

# **Pandit Deendayal Energy University**

## **School of Technology**

### **Department of Computer Science & Engineering**

Even Semester 2023-2024

### **Design and Analysis of Algorithms Lab**

#### **Course file**

<b>Name of the course:</b>	Design and Analysis of Algorithms Lab
<b>Course Code:</b>	20CP209P
<b>Program:</b>	B. Tech.
<b>Department:</b>	Computer Science and Engineering
<b>Semester:</b>	4 <sup>th</sup> semester
<b>Academic Year:</b>	2023-2024
<b>Name of Course Coordinator:</b>	Dr. Aditya Shastri
<b>Name of Other Faculty Members:</b>	Dr. Hargeet, Dr. Rajendra, Dr. Hiren
[A]	Teaching Scheme, Lab Experiments, Prerequisites, List of Books and Reference Books.
[B]	Lesson Plan
[C]	Academic Calendar, Faculty Timetable, Class Timetable
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[I]	Tutorials, Assignments, Case Studies, Quiz, etc.
[J]	Course related ICT: Weblinks, Software, E-books, Relevant NPTEL and MOOC, Video lectures, Blogs, Virtual Labs, Animations, Simulations etc.
[K]	Laboratory Manuals
[L]	List of International / National Journals related to the Course
[M]	List of well-known Conferences related to the Course
[N]	List of Classic Journal Papers / Articles / Review Papers related to the Course
[O]	List of Renowned Industries / Organizations / working in the Course related areas
[P]	List of Renowned Scientists / Academicians working in the Course related areas
[Q]	Copies of the MSE and ESE Question Papers and Answer Sheets
[R]	Attendance Record
[S]	Records of the Continuous Assessment (Assignment, Quiz, Laboratory Work, etc.)
[T]	Details of Remedial Classes (with evidences)
[U]	Details of Expert Lectures / Industrial Visits/Events (Only related to the Course)
[V]	List of Slow and Advanced Learners, activity planned and executed
[W]	Direct Assessment (Result of mid, end and internal assessment components)
[X]	Indirect Assessment (Exit Survey/ Post Test)
[Y]	Final Attainment of COs and POs and Interpretation
[Z]	Actions to be taken if COs and POs are not achieved

**Date:**

**Signature of Subject Teachers**

**Signature of Department  
Coordinator (IQAC)**

**Signature of Head of the  
Department**

## A. Teaching Scheme, Lab Experiments, Prerequisites, List of Books and Reference Books.

### Teaching Scheme

20CP209P					Design and Analysis of Algorithm Lab		
Teaching Scheme					Examination Scheme		
L	T	P	C	Hrs./Week	Lab Work	Lab Exam	Total
0	0	2	1	2	50	50	100

### Lab Experiments

1. To implement selection and insertion sort algorithms and compare their complexities.
2. To implement quicksort and mergesort algorithms and compare their complexities.
3. To implement linked list for doing various mathematical operations.
4. To implement City Database and perform various operations on it. Compare the complexities when the database is implemented using array and linked list.
5. To implement Greedy Algorithm for obtaining minimum spanning trees using union and find. Perform its complexity analysis.
6. To implement standard matrix multiplication and Strassen matrix multiplication using divide and conquer approach. Compare the complexities of both approaches.
7. To implement Dynamic Programming Algorithms for optimization problems and compare Greedy solution with Dynamic Programming solutions.
8. To implement Backtracking Algorithm for N-queens problem.
9. To implement Branch and Bound Technique for Travelling Salesman Problem.
10. To design and solve given problems using different algorithmic approaches and analyze their complexity.

### Pre-requisites courses:

1. Data Structures Course.
2. Any Programming Language Course.

### Text /Reference Books:

1. Charles E. Leiserson, Thomas H. Cormen, Ronald L. Rivest, Clifford Stein - Introduction to Algorithms, PHI
2. Gilles Brassard & Paul Bratley, Fundamentals of Algorithmic, PHI
3. Ellis Horowitz, Sartaj Sahni, Sanguthevar Rajasekharan, Fundamentals of Computer Algorithms, Galgotia.

