B.E. Civil Engineering Sixth Semester

CE605 - Computer Application in Civil Engineering

P. Pages : 2 **GUG/W/18/1671**

Time : Three Hours * 1 3 1 5 * Max. Marks :80

Notes : 1. All questions carry equal marks.
2. Answer all questions.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.
6. Use of electronics calculator (non programmable) is allowed.

1. a) What is initialization? why is it important. **4**

b) What are the different rules for constructing integer constants. **4**

c) Which of the following arithmetic expressions are valid? If valid give the value of the expression, otherwise give reason. **4**

i) 25/3 %2 ii) +9/4+5

iii) 7.5 % 3 iv) (5/3) *3+5 %3

d) What is ternary operator? Explain with an example. **4**

OR

2. a) If a five digit number is input through the keyboard write a program to calculate the sum of its digits (use the modulls operator%) **8**

b) The distance between two cities (in km). is input through keyboard. write a program to convert and print this distance in meters, feet, inches and centimeters. **8**

3. a) Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another (ex. a^b) **8**

b) Write a program to add first seven terms of the following series using for loop. **8**

$\frac{1}{1!}+\frac{2}{2!}+\frac{3}{3!}+.....$

OR

4. a) How conditions are checked in C language. Explain with an example. **8**

b) Write a program in C to print all the prime numbers from 1 to 100. **8**

5. a) What is storage class? Explain the different types of storage class with an example. **8**

b) Write a program in C to find the transpose of a 3×3 matrix. **8**

OR

6. a) Write a program in C to store information of ten books (contains name of book, price of book and pages of book) Using structure. **8**

b) Explain different file opening modes in C language. **8**

7. a) Evaluate $\int_{-1}^{1} e^x \, dx$ Using Simpson's $1/3$ rule also write a program for it in 'C' language. **8**

b) Compute the integral $\int_{0}^{\pi/2} \sqrt{\sin(x)} \, dx$ using composite trapezoidal rule for n = 2 and n = 4. **8**

OR

8. a) Solve the System. **8**

$2x_1 + 4x_2 - 6x_3 = -8$,

$x_1 + 3x_2 + x_3 = 10$,

$2x_1 - 4x_2 - 2x_3 = -12$,

Using Gauss – elimination method also develop a program to implement it.

b) Evaluate $\int_{0}^{3} \frac{1}{1+x^5} dx$, Using Simpson's 3/8 rule. Also develop a program for it. **8**

9. a) Use Runge-Kutta method to estimate y (0.4) when $y'(x) = x^2 + y^2$, with y (0) = 0. Assume h = 0.2 Also write program for it. **8**

b) Determine the roots of equations $x^2 + x - 2$, using Newton Raphson method. Also develop a program for it. **8**

OR

10. a) Given the equation $y'(x) = \frac{2y}{x}$, with y (1) = 2 estimate y (2) using Milne-Simpson predictor corrector method. Assume h = 0.25 and then write a program to implement it. **8**

b) Given the equation $\frac{dy}{dx} = 3x^2 + 1$, with y (1) = 2 estimate y (2) by Euler's method using i) h = 0.5 and ii) h = 0.25 and then develop a program in 'C' language for it. **8**

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