x>y) return x;
  else if(y>x) return y;
  else return (x+y); }
```

```
main()
{ int x=1, y=1;
  printf("%d ", func(x++, ++y));
  printf("%d", func(y++, x++)); }
```

- a) 4 3
- b) 4 4
- c) 2 4
- d) 4 6
- e) 2 6

29) What is the output of the following program?

```
main(){
  int i, j, sum=0, time=01;
  for(i=1; i<6; i++){
    j=0;
    time*=i;
    while(j<i){sum+=j; j++;}
    sum+=time; }
  printf("%d %d", sum, time);
}
```

- a) 20 173
- b) 120 173
- c) 173 20
- d) 20 120
- e) 173 120

30) What is the output of the following program?

```
main()
{ int x=0, i;
  for(i=0; i<5; i++)
  { switch(i)
    { case 0: x++;
      case 1: x*=x; break;
      case 2: x+=x;
      default: x--; } }
  printf("%d", x); }
```

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

31) How many times 1 will be printed on the screen?

```
main()
{ int i=1;
  for(i=16; i!=0; i-=2)
  { switch(i%4)
    { case 0: printf("0");
      case 1: printf("1"); break;
      case 2: printf("2"); break;
      case 3: printf("3"); } } }
```

- a) Compile-time Error
- b) 0 times
- c) 1 time
- d) 4 times
- e) 8 times

32) What is the output of the following program?

```
main()
{ int n1=0, n2=1;
  if( n1 && (n2-- % n1 == 0))
  printf("C");
  printf("%d", n2); }
```

- a) Compile-time Error
- b) C1
- c) Run-time Error(Divide by Zero)
- d) C0
- e) 1

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33) What is the output of the following program?

```
main()
{ int number=13986,i;
  int s=0,d=0;
  for(i=1 ; i ; i=number)
  { s+=number%10;
    number/=10;
    d++; }
  printf("%d%d",s,d); }
```

- a) 265 b) 274 **c) 275** d) 264 e) None of them

34) What is the output of the following program?

```
main()
{ int x=0;
  while (!x)
  do
  { printf("%d",x%2);
    }while(++x<5); }
```

- a) No output b) Run-time error c) 10101
- d) 01010** e) Compile-time error

35) What is the output of the following program?

```
main()
{ int i=75;
  for(; i>0;)
  { --i;
    i/=3;
    printf("%d ",i);
    if(i==5) break; } }
```

- a) 24 7 2 0** b) Run-time error c) 25 8 2 0
- d) Compile-time error e) 25 5

36) Which of the followings cannot be used as variables?

- a) string, math b) math, print c) scan, math
- d) print, string **e) long, int**

37) What is the output of the following program?

```
main()
{ int i;
  char k='n', n='k';
  for(i=1; i<=k-'k'; i++)
  { if(i==( 'n'-n)) k='k'-i;
    n=n+1; }
  printf("%c%c",k,n); }
```

- a) km b) kn **c) im** d) in e) nk

38) What is the output of the following program?

```
main()
{ int i, j, k=1, m=1;
  for(i=1; i<=3; i++)
  { for(j=i; j>=1; --j)
    { m=m*(-1);
      for(k=i-j+1; k<=i; k++)
        m++; } }
  printf("%d",m); }
```

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

39) What is the output of the following program?

```
#define PI 22/7
main()
{ int r = 7/4;
  printf("%.2f\n", 2.0*(PI*r)); }
```

- a) 11.00 b) 10.50 c) 6.29
- d) 6.00** e) Run-time error

40) What is the output of the following program?

```
main()
{ char f = 'd', g = 'n';
  while(f-g)
  { f++; --g; printf("%d", g-f+3); } }
```

- a) Infinite loop **b) 119753** c) 1197531-1
- d) 12108653 e) 121086531-1