CSE 101

B. Tech. I[st] SEMESTER EXAMINATION, 2024-25

B.TECH.

Programming for Problem Solving

(CSE, ME)

(CBCS Mode)

AFFIX PRESCRIBED RUBBER STAMP

Date (तिथि) : _____

Paper ID
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2107

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अनुक्रमांक (शब्दों में) : _____

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Time : 1:30 Hrs.
समय : 1:30 घण्टे

Max. Marks : 75
अधिकतम अंक : 75

नोट : पुस्तिका में 50 प्रश्न दिये गये हैं, सभी प्रश्न करने होंगे। प्रत्येक प्रश्न 1.5 अंक का होगा।

Important Instructions :

1. The candidate will write his/her Roll Number only at the places provided for, i.e. on the cover page and on the OMR answer sheet at the end and nowhere else.
2. Immediately on receipt of the question booklet, the candidate should check up the booklet and ensure that it contains all the pages and that no question is missing. If the candidate finds any discrepancy in the question booklet, he/she should report the invigilator within 10 minutes of the issue of this booklet and a fresh question booklet without any discrepancy be obtained.

महत्वपूर्ण निर्देश :

1. अभ्यर्थी अपने अनुक्रमांक केवल उन्हीं स्थानों पर लिखेंगे जो इसके लिए दिये गये हैं, अर्थात् प्रश्न पुस्तिका के मुख्य पृष्ठ तथा साथ दिये गये ओ०एम०आर० उत्तर पत्र पर, तथा अन्यत्र कहीं नहीं लिखेंगे।
2. प्रश्न पुस्तिका मिलते ही अभ्यर्थी को जाँच करके सुनिश्चित कर लेना चाहिए कि इस पुस्तिका में पूरे पृष्ठ हैं और कोई प्रश्न छूटा तो नहीं है। यदि कोई विसंगति है तो प्रश्न पुस्तिका मिलने के 10 मिनट के भीतर ही कक्ष परिप्रेक्षक को सूचित करना चाहिए और बिना त्रुटि की दूसरी प्रश्न पुस्तिका प्राप्त कर लेना चाहिए।

1. Who is the father of C language ?

(A) Steve Jobs

(B) James Gosling

(C) Dennis Ritchie

(D) Rasmus Lerdorf

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

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

(A) 3.75

(B) Depends on compiler

(C) 24

(D) 3

3. What will be the data type returned for the following C function ?

```
#include < stdio.h >
int fun ( )
 {
   return(double)(char)5.0 ;
 }
```

(A) char

(B) int

(C) double

(D) Multiple type-casting in return is illegal

4. 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, (garbage), (garbage), (garbage), (garbage)

(D) (garbage), (garbage), (garbage), (garbage), 5

5. Comment on the output of following C code.

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

(A) It will print a

(B) It will print 0

(C) Compile time error

(D) Run time error

6. What is the output of this C code ?

```
#include < stdio.h >
Main( )
{
 int n = 0, m = 0;
 if (n > 0)
    if (m > 0)
       printf("True");
    else
       printf ("False");
}.
```

(A) True

(B) False

(C) No output will be printed

(D) Run time Error

7. What will be the output of C code ?

```
# include < stdio. h >
void main( )
{
 int x = 4;
 int * p = & x;
 int * k = p + +;
 int r = p − k;
 printf("%d", r);
}
```

(A) 4

(B) 8

(C) 1

(D) Run time error

8. What will be the output of C code ?

```
# include < stdio. h >
void main( )
{
  int a = 5, b = −7, c = 0, d;
  d = + + a & & + + b|| + + c;
  printf("\n% d% d% d% d", a, b, c, d);
}
```

(A) 6 -6 0 0

(B) 6 -5 0 1

(C) -6 -6 0 1

(D) 6 -6 0 1

9. What will be the output of C code ?

```
# include < stdio.h >
int main( )
{
  int x = 2, y = 0;
  int z = (y + +) ? y == 1&& x : 0 ;
  printf ("% d \ n", z);
  retune 0;
}
```

(A) 0

(B) 1

(C) Undefined behaviour

(D) Compile time error

10. Consider the following declaration:

```
int a = ((1,2,3), (4,5,6), (7,8))
   printf ("%d", a)
```

What will be the output of this *C* code ?

(A) 1

(B) 2

(C) 8

(D) 4

11. What is the return-type of the function sqrt( ) ?

(A) int

(B) float

(C) double

(D) depends on the data type of the parameter

12. Consider the following C-code :

```
int a = printf("Ram");
pirntf("%d", a);
```

What will be the output of the above code ?

