

Code : 100204

B.Tech 2nd Semester Exam., 2022

( New Course )

PROGRAMMING FOR PROBLEM SOLVING

Time : 3 hours

Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
- (ii) There are **NINE** questions in this paper.
- (iii) Attempt **FIVE** questions in all.
- (iv) Question No. 1 is compulsory.

1. Choose the correct option from any seven of the following : 2×7=14

(a) What is the maximum range of unsigned char data type?

(i) 128

(ii) 127

(iii) 255

(iv) 256

(b) How many times AKU is printed?

```
int main()
```

```
{
```

```
int a = 0;
```

```
while(a++);
```

```

{
    printf("AKU");
}
return 0;
}

```

- (i) 0
- ☒ (ii) 1
- (iii) Infinite times
- (iv) Compiling error

(c) What is the output of the following C code?

```

#include<stdio.h>
int main()
{
    int i = 5/2;
    printf("%d", i==2);
    return 0;
}

```

- (i) 2
- ☒ (ii) 1
- (iii) Garbage value
- (iv) 2.5

(d) A C variable cannot start with

- ☒ (i) number
- (ii) underscore
- (iii) character
- (iv) None of the above



- (e) What will be the output of the following program?

```
int main() {  
    printf("\nAKU");  
    printf("\bGAYA");  
    return 0;  
}
```

☒ (i) AKGAYA

(ii) AKUGAYA

(iii) GAYA

(iv) None of the above

- (f) Which one is not a keyword in C?

☒ (i) gotoo

(ii) typedef

(iii) void

(iv) short

- (g) What is the output of the the following C code?

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

```
}  
return 0; }
```

- (i) 11--21--
- (ii) 1221
- (iii) Compiled error
- (iv) None of the above

(h) What is the output of the following program?

```
int main()  
{  
printf("%d", 3/2);  
return 0;  
}
```

- (i) Compilation error
- (ii) Run time error
- (iii) 1
- (iv) None of the above

(i) Which of you allocate a memory?

- (i) remove(var-name);
- (ii) free(var-name);
- ☒ (iii) malloc(var-name);
- (iv) None of the above



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(j) Which of the following is invalid header file in C?

(i) `stdlib.h`

(ii) `ctype.h`

(iii) `string.h`

~~(iv) `mathe.h`~~

2. Attempt all parts :

7×2=14

(a) Write a program in C to print the sum of all even numbers from 0 to 50.

(b) Explain logical AND and OR operators with suitable examples.

3. Attempt all parts :

7×2=14

(a) Can you dynamically allocate arrays in expanded memory? Explain it with an example.

(b) What is the similarity between structure, union and enumeration?

4. Twenty-five numbers are entered from the keyboard into an array. Write a C program to find out how many of them are positive, how many are negative, how many are even and how many are odd.

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5. Attempt all parts :  $7 \times 2 = 14$

(a) Explain increment and decrement operators in C language with the help of suitable example.

(b) Write a program in C to print the sum of the following series :

$2+4+6+8+10+\dots$

6. What is linear search? Draw a working flowchart and write a program in C using function for the linear search. 14

7. Attempt all parts :  $7 \times 2 = 14$

(a) Write a program in C to find and display the minimum and maximum values of an array of integers.

(b) Explain the concept of file handling with an example.

8. Attempt all parts :  $7 \times 2 = 14$

(a) Write a C program using the nesting of loops to print the following pattern :

```

A A A A —
A A A A —
A A A A —
A A A A —

```



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(b) Define a macro called AREA which will calculate area of cylinder in terms of radius. Use the constant PI in the calculation.

9. Explain the generation of programming languages. Mention the types of applications which can be developed using C. List any three C compilers.

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