Semester-VI
Scientific Computing Laboratory/ Parallel Computing Laboratory (AS-6002)

Course Code	AS-6002	Credits-2	L-0, T-0, P-2
Name of the Course	Scientific Computing Laboratory/ Parallel Computing Laboratory		
Lectures to be Delivered	26 Hrs. of Lab work (2hrs. each per week)		
Semester End Examination	Max Marks: 50	Min Pass Marks: 40%	Maximum Time: 3 hrs
Continuous Assessment	Lab work 30%, Lab Record 25%, Viva 25% & Attendance 20%	Max Marks: 50	Min Pass Marks: 25

Instructions for paper setter / Candidates

Laboratory examination will consist of three parts:

1. Performing a practical examination assigned by the examiner. (25 marks)
2. Viva-voce examination. (25 marks)

Viva-voce examination will be related to the practical performed/projects executed by the candidate related to the paper during the course of the semester.

a) Usage of FORTRAN 77/90 for implementation of following programs.

(i) Finding the root of a non linear equation by (a) Bisection Method (b) Newton Raphson method.
(ii) Two point and three point numerical differentiation with error estimates.
(iii) Integration by Simpson rule with error estimate.
(iv) Integration by Gaussian Quadra rule with error estimate.
(v) Solving an ordinary differential equation using four point Runge Kutta Method with error estimate and control.
(vi) Solution of a system of Linear equations by Gaussian-elimination Method.
(vii) Diagonalization of Real symmetric Matrix.
(viii) Evaluating a 3 dimensional integral using Monte Carlo method of integration.

b) Parallel Programming: -

Developing following elementary programs in FORTRAN 77/C for implementation on Parallel machines.

(i) Fork and Node identity
(ii) Expression evaluation
(iii) Matrix Addition
(iv) Matrix Multiplication
(v) Linear curve fit
(vi) Gaussian elimination
(vii) Simpson's $1/3^{rd}$ rule.