King Saud University

College of Computer and Information Sciences
Computer Science Department

Course Code	**CSC 215**	
Course Title	**Procedural Programming**	
Section No.	**Sample (A)**	
Semester	**Spring 2022**	
Exam	**Final Exam**	
Date	**02/06/2022**	**Duration** **120 minutes**
Student Name		
Student ID		

Instructions:

· **This exam has a total of 40 marks.**
· **Write clearly and neatly.**
· **Copy your answers to questions-1 to 1-40 in the table below.**
· **ONLY THIS TABLE WILL BE GRADED.**
· **USE CAPITAL LETTERS.**
· **For all questions, assume the size of the integer type and the address is 32-bits.**

1	2	3	4	5	6	7	8	9	10

11	12	13	14	15	16	17	18	19	20

21	22	23	24	25	26	27	28	29	30

31	32	33	34	35	36	37	38	39	40

1. What will be the output of the following C code?

```
#include <stdio.h>
int main(){
  int y = 1000;
  int y = 34;
  printf("Hello World! %d\n", y);
  return 0;
}
```

re declaration

A) `Hello World! 34`
B) `Hello World! 1000`
C) `Hello World!` followed by a random value
D) Compiler error

---

2. What will be the final value of x in the following C code?

```
#include <stdio.h>
int main(){
  int x = 5 * 9 / 3 + 9;
  return 0;
}
```

45/3 = 15+9=24

A) `3.75` B) `3` C) `24` D) compiler dependent

---

3. What will be the output of the following C code?

```
#include <stdio.h>
int main(){
  short int i = 20;
  char c = 97;
  printf("%d, %d, %d\n", sizeof(i), sizeof(c), sizeof(c + i));
  return 0;
}
```

??

A) `2, 1, 2` B) `2, 1, 1` C) `2, 1, 4` D) `2, 2, 8`

---

4. What is the difference between the following 2 C codes?

```
#include <stdio.h> //Program 1
int main(){
  int d, a = 1, b = 2;
  d =  a++ + ++b;
  printf("%d %d %d", d, a, b);
  return 0;
}
```

```
#include <stdio.h> //Program 2
int main(){
  int d, a = 1, b = 2;
  d =  a++ +++b;
  printf("%d %d %d", d, a, b);
  return 0;
}
```

increment first

so can't do +++b

A) No difference as space doesn't make any difference. Values of `a`, `b`, `d` are the same in both
B) Space does make a difference, values of `a`, `b`, `d` are different
C) Program 1 has a syntax error, program 2 does not.
D) Program 2 has a syntax error, program 1 does not.

---

5. What is the output of the following C statements?

```
int n = 1++;
printf("%d, %d", 3*n, n);
```

constant not a variable

A) `3, 2` B) `3, 1` C) `6, 1` D) compiler error

6. Will the following C code compile without any error?

```
#include <stdio.h>
int main(){
  for (int k = 0; k < 10; k++);
  return 0;
}
```

A) Yes B) No C) C standard dependent D) compiler dependent

---

7. What will be the final values of i and j in the following C program?

```
#include <stdio.h>
int x; int f(); int g();
int main(){
  int i = (f() + g()) | g();
  int j = g() | (f() + g());
  return 0;
}
int f(){
  if (x == 0) return x + 1;
  else return x - 1;
}
int g(){
  return x+2;
}
```

A) i = 1, j = 1 B) i = 0, j = 0 C) i = 3, j = 3 D) i and j are undefined

---

8. What will be the value of i and j in the following code segment?

```
int i, j ;
int x[5] = {2, 3, 4, 8, 9} ;
int *ptr =&x[2];
i = (*ptr)++ ;
j = *ptr++ ;
```

A) i = 5, j = 5 B) i = 5, j = 8 C) i = 4, j = 5 D) i = 5, j = 9

---

9. The output of the following program is:

```
int main(){
  const int x = 5;
  const int *ptrx;
  ptrx = &x;
  *ptrx = 10;
  printf("%d\n", x);
  return 0;
}
```