## B. Lesson Plan

<b>Sr. No.</b>	<b>Lab Conduction</b>	<b>Mapped CO</b>
1	Lab 1: Selection and Insertion sort and their complexity analysis	CO1
2	Lab 2: Merge and Quick sort with complexity analysis	CO1
3	Lab 3: Mathematical operations on large numbers.	CO2
4	Lab 4: City Database and operations using linked list	CO4
5	Lab 5: Kruskal's algorithm using Greedy Approach	CO3
6	Lab 6: Standard and Strassen using Divide and Conquer Approach	CO3
7	Lab 7: All pair shortest pair problem using Dynamic Programming	CO3
8	Lab 8: N-queens using Backtracking	CO5
9	Lab 9: Travelling salesman using Branch and Bound	CO5
10	Lab 10: General computations Problem	CO6

## C. Academic Calendar, Faculty Timetable, Class Timetable

### **Academic Calendar 2022-23 (Even Semester)**

PANDIT DEENDAYAL ENERGY UNIVERSITY

Academic Calendar: 2023-24

Even Semester: UG Sem.2/4/6/8 & PG Sem. 2/4 (FoET) & UG Sem. 2/4/6/8 & PG Sem 2/4 (FoLS)	
Particulars	Date
Semester Registration, Department Orientation. & Commencement of classes, Department Orientation.	4 <sup>th</sup> Jan. (Thursday) 2024
Attendance Review-1 (After 4 week)	25 <sup>th</sup> Jan (Thur)2024
Republic Day Celebration	26 <sup>th</sup> Jan. (Fri) 2024
Energy Cup – The Sports Fest	5 <sup>th</sup> (Mon)-12 <sup>th</sup> (Mon)Feb. 2024
Internal Assesment-1 (Quiz, Test, Assignment etc.)** CP / MP Review – 1, Student Mentoring Week - 1	12 <sup>th</sup> (Mon)-16 <sup>th</sup> (Fri) Feb. 2024
Attendance Review-2 (After 8 week)	22 <sup>nd</sup> (Thur)-23 <sup>rd</sup> (Fri)Feb. 2024
Recruiters Meet	21 <sup>st</sup> (Wed)-25 <sup>th</sup> (Sun) Feb. 2024
Mid Semester Examination/ Dissertation Review 1	26 <sup>th</sup> Feb (Mon) 2024 Onwards
Last Date of showing evaluated answer books of Mid-Sem. Exam	15 <sup>th</sup> Mar (Fri)2024
Declaration of Mid Sem. Exam Result	18 <sup>th</sup> Mar (Mon) 2024
Attendance Review-3 (After 12 week)	21 <sup>st</sup> (Thur)-22 <sup>nd</sup> (Fri) March2024
Parent Teacher Meeting (Saturday)	23 <sup>rd</sup> Mar. (Sat) 2024
360 Degree Feedback from Students	26 <sup>th</sup> (Tues)-29 <sup>th</sup> (Fri) Mar. 2024
Declaration of Detention list of students (during 13 <sup>th</sup> Week)	29 <sup>th</sup> March (Fri) 2024
Internal Assesment-2 (Quiz, Test, Assignment etc.)** CP / MP Review – II Student Mentoring Week - 2	8 <sup>th</sup> (Mon)-12 <sup>th</sup> (Fri)Apr. 2024
Flare – The Social & Cultural Fest	19 <sup>th</sup> (Fri)-21 <sup>st</sup> (Sun)Apr. 2024
Classes End & Farewell by Dept. to pass out batch	26 <sup>th</sup> Apr. (Fri) 2024
Practical Examinations, submission of Term Work and Seminars	29 <sup>th</sup> Apr.(Mon) 2024 Onwards
Dissertation presentation for UG and PG for FOLS	29 <sup>th</sup> April (Mon) 2024 onwards
End Semester Examination FoET & FoLS	6 <sup>th</sup> May (Mon) 2024 Onwards
Dissertation Exam for PG program(s) & Progress Review for Ph.D. CP / MP Final Review	20 <sup>th</sup> (Mon)-24 <sup>th</sup> (Fri) May 2024
Industrial Internship for FoET students & Internships (Industrial/ Rural/ CSSI) & Training	During May-June 2024
Declaration of End Sem. Exam Result	24 <sup>th</sup> May (Fri) 2024
Summer Vacation (Faculty will resume office on 4 <sup>th</sup> July 2024)	27 <sup>th</sup> (Mon) May to 3 <sup>rd</sup> (Wed) Jul 2024
Faculty Development Programme	8 <sup>th</sup> (Mon) -19 <sup>th</sup> (Fri) Jul. 2024
Odd Semester: Sem.3/5/7 (FoET) & Sem.1/3/5/7 (FoLS)	
Odd Semester Registration & class commencement	22 <sup>nd</sup> Jul.(Mon) 2024

