KARNATAKA STATE OPEN UNIVERSITY
MUKTHAGANGOTRI, MYSURU-06
Dept. of Studies and Research in Information Technology

MSc in Information Technology

2021-22 January Cycle

Instructions:

NOTE: You are required to read the following instructions carefully before you answer.

1. Write the ***Roll Number, Name and Title of the course*** at the beginning of your answer of each subject.

2. You should answer ***all Questions*** under each paper.

3. Assignments without **Roll No. and Name** will be rejected.

4. You should write the assignment separately with regard to each course. Use A4 size sheets to write the assignments and make it soft binding or use stick files for each course. Put the assignments in a cover and send it to the address given below.

5. Your assignment should reach to:

> Chairperson,
> Department of Studies in Information Technology,
> Karnataka State Open University,
> Mukthagangothri,
> Mysore-570 006.

6. **Assignments should reach us on or before 30th June 2022.**

   The assignments received after the last date will be summarily rejected. No further extension is allowed. Also browse the website www.ksoumysore.edu.in for further details. Timetable for contact program will be hosted shortly.

7. Assignment sent to any other address of the University will not be valued.

8. The students are **advised to keep a copy of the assignments** with them & submit it in case the University demands the same.

MSc in Information Technology

I Semester

Note: Answer all the questions

MITDSC-1.1 Computational Mathematics

1. Show that the set of all non-zero real numbers R is an abelian group under the binary operation * defined by $a * b = ab/2$.

2. A binary communication channel carries data as 0 or 1. Owing to noise, sometimes errors happen. Transmitted 0 / 1 can be received as 1 / 0 with probabilities 0.06 / 0.09. Further assume a probability of 0.45 that signal sent is 0. Determine the following probabilities.

   (i)   Probability that 1 is received

   (ii)   Probability that 0 is received

   (iii) Probability that 1 was transmitted given that 1 was received

   (iv)   Probability that 0 was transmitted given that 0 was received

   (v)   Probability of error

MITDSC-1.2 Advanced Data Structures

1. Explain various operations performed on singly and circularly linked lists.

2. Explain two different ways of sequential representation of a graph with an example.

MITDSC-1.3 Computational Mathematics Lab

1. Consider an urn with 10 balls inside, 7 of which are red and 3 of which are green. Select 3 balls successively from the urn. Write the solution steps using R.

MITDSC-1.4 Advanced Data Structure Lab

1. Write a C program to insert elements in to a linked list

MITDSC-1.5 Unix System Programming

1. With a neat diagram, illustrate the architecture of UNIX.

2. Exlain the prototype of six different exec functions.

MITDSC-1.6 C Programming

1. What are the various logical and relational operators supported by C. Explain them with proper examples.
2. Write a C program to implement string handling functions

MITDSC-1.7 Computer Organization and Architecture

1. Discuss the different addressing modes.
2. Explain the shared memory organization used in multicore architecture.

MITDSC-1.8 Operating System

1. Describe the Services of operating system.
2. What are the necessary conditions for deadlock to occur, Explain?

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