A) 10 B) 20 C) 5 D) Compiler error

---

10. What will be the output of the following C program?

```
#include <stdio.h>
enum birds {SPARROW, PEACOCK, PARROT};
enum animals {TIGER=8, LION, RABBIT, ZEBRA};
int main(){
  enum birds m = TIGER;
  int k;
  k = m;
  printf("%d\n", k);
  return 0;
}
```

A) 0 B) 1 C) 8 D) Compiler error

---

11. Consider the following structure declarations and tell which is/are valid with no error or warning:

```
1- typedef struct{double x; double y;} Point;
2- typedef struct{double x; double y} Point;
3- typedef {double x; double y;}Point;
4- typedef struct{ double x; double y;};
```

A) All are invalid
B) All are invalid except statement (1)
C) All are invalid except statement (2)
D) All are invalid except statement (4)

---

12. In the following C code, we can access the 1st character of the string `sval` by using _____

```
struct{
  char *name;
  union{
    char *sval;
  } u;
} symtab[10];
```

A) `*(symtab[i].u.sval)`
B) `symtab[i].u.sval[0]`
C) You cannot have union inside structure
D) Both `*(symtab[i].u.sval)` and `symtab[i].u.sval[0]`

---

13. How many times will the program print "ABCDEF"?

```
int main() {
  printf("ABCDEF");
  main();
  return 0;
}
```

A) Infinite times B) 32767 (2^{15}-1) times C) 65535 (2^{16}-1) times D) None of the given

---

14. What is the output of the following Cprogram?

```
#include <stdio.h>
void f1(int a, int b){
  int c=a; a=b; b=c;
}
void f2(int *a, int *b){
  int c=*a; *a=*b; *b=c;
}
int main(){
  int a=4, b=5, c=6;
  f1(a, b);
  f2(&b, &c);
  printf ("%d", c-a-b);
  return 0;
}
```

A) -5 B) -4 C) 3 D) 5

---

15. What is the output of the following C program?

```
#define CVV 156
int main(){
  int a=10;
  a = a*CVV;
  printf("CVV=%d",a);
  return 0;
}
```

A) `0` B) `156=1560` C) `1560` D) `CVV=1560`

---

16. What is the output of the following code?

```
int a = 1; printf ("%d",(a,++a,a++));
```

A) 1 B) 2 C) 331 D) 321

---

17. What is the output of the following program?

```
#include <stdio.h>
int main(){
  char str1[]="Fahad", str2[20];
  str2= str1;
  printf("%s",str2);
  return 0;
}
```

A) Fahad B) F C) Fahad\0 D) Compiler error

---

18. What is the output of the following program?

```
#include <stdio.h>
#define ERRMSG printf("Some error.");
int main(){
  printf("JAR.");
  ERRMSG;
  return 0;
}
```

A) `JAR.` B) `JAR.ERRMSG` C) `JAR.Some error.` D) Compiler error

---

19. What is the C keyword used to define global constants?

A) `const` B) `definition` C) `def` D) `define`

---

20. What is the value returned when calling the following function using `f(1)`?

```
int f(int n){
  static int i = 1;
  if(n >= 5) return n;
  n = n+i;
  i++;
  return f(n);
}
```

A) 5 B) 6 C) 7 D) 8

---

21. What is the value returned when calling the following function using `func(435)`?

```
int func(int num) {
  int count = 0;
  while(num){
    count++;
    num >>= 1;}
  return count;}
```

A) 9 B) 8 C) 0 D) 10

---

22. A NULL pointer can be assigned to a pointer of any type.

A) `True` B) `False` C) at initialization only D) None of the given

---

23. Which variable has the longest scope in the following C program?

```
#include <stdio.h>
int varB;
int main() {
  int varC;
  return 0;
}
int VarA;
```

A) VarA B) varB C) varC D) Both a and b

---

24. Which function is used to free the memory allocated in the following program?

```
#include<stdlib.h>
#define MAXROW 3
#define MAXCOL 4
int main(){
  int **p, i, j;
  p = (int *) malloc(MAXROW * sizeof(int*));
  return 0; }
```

A) memfree(int p); B) dealloc(p); C) release(p, 0); D) free(p);

---

25. What is true about the size of the variable u in the following C declaration?

```
union u_tag{
  int ival;
  float fval;
  char *sval;
} u;
```