Faculty Timetable

Aditya Shastri																
Computer Science & Engineering																
Spring Semester 2024	w.e.f : 4th January 2024															
Day	08:00-08:55	09:00-9:55	10:00-10:55	10:55-11:10	11:10-12:05	12:10-13:05	13:10-14:05	14:10-15:05	15:10-16:05	16:05-16:10	16:00-17:00	17:00-18:00				
Monday	G (23MSCPM202T)			SHORT BREAK			LUNCH BREAK			SHORT BREAK						
	F-304, CP(4) - L															
G (23MSCPM202T)													G1 (20CP209P)		G1G2 (20CP209T)	
F-304, CP(4) - L													F-104, CP(4) - P		F-302, CP(4) - L	
G (23MSCPM202T)													G6 (20CP209P)			
F-304, CP(4) - L													E213, CP(4) - P			
G (23MSCPM202P)	G1G2 (20CP209T)															
C008, CP(4) - L	F-303, CP(4) - L															
G (23MSCPM202P)																
C008, CP(4) - L																
Location Abbr.		Location Name		Subject Abbr.		Subject Name										
C008		C, Computer Lab1		20CP209P		Design & Analysis of Algorithm -										
E213		E, Web Tech. Lab (CP2)		20CP209T		Design & Analysis of Algorithm										
F-104		F, Data Analytics Lab		23MSCPM202P		Machine Learning for Beginners										
F-302		F, Lecture Hall		23MSCPM202T		Machine Learning for Beginners										
F-303		F, Lecture Hall														
F-304		F, Lecture Hall														
F-403		F, Lecture Hall														

Class Timetable

Day	08:00 to 08:55 (Minor)	9.00 to 9. 55	10.00 to 10.55	10:55 to 11:10	11.10 to 12.05	12.10 to 1.05	13:10 to 14:05	2.10 to 3.05	3.10 to 4.05
Monday	G (23MSCPM202T) F-304, ADSh-L			S H O R T  B R E A K	G1 (20CP210P) E216, KSL-P		L U N C H  B R E A K	G1G2 (20CP206T) F-302, TABH-L	G1G2 (20CP206T) F-302, TABH-L
					G2 (20CP207P) F-104, KBT-P				
Tuesday	G (23MSCPM202T) F-304, ADSh-L	G1G2 (20CP207T) F-302, HMGA-L	G1G2 (20CP208T) F-303, AMc-L		G1 (20CP209P) F-104, ADSh-P			G1G2 (20CP207T) F-302, HMGA-L	G1G2 (20CP209T) F-302, ADSh-L
					G2 (20CP210P) F-103, KSL-P				
Wednesday	G (23MSCPM202T) F-304, ADSh-L	G1G2 (20CP207T) F-302, HMGA-L	G1G2 (20CP206T) F-303, TABH-L			G1G2 (20CP208T) F-303, AMc-L			
Thursday	G (23MSCPM202P) C008, ADSh-L	G1G2 (20CP209T) F-303, ADSh-L	G1G2 (20CP208T) F-303, AMc-L		G2 (20CP208P) E215, AMc-P			G2 (20CP209P) F-104, ADSh-P	
					G1 (20CP210P) F-103, KSL-P			G1 (20CP208P) E216, AMc-P	
Friday	G (23MSCPM202P) C008, BHT-L	G1G2 (20HS201P) C007, ARO-P			G1 (20CP207P) F-104, HMGA-P			G1G2 (20CP209T) F-403, ADSh-L	
					G2 (20CP210P) F-103, KSL-P				

