STORAGE CLASSES AND TYPES

1. Consider the following C function, what is the output?

```
int f(int n)
{
   static int r = 0;
   if (n <= 0) return 1;
   if (n > 3)
   {
      r = n;
      return f(n-2)+2;
    }
   return f(n-1)+r;
}

int main()
{
   printf("%d", f(5));
}
```

(a) 5
(b) 7
(c) 9
(d) 18

2. Which of the following is not a storage class specifier in C?

(a) auto
(b) register
(c) static
(d) volatile

3. Output of following program?

```
int main()
{
   static int i=5;
   if(--i){
      main();
      printf("%d ",i);
```

```
    }
}
```

(a) 4 3 2 1
(b) 1 2 3 4
(c) 0 0 0 0
(d) Compiler Error

4.

```
#include <stdio.h>

int main()
{
   static int i=5;
   if (--i){
      printf("%d ",i);
      main();
     }
}
```

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

5.

```
int main()
{
   int x = 5;
   int * const ptr = &x;
   ++(*ptr);
   printf("%d", x);
   return 0;
}
```

(a) Compiler Error
(b) Runtime Error
(c) 6
(d) 5

6.

```
#include<stdio.h>

int main()
{
  typedef static int *i;
  int j;
  i a = &j;
  printf("%d", *a);
  return 0;
}
```

(a) Runtime Error
(b) 0
(c) Garbage Value
(d) Compiler Error

7. Output?

```
#include<stdio.h>

int main()
{
   typedef int i;
   i a = 0;
   printf("%d", a);
   return 0;
}
```

(a) Compiler Error
(b) Runtime Error
(c) 0
(d) 1

8.

```
#include<stdio.h>

int main()
{
  typedef int *i;
  int j = 10;
  i *a = &j;
  printf("%d", **a);
```

```
  return 0;
}
```

(a) Compiler Error
(b) Garbage Value
(c) 10
(d) 0

9. Output?

```
#include<stdio.h>

int fun()
{
  static int num = 16;
  return num--;
}

int main()
{
  for(fun(); fun(); fun())
    printf("%d ", fun());
  return 0;
}
```

(a) Infinite loop
(b) 13 10 7 4 1
(c) 14 11 8 5 2
(d) 15 12 8 5 2

10.

```
#include<stdio.h>

int main()
{
  int x = 10;
  static int y = x;
  if(x == y)
     printf("Equal");
  else if(x > y)
     printf("Greater");
  else
     printf("Less");
```

```
  return 0;
}
```

(a) Compiler Error
(b) Equal
(c) Greater
(d) Less

11. Consider the following C function

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

The value returned by f(1) is (GATE CS 2004)

(a) 5
(b) 6
(c) 7
(d) 8

12. In C, static storage class cannot be used with:

(a) Global variable
(b) Function parameter
(c) Function name
(d) Local variable

13. Output? (GATE CS 2012)

```
#include<stdio.h>

int a, b, c = 0;
void prtFun (void);
int main ()
{
```

```
   static int a = 1; /* line 1 */
   prtFun();
   a += 1;
   prtFun();
   printf ( "\n %d %d " , a, b) ;
}

void prtFun (void)
{
   static int a = 2; /* line 2 */
   int b = 1;
   a += ++b;
   printf (" \n %d %d " , a, b);
}
```

(a) 31
41
42

(b) 42
61
61

(c) 42
62
20

(d) 31
52
52

14. What output will be generated by the given code segment if:

Line 1 is replaced by “auto int a = 1;”
Line 2 is replaced by “register int a = 2;” (GATE CS 2012)

(a) 31
41
42

(b) 42
61
61

(c) 42
62
20

(d) 42
42
20

15. Output?

```
#include<stdio.h>
```

```
int main()
{
  register int i = 10;
  int *ptr = &i;
  printf("%d", *ptr);
  return 0;
}
```

(a) Prints 10 on all compilers
(b) May generate compiler Error
(c) Prints 0 on all compilers
(d) May generate runtime Error

16.

```
#include<stdio.h>

int main()
{
  extern int i;
  printf("%d ", i);
   {
      int i = 10;
      printf("%d ", i);
    }
}
```

(a) 0 10
(b) Compiler Error
(c) 0 0
(d) 10 10

17. Output?

```
#include <stdio.h>

int main(void)
{
   int i = 10;
   const int *ptr = &i;
   *ptr = 100;
```

```
    printf("i = %d\n", i);
    return 0;
  }
```

(a)) i = 100
(b) i = 10
(c) Compiler Error
(d) Runtime Error

18. Output of following program

```
#include <stdio.h>

int fun(int n)
{
    static int s = 0;
    s = s + n;
    return (s);
}

int main()
{
    int i = 10, x;
    while (i > 0)
    {
        x = fun(i);
        i--;
     }
    printf ("%d ", x);
    return 0;
}
```

(a) 0
(b) 100
(c) 110
(d) 55

19.

```
#include <stdio.h>

char *fun()
{
```

```
    static char arr[1024];
    return arr;
}

int main()
{
    char *str = "ravindrababus";
    strcpy(fun(), str);
    str = fun();
    strcpy(str, "gatessquiz");
    printf("%s", fun());
    return 0;
}
```

(a) ravindrababus
(b) gatesquiz
(c) ravindrababus gatesquiz
(d) Compiler Error

20.

```
#include <stdio.h>

int main()
{
    int i = 1024;
    for (; i; i >>= 1)
        printf("GatesQuiz");
    return 0;
}
```

How many times will GatesQuiz be printed in the above program?

(a) 10
(b) 11
(c) Infinite
(d) The program will show compile-time error