CSE-2012 → Paper II

5) (c) Provide a computer algorithm to solve an ordinary differential equation $\frac{dy}{dx} = f(x,y)$ in the interval $[a,b]$ for 'n' number of discrete points, where the initial value is $y(a) = \alpha$, using Euler's method.

⇒ Algorithm ⇒ :

1. Read a, b, y_i
2. Read number of discreate points 'n'.
3. Evaluate $h = (b-a)/h$
4. Assign $x = a$.
5. Assign $i = 1$.
6. Check if $x >= (b+n)$, go to 10.. otherwise go to 7
7. Evaluate $y_{i+1} = y_i + hf(x_i, y_i)$
8. Print y_{i+1}
9. Increament i and go to 6. and $x = x+h$.
10. Stop.

7) (c) In the certain examination, a candidate has to appear for one major and two minor subjects. The rules for declaration of results are: marks for major are denoted by M_1 and for minors by M_2 and M_3. If the candidate obtains 75% and above marks in each of three subjects, the candidate is declared to have passed the examination in first class with distinction. If the candidate obtain 60% and above marks in each of the three subjects, the candidate is declared to have passed the examination in first class. If the candidate obtains 50% or above in major, 40% or above in each of two minors and the average of 50% or above in all three subjects put together, the Candidate is declared to have passed the examination in second class. All those candidates, who have obtained 50% and above in major and 40% or above in minor, are declared to have passed the examination. If the candidate obtains less than 50% in major or less than 40% in any one of the two minors, the candidate is declared to have failed in the examinations. Draw a flow chart to declare the results for the above.

⇒ Algorithm ⇒ (1) start

(2) Read Candidate's details for enswering individual. Also read M_1, M_2, M_3

(3) Check together for 1st class with distinction.

(4) check together for 1st class.

(5) Compute together for 2nd class.

(6) check separately for the pass class else print failed in the exam

(7) stop.

Flow chart ⇒