Office Hours:

Day: Every Tuesday and Friday

Time: 4 PM – 6 PM

Venue: F Block, 5<sup>th</sup> Floor, L2 Cabin

## D. Course Outcomes (COs)

On completion of the course, student will be able to

**CO1** - Understand need of complexity analysis of the algorithm

**CO2** - Solve Homogenous and Inhomogeneous recurrence relations using Master Theorem, Substitution method, and Recurrence tree.

**CO3** - Apply Dynamic Programming, Divide and Conquer Strategy and greedy method to solve computational and graph problems.

**CO4** - Compare different algorithmic Strategies on efficiency parameters for optimization problems.

**CO5** - Evaluate Classical problems through Backtracking and Branch & Bound techniques.

**CO6** - Create algorithms for real time problems Design algorithms for computational problems of moderate complexity.

## E. Mapping of Course Outcomes with Program Outcomes (POs)

### ***Course Articulation Matrix***

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
1	3	3	-	-	-	-	-	-	-	-	-	1	1	-	-
2	3	3	3	2	-	-	-	-	-	-	-	1	1	-	-
3	2	2	3	2	-	-	-	-	-	-	-	1	1	-	-
4	1	2	2	3	-	-	-	-	-	-	-	1	1	-	-
5	1	3	3	3	-	-	-	-	-	-	-	1	1	-	-
6	2	2	3	3	-	-	-	-	-	-	-	1	1	-	-

### ***Program Articulation Matrix***

PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
2	2.5	2.3	2.1	-	-	-	-	-	-	-	1	1	-	-

Correlation levels 1, 2 and 3 as defined below:

1: Slight (Low)      2: Moderate (Medium)      3: Substantial (High)

## F. Evaluation Scheme and Rubrics

<b>Assessment Method</b>	<b>Assessment Tool</b>	<b>Description</b>	<b>Marks</b>	<b>Mapping with CO</b>	<b>Contribution to CO's</b>
Direct (Continuous Evaluation)	Performance Evaluation and Lab Work	Evaluation of Individual lab work on weekly basis	50	All CO's	It contributes to 50% weightage of Direct Assessment to CO attainment.
Direct	Lab Exam and Viva/ Quiz	Examination based on Critical Experiment and Viva/ Quiz	50	All CO's	It contributes to 50% weightage of Direct Assessment to CO attainment.



## G. Class Notes, Handouts, Course Material, etc.

The following documents are uploaded on MS Teams for students and attached in this file for reference.

### Laboratory Manuals

#### List of Practicals.

##### Practical No. 1 and 2

Implement the following sorting in any programming language.

- a) Insertion sort
- b) Selection sort
- c) Merge sort
- d) Quick sort

Now, measure the execution time and the number of steps required to execute each algorithm in best case, worst case, and average case.

##### Practical No. 3

Use singly linked lists to implement integers of unlimited size. Each node of the list should store one digit of the integer. You should implement addition, subtraction, multiplication, and exponentiation operations. Limit exponents to be positive integers.

What is the asymptotic running time for each of your operations, expressed in terms of the number of digits for the two operands of each function?

##### Practical No. 4

Implement a city database using unordered lists. Each database record contains the name of the city (a string of arbitrary length) and the coordinates of the city expressed as integer  $x$  and  $y$  coordinates. Your program should allow following functionalities:

- a) Insert a record,
- b) Delete a record by name or coordinate,
- c) Search a record by name or coordinate.
- d) Print all records within a given distance of a specified point.

Implement the database using an array-based list implementation, and then a linked list implementation. Perform following analysis:

- a) Collect running time statistics for each operation in both implementations.
- b) What are your conclusions about the relative advantages and disadvantages of the two implementations?
- c) Would storing records on the list in alphabetical order by city name speed any of the operations?
- d) Would keeping the list in alphabetical order slow any of the operations?

