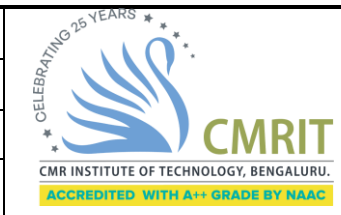
CMR Institute of Technology, Bangalore			
Department(s): Information Science & Engineering			
Semester: 4	Section(s): A/B/C	Lectures/week: 04	
Subject: Analysis & Design of Algorithm		Code: BCS401	
Course Instructor(s): Prof. Dinesh Kumaar/Prof. Kavitha			
Course duration: Feb 2026 – May 2026			
Google Classroom Link: https://classroom.google.com/c/ODQzNzM0ODg1MzA0?cjc=fmvezgz7			

Analysis & Design of Algorithms Workbook

Q. No.	WORKBOOK (Total Marks:10) Date:			
	Questions	**Marks**	**CO**	**Blooms Level**
1.	**Relate the below scenario to algorithms. Analyze the scenario and fill in the blanks.** Anitha decided to cook Veg biryani. She started collecting Ingredients i.e Rice, Salt, Vegetables etc.. She started cooking by referring to YouTube. She added all the ingredients, boiled to certain temperature and added rice, finally after 1 hour 20 minutes veg biryani was ready which was 3/4th of the vessel. Finally she served her daughter she was very happy to have. a. What can be the name of the algorithm b. The keyword Ingredients refers to c. The 1 hour 20 minutes in algorithms can be referred as d. 3/4th of the vessel veg biryani refers to	**4**	**CO1**	**L2**
2.	**Analyse the below scenario and answer the questions.** During the naming ceremony of any child, parents try to give a name which well suits the kid. ALIKA is a girl, wants to find the meaning of her name. So she purchased the Oxford Dictionary and she started searching from the starting page till the end. Finally she found the 10^{th} page which means HONESTY, JUSTICE. She felt very happy. i. Which algorithm can be used? Ans: ii. What is the time complexity? Ans: iii. Write the algorithm? Ans:	**3**	**CO1**	**L3**

3.	**Analyse the below scenario and answer the questions.** Anita went to a fruit shop and she wanted to purchase apples based on the size. In Total there were 5 apples. First she picked an apple compared to the second one. She felt the second smallest. Again she started comparing one more apple with the second. She felt the second is the smallest when compared to the third. Next time she compared the second apple with one more, again she felt the second was small. After all the comparison she came to know the second apple is the smallest one she kept in the first place. She repeated the process for the rest of the apples to get apples arranged in the order according to the size. Purchased all 5 apples and happily she came out of the shop. i. Which algorithm can be used? Ans: ii. What is the time complexity? Ans: iii. Write the algorithm? Ans:	**4**	**CO2**	**L3**
4.	**Analyse the below scenario and answer the questions.** Person wants to travel from CMRIT to Majestic. First day he boarded 335E vajra at 8.00am and reached at 10. 00am.Second day he booked an auto through name yatra and started at 8.30am but reached by 10.00am. Finally, he chose the Namma metro. He started at 9.00am and reached at 10.00am.So finally he decided to travel through the metro. i. Which concept will well suit the above scenario? Ans: ii. What does the timing denote? Ans:	**2**	**CO4**	**L4**
5.	**Do some research on al-Khorezmi (also al-Khwarizmi), the man from whose name the word "algorithm" is derived. In particular, you should learn what the origins of the words "algorithm" and "algebra" have in common.**	**2**	**CO5**	**L2**

6.	**What does Euclid's algorithm do for a pair of numbers in which the first number is smaller than the second one? What is the largest number of times this can happen during the algorithm's execution on such an input?**	**3**	**CO1**	**L4**
7.	**a) Write down driving directions for going from your college to your home with the precision required by an algorithm.** **b) Write down a recipe for cooking your favorite dish with the precision required by an algorithm.**	**5**	**CO1**	**L4**
8.	**There are n lockers in a hallway, numbered sequentially from 1 to n. Initially all the locker doors are closed. You make 11 passes by the lockers, each time starting with locker #1. On the ith pass, i = 1, 2, ... , 11, you toggle the door of every ith locker: if the door is closed, you open it; if it is open, you close it. For example, after the first pass every door is open; on the second pass you only toggle the even-numbered lockers (#2, #4, ...) so that after the second pass the even doors are closed and the odd ones are open; the third time through, you close the door of locker #3 (opened from the first pass), open the door of locker #6 (closed from the second pass), and so on. After the last pass, which locker doors are open and which are closed? How many of them are open?**	**5**	**CO5**	**L4**