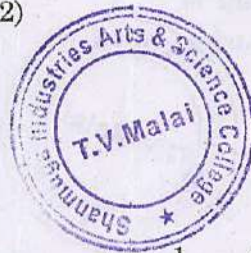9. Write a C program to find $y(0.1)$, $y(0.2)$, $y(0.3)$ from $\dfrac{dy}{dx} = xy + y^2$, $y(0) = 1$ using Runge-Kutta method.

10. (a) What is a script M-file? Give an example. (3)

   (b) How can you $(3 \times 4 = 12)$

   (i) create

   (ii) save

   (iii) run a script file

MPH43B — PROGRAMMING IN C AND MATLAB

Time : Three hours   Maximum : 75 marks

SECTION A — $(5 \times 6 = 30$ marks$)$

Answer ALL questions.

Each question carries equal marks.

1. (a) (i) Define : Variables. (1)

   (ii) Give the five conditions to have the variable names of C language. (5)

   Or

   (b) With examples, explain (i) primary type (ii) user – defined type declaration of variables.

2. (a) Discuss about (i) comma and (ii) size of operators with examples.

   Or

   (b) (i) What is an array? (1)

   (ii) Give the general form for array declaration and initialization of an array. (5)

3. (a) (i) Distinguish between entry-controlled and exit-controlled loops.

   (ii) With general format, example, explain about while statement.

   Or

   (b) Write a C program to calculate the sum of squares of integers between 1 and 10 using if.....else statement.

4. (a) Write a program to find the inverse of a matrix.

   Or

   (b) Write a C program to solve the system of equations, $2x+3y-z=5$, $4x+4y-3z=3$ and $2x-3y+2z=2$ using Gauss-Elimination method.

5. (a) (i) Give the general format for solving system of equations and explain. (3)

   (ii) Illustrate it with an example. (3)

   Or

   (b) Write a MATLAB program for array multiplication.

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SECTION B — (3 × 15 = 45 marks)

Answer any THREE questions.

6. (a) Give the general form of printf statement and explain. (4)

   (b) How can you outputting the

   (i) integer numbers (2)
   (ii) real numbers (2)
   (iii) single character (1)
   (iv) strings (4)
   (v) mixed data (2)

7. (a) What are unary operators? Give two examples. (4)

   (b) Explain increment and decrement operators with examples. (6)

   (c) List out any five relational operators. (5)

8. (a) Give the general form, and flow chart of if....else ladder statement and explain. (7)

   (b) Illustrate if...else ladder statement with an example. (8)

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