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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH MODEL Question PAPER

SUBJECT: Principles of Computing using Data Structures[CRA 4065]

Time : 3 hours

Max. Marks : 50

Instructions to Candidates

1. Answer ALL questions.
2. Missing data may be suitably assumed.

1A	Describe the different types of invariants with the help of example.	5
1B	<p>What is inheritance? Write the output of the code with explanations.</p> <pre> class Base: def hello(self): print "Good Morning" def message(self, msg): print msg class Sub(Base): def message(self, msg): print "sub:", msg baseobj = Base() baseobj.hello() baseobj.message("How are you") obj = Sub() obj.hello() obj.message("Have a good day?") </pre>	3
1C	What are the uses of recurrence?	2

2A	Describe the method of creating generator in python with an example.	5
2B	Explain with example, the built- in functions in python that can be used along with lambda function.	3
2C	Write the code in python to read a file from network.	2

3A	Define the rooted binary tree and describe its components with a neat diagram. Describe its structural properties also.	5
3B	What are the different applications of binary tree?	3
3C	Differentiate between return and yield statement used in a function.	2

4A	Write a program in python to solve the problem of determining the count of binary numbers of length n using recurrence.	5
4B	Explain the three types of tree traversal in binary trees with example?	3
4C	How can the breadth first search technique be implemented using a grid?	2

5A	Which types of problems can be solved using recursion? Explain the two parts of recursive function. Write a recursive function in python to check whether the given string strings “Malayalam” and “Kannada” is palindrome or not.	5
5B	Differentiate lambda functions from a normal def defined functions with the help of example.	3
5C	Which data structure can be used to implement the recursive function and why?	2