# PG CBCS <br> M.SC. Semester-I Examination, 2021 <br> MATHEMATICS <br> PAPER: MTM 104 <br> (ADVANCE PROGRAMMING IN C AND MATLAB) 

Full Marks: 50
Time: 2 Hours

Answer any FOUR questions of the following:
$10 \times 4=40$

1. a). Using MATLAB, create the following
i. a row and column vectors that has the elements:
$11,-3, e^{7.8}, \ln (59), \tan (p i / 3), 5 \log _{10}(26)$.
ii. a row vector with 20 equally spaced elements in which the first element is 5.
iii. a column vector with 15 equally spaced elements in which the first element is -1 .
b). What is array in C? What is the limitation of array?
2. What is function prototype? Write a program in $C$ to show the concept of call by value and call by address in function.
3. a). What is cell array? How will you write the name, address and age of three students in cell array in MATLAB?
b). Write a program in C to keep records of books (title, author_name, no_of_pages, price) using structure.
4. Define structure in MATLAB. How can a structure be created in MATLAB? Write a script to compute sum, mean, median, variance and standard deviation of an input array or a matrix to write theses values in a structure having the same name as the input array or matrix.
5. a). Write a program in C to implement linear search using user defined function. b). What are address operator and dereferencing operator in C? Explain the difference between an array and a pointer.
6. a). Write a script in MATLAB to add either two arrays or two matrices by a single program. Also explain all built -in-functions which are used here.
b). How is a multidimensional array defined in terms of an array of pointers in C? What does each pointer represent? How does this definition differ from a
pointer to a collection of contiguous arrays of lower dimensionality? $5+5$
7. a). Explain any two conditional statements in MATLAB.
b). Write a script in MATLAB that will greet you with regard to the day or night time moment and remind you to go sleeping when it is too late.
$5+5$
8. a). Explain the relational and logical operations in MATLAB with examples.
b). Explain the utilities of 'inline', 'eval' and 'feval' functions.
[Internal Assessment-10 Marks]