##### Experiment No. 5 [Greedy Approach]

Implement interval scheduling algorithm. Given  $n$  events with their starting and ending times, find a schedule that includes as many events as possible. It is not possible to select an event partially. For example, consider the following example:

Event	Starting time	Ending time
A	1	3

B	2	5
C	3	9
D	6	8

Here, maximum number of events that can be scheduled is 2. We can schedule B and D together.

### Practical No. 6 [Divide and Conquer]

Implement both a standard  $O(n^3)$  matrix multiplication algorithm and Strassen's matrix multiplication algorithm. Using empirical testing, try and estimate the constant factors for the runtime equations of the two algorithms. How big must  $n$  be before Strassen's algorithm becomes more efficient than the standard algorithm?

### Experiment No. 7 [Dynamic Programming]

Implement the Floyd Warshall Algorithm for All Pair Shortest Path Problem. You are given a weighted diagraph  $G = (V, E)$ , with arbitrary edge weights or costs  $c_{vw}$  between any node  $v$  and node  $w$ . Find the cheapest path from every node to every other node. Edges may have negative weights. Consider the following test case to check your algorithm:

$v$	$w$	$c_{vw}$
0	1	-1
0	2	4
1	2	3
1	3	2
1	4	2
3	2	5
3	1	1
4	3	-3

### Practical No. 8 [Backtracking]

Solve the  $n$  queens' problem using backtracking. Here, the task is to place  $n$  chess queens on an  $n \times n$  board so that no two queens attack each other. For example, following is a solution for the 4 Queen' problem.

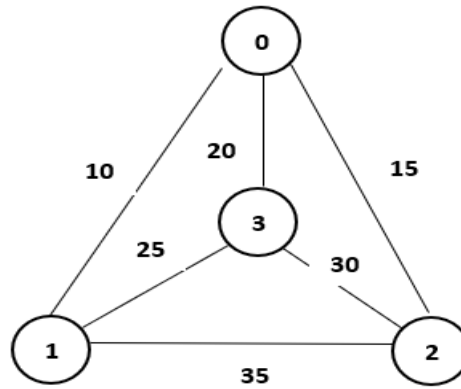
		Q	
			Q
Q			
		Q	

### Practical No. 9 [Branch and Bound]

Given a set of cities and distance between every pair of cities, the problem is to find the shortest possible tour that visits every city exactly once and returns to the starting point.

Solve this problem using branch and bound technique.

For example, consider the following graph:



A Travelling Salesman Problem (TSP) tour in the graph is  $0 - 1 - 3 - 2 - 0$ . The cost of the tour is  $10 + 25 + 30 + 15 = 80$ .

### Practical No. 10

To design and solve given problems using different algorithmic approaches and analyze their complexity.

1. Your friends are starting a security company that needs to obtain licenses for  $n$  different pieces of cryptographic software. Due to regulations, they can only obtain these licenses at the rate of at most one per month. Each license is currently selling for a price of \$100. However, they are all becoming more expensive according to exponential growth curves: in particular, the cost of license  $j$  increases by a factor of  $r_j > 1$  each month, where  $r_j$  is a given parameter. This means that if license  $j$  is purchased  $t$  months from now, it will cost  $100r_j^t$ . We will assume that all the price growth rates are distinct; that is,  $r_i \neq r_j$  for licenses  $i \neq j$  (even though they start at the same price of \$100).

The question is: Given that the company can only buy at most one license a month, in which order should it buy the licenses so that the total amount of money it spends is as small as possible?

Give an algorithm that takes the  $n$  rates of price growth  $r_1, r_2, \dots, r_n$ , and computes an order in which to buy the licenses so that the total amount of money spent is minimized. The running time of your algorithm should be polynomial in  $n$ .

