

**M.Sc. 1st Semester Examination-2022-23****MATHEMATICS (PRACTICAL)****Course ID : 12165      Course Code : MATH/105C(LA)****Course Title : Internal Assignment (NA Practical  
using C-Prog.)****Time : 2 Hours****Full Marks : 30**

*The figures in the right hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable. Notations and symbols have their usual meaning.*

**Answer any one question :**

**I. (a) Write a C-program to find the GCD of two positive integers. 5**

**(b) Write a C-program to solve the following IVP**

$$\frac{dy}{dx} = xy, \quad y(0) = 0.5 \quad 10$$

**by using Runge-Kutta method of order 4.**

*(Turn Over)*

- (c) Lab notebook 8
- (d) Viva-Voce 7
2. (a) Write a C-program to generate Fibonacci Series. 5
- (b) Write a C-program to solve the following system of linear equations 10
- $$4x_1 - x_2 + x_3 = 8$$
- $$2x_1 + 5x_2 + 2x_3 = 3$$
- $$x_1 + 2x_2 + 4x_3 = 11$$
- by using Gauss elimination method.
- (c) Lab notebook 8
- (d) Viva-voce 7
3. (a) Write C-program to test whether a positive integer is prime or not. 5
- (b) Write a C-program to solve a system of linear equations with three variables by using the Gauss Seidel iteration method. 10
- (c) Lab notebook 8
- (d) Viva-voce 7
4. (a) Write C-program to find the maximum among some numbers. 5
- (b) Write a C-program to solve an IVP  $\frac{dy}{dx} = y - x^2 + 1$ ,  $y(0) = 0.1$  by using Runge-Kutta method of order 2. 10
- (c) Lab notebook 8
- (d) Viva-voce 7
5. (a) Write a C-program to compute the sum of two matrices. 5
- (b) Write a C-program to solve the system fo linear equations 10
- $$x_1 - x_2 + x_3 = 5$$
- $$7x_1 + 5x_2 - x_3 = 8$$
- $$2x_1 + x_2 + x_3 = 7$$
- by using Gauss-Jordan elimination method.
- (c) Lab notebook 8
- (d) Viva-voce 7

6. (a) Write a C-program to find the area of a triangle. 5  
 (b) Write a C-program to find the Largest Eigenvalue in magnitude by Power method. 10  
 (c) Lab notebook 8  
 (d) Viva-voce 7
7. (a) Write a C-program to find the prime numbers between to positive integers. 5  
 (b) Write a C-program to find the determinant of a square matrix. 10  
 (c) Lab notebook 8  
 (d) Viva-voce 7
8. (a) Write a C-program to perform matrix multiplication. 5  
 (b) Write a C-program to convert a matrix into its row reduced echelon form. 10  
 (c) Lab notebook 8  
 (d) Viva-voce 7

9. (a) Write a C-program to find the average of 15 numbers. 5  
 (b) Write a C-program to convert a square matrix into diagonal matrix. 10  
 (c) Lab notebook 8  
 (d) Viva-voce 7
10. (a) Write a C-program to find the power of a number ( $x^y$ ). 5  
 (b) Write a C-program to solve the system of linear equations 10  
 $2x_1 + 2x_2 + x_3 = 6$   
 $x_1 + x_2 + x_3 = 4$   
 $x_1 + x_2 + 2x_3 = 6$   
 by using the Gauss Jacobi iteration method.  
 (c) Lab notebook 8  
 (d) Viva-voce 7

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