A) Will be large enough to hold the largest of the three types (int, float, char)
B) Will be large enough to hold the smallest of the three types (int, float, char)
C) Will be large enough to hold the all of the three types (int, float, char)
D) None of the given

---

26. For the following structure declaration choose the right answer.

```
struct student_struct {
  long student_idno;
  char student_name[20];
  struct {int day, month, year;} birth_date ;
  int age;
  float weight;
};
```

A) Not allowed in C B) Allowed in C C) compiler dependent D) None of the given

---

27. What is the output of the following C program if the user input is the “South West”?

```
#include <stdio.h>
int main() {
  char str[2];
  scanf("%s", str);
  printf("%s",str);
}
```

A) So B) South C) South West D) Compiler error

---

28. What is the output of the following C Program?

```
#include <stdio.h>
int main(){
  char country[]="BRAZIL";
  char *ptr;
  ptr=country;
  while(*ptr != '\0'){
    printf("%c", *ptr);
    ptr++;
  }
  return 0;
}
```

A) B B) BRAZIL C) No output D) Compiler error

---

29. What is the output of the following C program?

```
#include <stdio.h>
int main() {
while(true)  {
  printf("Hello");
  break;}
return 0;}
```

A) Hello B) Hello printed infinitely C) No output D) Compiler error

---

30. What is true about void*?

A) Does not point to any specific data type
B) Very useful when you want a pointer to point to data of different types at different times.
C) It can be casted to any pointer type.
D) All of the given.

---

31. 31) What is the output of this program?

```
#include <stdio.h>
int main() {
  enum days {MON=-1, TUE, WED=4, THU, FRI, SAT};
  printf("%d, %d, %d, %d, %d, %d", MON, TUE, WED, THU, FRI, SAT);
  return 0; }
```

A) -1 0 4 5 6 7 B) -1 0 1 2 3 4 C) 0 1 2 3 4 5 D) Compiler error

---

32. What will be the output of the following C code?

```
#include <stdio.h>
int main(){
  short int i = 20;
  char c = 97;
  printf("%d, %d, %d\n", sizeof(i), sizeof(c), sizeof(c + i));
  return 0;}
```

A) 2, 1, 2 B) 2, 1, 1 C) 2, 1, 4 D) 2, 2, 8

---

33. What are the elements present in the array of the following C code?

```
int array[5] = {5};
```

A) 5, 5, 5, 5, 5 B) 5, 0, 0, 0, 0 C) 5, 4 random values D) 4 random values, 5

---

34. If `foo()` returns `2`, what will be the value of the following expression?

```
(x = foo())!= 1
```

A) `2` B) `true` C) `1` D) `0`

---

35. What will be the output of the following C program?

```
#include <stdio.h>
int main(){
  int i = 0;
  do{
    i++;
    if (i == 2) continue;
    printf("in while ");
  } while (i < 2);
  printf("%d\n", i);
}
```

A) `in while 2` B) `in while in while 3` C) `in while 3` D) No output

---

36. Comment on the output of the following C program?

```
#include <stdio.h>
int main(){
  char *p = 0;
  *p = 'a';
  printf("value in pointer p is %c\n", *p);
  return 0;
}
```

A) It will print `a` B) It will print `0` C) Runtime error D) Compiler error

---

37. What will be the correct syntax to initialize all elements of a two-dimensional array to value 0?

A) `int arr[2][3] = {0, 0, 0, 0, 0, 0, 0};`
B) `int arr[2][3] = {{0},{0}} ;`
C) `int arr[2][3] = {0},{0} ;`
D) `int arr[2][3] = [0];`

---

38. Given the declaation, `struct student_struct *pstu;` which statement will be equivalent to `(*pstu).idno`?

A) `pstu->idno` B) `*(pstu->idno)` C) `pstu->(*idno)` D) None of the given

---

39. The address of a variable can be obtained using _____ operator.

A) `*` B) `&` C) `?` D) `;`

---

40. Which of the following is/are examples of C Preprocessor Directives?

A) Macros B) Conditional Compilation C) File Inclusion D) All of the given

---

41. How do you accept the string “King Saud University” in C Language.?

A) `scanf` B) `fgets` C) `getc` D) `fread`
