

Bachelor of Power Engineering Examination, 2017
(1st Year – 2nd Semester)

Subject: Numerical Methods and Computer Programming

Time: 3 hours

Full Marks: 100

Answer all

Answer all the parts of a question in contiguous location

1. Answer any 4 (4x5)

- Mention the precedence of different operators used in C language.
- List the advantages and disadvantages of *array*.
- With appropriate program show the utility of *break* or *continue* in C.
- Show usage of unary and ternary operators in C language.
- Function helps to recognize C as *modular* programming language- explain.

2. Explain, what would happen if you try to run the following codes. (any 4) (4x5)

a.
void main()
{
 int x = 1, y = 0;
 printf(“%d”, ++x + y);
}

b.
void main()
{
 int x=1;
 for(x = 0; x = 0; x++)
 printf(“x is 1\n”);
}

c.
void main()
{
 int a = 1, b = 1, c = 1;
 a = b > c;
 printf(“%d”, a);
}

d.
void main()
{
 int x = 1, y = 2;
 float z=1;
 z = y/x;
 printf(“%f”, z);
}

e.
void main()
{
 int x = y = 1;
 if(x = x)
 printf(“=”);
 else
 printf(“≠”);
}

f.
void main()
{
 int x = 1, y=0;
 while(x<100)
 {
 y = x++ ;
 printf(“%d\n”, y);
 }
}

3. Write a C program which can give users the choice to select one of the following operations: (10)

- Compute the factorial of a given number
- Check whether a given number is odd or even
- Determine which one is the maximum between two given integers.

4. Implement *Bisection* or *Secant* method using C language to find out the root of a non-linear equation. (10)

5. Solve the initial value problem using Euler's method:
 $y' = x + y, y(0) = 1$
- Find a value for the solution at $x = 0.8$ using step size $h = 0.1$. (10)
6. Explain the *Gauss-Seidel* method used to solve linear simultaneous equations. What are the disadvantages of this method over direct method? (7+3)
7. Solve the following equations using Gauss Elimination *or* Gauss Seidel method: (10)
- $$2a + b + 2c = 2$$
- $$a + 2b + 2c = 4$$
- $$a + b + 4c = 2$$
8. Write a short note on:
Newton's forward *or* backward interpolation method (10)