MMT-001(P)

M.Sc. (MATHEMATICS WITH APPLICATIONS IN COMPUTER SCIENCE)
M.Sc. (MACS)

Term-End Practical Examination

00380   December, 2017

MMT-001(P) : PROGRAMMING AND DATA STRUCTURES

Time : 2 Hours   *Maximum Marks : 50*

Note : (i)   There are two questions in this paper, totalling 40 marks.

(ii) Answer **both** of them.

(iii) Remaining 10 marks are for the viva-voce.

1. Write a program which reads a line of text and stores it in a file. Read the text from the file and find the following : 25

   • Total number of characters

   • Total number of vowels

   • Total number of numerals

   • Total number of words in that text

2. Write a program that computes the value of $\tan^{-1} x$ using the power series expansion $x - \dfrac{x^3}{3} + \dfrac{x^5}{5} - \dfrac{x^7}{7} + ...$

   Use the program to find the value of π using the value

   $$\pi = 16 \tan^{-1}\left(\frac{1}{5}\right) - 4 \tan^{-1}\left(\frac{1}{239}\right).$$ 15