Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

III SEMESTER BTECH. (INFORMATION TECHNOLOGY/COMPUTER AND COMMUNICATION ENGINEERING) IN SEMESTER EXAMINATIONS, DECEMBER 2021

SUBJECT: OBJECT ORIENTED PROGRAMMING [ICT 2155]

REVISED CREDIT SYSTEM

(16/12/2021)

TIME: 90 Minutes **MAX. MARKS: 20**

Instructions to candidates

- Answer **ALL** questions.
- Missing data, if any, may be suitably assumed.

Q. No.	Questions	Marks
1.	Write a java program, which reads an one dimensional array and display only those numbers in the array, which matches with the product of previous two numbers in the array. Example: Input array: 4 3 2 6 2 4 8 3 3 9 2 Output: 6, 8, 9 (The first number displayed is 6 because product of previous two numbers are 2 * 3=6. Similarly for other output.)	3
2.	Write a java program to read a 3 digit integer number. Compare middle digit with sum of remaining 2 digits. If it is equal, print the all devisors of middle digit else print the sum of remaining 2 digit. Example1 Input: 583 Output: Here middle digit is equal to sum of remaining 2 digits. So the output will be devisors of 8 which is 1, 2, 4, 8 Example2 Input: 573 Output: Here middle digit is not equal to sum of remaining 2 digits. So the output will be sum of remaining 2 digits which is 8	3

3.	Create an abstract class Employee with data members: employee Id, employee name, basic salary. Derive two classes Regular Employee and Contract Employee and compute the net salary, using computeNetSalary method and display employee details using display method. Net Salary is computed using below formulae: DA = basic * 0.40, HRA=basic * 0.10, Gross Salary = basic + DA + HRA, tax=0.5*basic Net Salary = Gross Salary – Tax	3
4.	Create an interface StudentInterface with computeTotal() method. Create a class Student implementing this interface, having data members: registration number and name. Using this class, create a subclass UGStudent having these data members: sessionalMarks, assignmentMarks and endSemMarks. The UGStudent class also has setUGStudent method to initialize the object. Compute total marks and print 3 student details. Total Marks are calculated as given below: TotalMarks = sessionalMarks + assignmentMarks + endSemMarks While entering Marks check sessional marks are between 0-20, assignment marks – 0-30 and End semester marks between 0-50.	3
5.	Make a class called "BaseClass" with the abstract method: abstract string Add(String Eq1, String Eq2). Eq1 and Eq2 represent polynomial equations. The main method's class should be derived from the 'BaseClass' class. Create a Java programme that combines two equations and displays the result. For example, if the inputs are 10X+3Y and 2X+12Y, the outcome of the add function is 12X+ 15Y. Also, if the input equation does not contain a 'X' or 'Y' term, an exception message such as 'Invalid Equation' will be printed.	4
6.	Create a Java method that takes two strings as input and reverses them. Further, concatenate the reversed strings and check if the concatenated string is a palindrome. If so print it the string otherwise throw an user-defined exception with the appropriate message. Illustrate this method by writing suitable main application.	4