(A) Error

(B) Ram,3

(C) 2, Ram

(D) None of the above

13. What are the different ways to initialize an array with all elements as zero ?

(A) `int array [5] = { };`

(B) `int array [5] = { 0};`

(C) `int a = 0, b = 0, c = 0;`
`int array [5] = { a, b, c};`

(D) All of the mentioned

14. Let us consider the C-code

```
register int x = 10;
void main( )
    {
     x = 5;
   printf("%d", x);
    }
```

What will be the output of this code ?

(A) 10

(B) 5

(C) Error

(D) None of the above

15. #define CUBE(x) x * x * x

```
Void main( )
   {
  int X = 64/CUBE(4);
  printf("%d", x);
}
```

What will be the output of the above code ?

(A) 1

(B) 64

(C) 256

(D) None of the above

16. Consider the following C-code :

```
void main( )
   {
  int x = 3
  switch(x)
  {
  case 3 : continue;
          break;
  case 1: printf("Hello");
  }
}
```

What will be the output ?

(A) Hello

(B) No output

(C) Hello$|

(D) Error

17.
```
int fact(int x)
    {
return(x == 0? 1: x * fact(x – 1));
    }
int main( )
    {
    printf("%d", fact(5));
    }
```

Output will be -

(A) Error

(B) 120

(C) 24

(D) None of the above

18. The attributes of three arithmetic operators in some programming language are given below.

The value of the expression $2 - 5 + 1 - 7 * 3$ in this language is_____.

(A) -23

(B) 9

(C) -27

(D) 23

19. Which of the following has the compilation error in *C* ?

(A) #include < stdio.h >

(B) float f = (float)99.32;

(C) char C = 99;

(D) int n = 17;

20. Consider the following declaration :

int a,* b = & a ; * + c = & b ;

The following program fragment

a = 4; ** c = 5 ;

(A) Assigns 5 to a

(B) Assigns the value of b to a

(C) Assigns address of c to a

(D) Does not change the value of a

21. Which of the following keywords can be used to exits a loop prematurely.

(A) Exit

(B) Break

(C) Continue

(D) Return

22. Which of the following is true with respect to reference ?

(A) A reference can never be NULL

(B) A reference needs an explicit dereferencing mechanism

(C) A reference can be reassigned after it is established

(D) A reference and pointer are synonymous

23. What is the index of the first element in an array in C ?

(A) 1

(B) 0

(C) -1

(D) None of the above

24. Which command line argument holds the name of the executable file.

(A) argv[1]

(B) argc

(C) argv[0]

(D) argc-1

25. Which function is used to open a file in C.

(A) open( )

(B) fileopen( )

(C) fopen( )

(D) file( )

26. The realloc function in C is used for ?

(A) Allocating new memory

(B) Reallocating & resizing existing memory

(C) Deallocating memory

(D) Copying memory

27. Consider the following C-code

```
void main( )
    {
    const int x = 5;
    * ((int *)&x) = 10;
    printf("%d", x);
    }
```

What will be the output ?

(A) 5

(B) 10

(C) Error

(D) None of the above

28. void main( )
```
{
Int x = 300 * 300/300;
If (x == 300)
    printf("Hello");
else
    printf("Hi");
}
```
Output of the above code will be on DOS platform -

(A) Hello

(B) Hi

(C) Depends on compiler

(D) None of the above

29. What will be the output of C code ?
```
#include < stdio. h >
struct student
{
 char * name;
};
void main( )
{
  struct student s, m;
  s. name = "st";
  m = s;
  printf("%s% s", s. name, m. name);
}
```
(A) Compile time error

(B) Nothing

(C) Junk values

(D) st st

30. The size of a union is determined by the size of the _____.

(A) First member in the union

(B) Last member in the union

(C) Biggest member in the union

(D) Sum of the sizes of all members

31. What would be the size of the following union declaration ?
(Assuming the size of double = 8, size of int = 4, size of char = 1)

```
# include < stdio. h >
union uTemp
{
 double a;
 int b[10];
 char c;
}u;
```

(A) 4
(B) 8
(C) 40
(D) 80

32. Members of a union are accessed as _____.

(A) Union-name. member
(B) Union-pointer→member
(C) Both union-name. member & union-pointer→name
(D) None of the mentioned

33. What will be the output of the following C code (Assuming size of int and float is 4) ?

```
# include < stdio. h >
union
{
  int ival;
  float fval;
}u;
void main( )
{
  printf("%d", size of (u));
}
```

(A) 16
(B) 8
(C) 4
(D) 32

34. Local variables are stored in an area called _____.

(A) Heap

(B) Permanent storage area

(C) Free memory

(D) Stack

35. void main( )

{

int x[5] = {1,2,3,4,5};

/* Base address of X starts from 1000 * 1000 */

X + +;

printf("%d", x[2]);

}

What will be the output of the code ?

(A) 3

(B) 2

(C) 1002

(D) Error

36. What is the meaning of the following C statement ?

printf("%10s", state);

(A) 10 spaces before the string state is printed

(B) Print empty spaces if the string state is less than 10 characters

(C) Print the last 10 characters of the string

(D) None of the mentioned

37. Which of the following operators has an associativity from Right to Left ?

(A) <=

(B) <<

(C) ==

(D) +=

38. Which of the following option is the correct representation of the following C statement ?

```
e = a * b + c/d * f;
```

(A) `e = (a * (b + (c/(d * f))));`

(B) `e = ((a * b) + (c/(d * f)));`

(C) `e = ((a * b) + ((c/d) * f));`

(D) `e = (a * (b + ((c/d) * f)));`

39. While swapping 2 numbers what precautions to be taken care ?

```
b = (b/a);
a = a * b;
b = a/b;
```

(A) Data type should be either of short, int and long

(B) Date type should be either of float and double

(C) All data types are accepted except for (char *)

(D) This code doesn't swap 2 numbers

40. What will be the output of the C code ?

```
#include < stdio. h >
int main( )
{
   int a = 1, b = 2, c = 3, d = 4, e;
    e = c + d = b * a;
   printf("%d% d\n", e, d);
}
```

(A) 7, 4

(B) 7, 2

(C) 5, 2

(D) Syntax error

41. Which function in the following expression will be called first ?

```
a = func3(6) − func2(4,5)/func1(1,2,3);
```

(A) fun 1( );

(B) fun 2 ( );

(C) fun 3 ( );

(D) Cannot be predicted

42. Which of the following operator has the highest precedence in the following?

(A) ( )

(B) Size of

(C) *

(D) +

43. Which of the following is a ternary operator ?

(A) &&

(B) >>=

(C) ?:

(D) →

44. The number of tokens in the following C statement.

printf("i=%d, &i =%x", i, &i);

(A) 3

(B) 26

(C) 10

(D) 21

45.
```
void main( )
  {
float x = 3.14;
  if(x == 3.14)
     printf("Hello");
   else
     printf("Hi");
}
```

What will be the output on DOS platform ?

(A) Hello

(B) Hi

(C) Depends on compiler

(D) None of the above

46. void main( )

```
{
int x = 5;
int y;
y = + + x + +;
printf("%d", x);
}
```

Its output will be (on DOS platform) -

(A) 5

(B) 6

(C) 7

(D) Error

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

```
char C[ ] = "GATE 2011"
char * p = c;
printf("%s", p + p[3] − p[1]);
```

(A) GATE 2011

(B) 2011

(C) E 2011

(D) 011

48.
```
#include < stdio.h >
void f(int * p, int * q)
{
 p = q;
* p = 2;
}
int i = 0, j = 1;
int main( )
 {
  f(&i, &j);
  printf("%d% d\n", i, j);
  return0;
}
```

What is the output of C code ?

(A) 22

(B) 21

(C) 01

(D) 02

49. Match the following :

X: m = malloc(5); m = NULL;

Y: free(n); n → volue = 5;

Z: char * p; * p = 'a';

1: Using dangling

2: Using uninitialized pointers

3: Lost memory

(A) X-1 Y-3 Z-2

(B) X-2 Y-1 Z-3

(C) X-3 Y-2 Z-1

(D) X-3 Y-1 Z-2

50. Let A be a square matrix of size n × n. Consider the following program. What is the expected output.

```
C =100
for i = 1 to n do
  for j = 1 to n do
  {
    Temp = A [i][j]+C
    A[i][j] = A[j][i]
    A[j][i] = Temp-C
  }
for i = 1 to n do
  for j = 1 to n do
    output (A[i][j]);
```

(A) The matrix A itself

(B) Transpose of matrix A

(C) Adding 100 to the upper diagonal elements and subtracting 100 from diagonal elements of A

(D) Inverse of matrix A

*****