2. Suppose you are given an array  $A$  with  $n$  entries, with each entry holding a distinct number. You are told that the sequence of values  $A[1], A[2], \dots, A[n]$  is unimodal. That is, for some index  $p$  between 1 and  $n$ , the values in the array entries increase up to position  $p$  in  $A$  and then decrease the remainder of the way until position  $n$ . (So if you were to draw a plot with the array position  $j$  on the  $x$ -axis and the value of the entry  $A[j]$  on the  $y$ -axis, the plotted points would rise until  $x$ -value  $p$ , where they'd achieve their maximum value, and then fall from there on). You'd like to find the "peak entry"  $p$  without having to read the entire array - in fact, by reading as few entries of  $A$  as possible. Show how to find the entry  $p$  by reading at most  $O(\log n)$  entries of  $A$ .

## H. Course Presentations (PPTs)

Presentations for this course are prepared from **Algorithm Design** by **John Klienberg** and **Eva Tardos**.

<https://www.cs.princeton.edu/~wayne/kleinberg-tardos/>

## I. Tutorials, Assignments, Case Studies, Quiz, etc.

Not applicable for the laboratory course.

J. Course related ICT: Weblinks, Software, E-books, Relevant NPTEL and MOOC, Video lectures, Blogs, Virtual Labs, Animations, Simulations etc.

1. NPTEL:

<https://nptel.ac.in/courses/106106131>

2. MIT Course:

<https://ocw.mit.edu/courses/6-006-introduction-to-algorithms-spring-2020/>

3. 0/1 Knapsack using Branch and Bound:

<https://iq.opengenus.org/0-1-knapsack-using-branch-and-bound/>

4. TSP Dynamic:

[https://www.tutorialspoint.com/design\\_and\\_analysis\\_of\\_algorithms/design\\_and\\_analysis\\_of\\_algorithms\\_travelling\\_salesman\\_problem.htm](https://www.tutorialspoint.com/design_and_analysis_of_algorithms/design_and_analysis_of_algorithms_travelling_salesman_problem.htm)

5. TSP Branch and Bound:

<https://iq.opengenus.org/travelling-salesman-branch-bound/>

6. 3 SAT to Clique:

[https://opensa-server.cs.vt.edu/ODSA/Books/Everything/html/threeSAT\\_to\\_clique.html](https://opensa-server.cs.vt.edu/ODSA/Books/Everything/html/threeSAT_to_clique.html)

## K. Laboratory Manuals

Laboratory Manual is attached at the end of this course file.

## L. List of International / National Journals related to the Course

Following are the reputed international journals related to the course:

1. ACM Transactions on Algorithms  
<https://dl.acm.org/journal/talg>
2. IEEE Transactions on Computers  
<https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=12>
3. Algorithms: An Open Access Journal from MDPI  
<https://www.mdpi.com/journal/algorithms>
4. Algorithmica (by Springer)  
<https://www.mdpi.com/journal/algorithms>



## M.List of well-known Conferences related to the Course

Following are the list of well-known conferences related to the course:

1. ACM/SIAM Symposium on Discrete Algorithms  
<https://www.siam.org/conferences/cm/conference/soda22>
2. Algorithmic Learning Theory  
<https://link.springer.com/book/10.1007/b100989#book-header>
3. European Symposium on Algorithms  
<https://algo-conference.org/esa/>
4. International Symposium on Algorithms and Computation  
<https://isa.hanyang.ac.kr/isaac2022/>

## N. List of Classic Journal Papers / Articles / Review Papers related to the Course

1. Adaptive dynamic programming for control: A survey and recent advances  
<https://ieeexplore.ieee.org/abstract/document/9306903>
2. Dynamic Programming algorithms and their applications in machine scheduling: A review  
<https://www.sciencedirect.com/science/article/abs/pii/S0957417421014998>
3. Divide-and-conquer methods for big data analysis  
<https://arxiv.org/abs/2102.10771>
4. A survey on the algorithm and development of multiple sequence alignment  
<https://academic.oup.com/bib/article-abstract/23/3/bbac069/6546258>
5. Compressed sensing for image compression: survey of algorithms  
[https://link.springer.com/chapter/10.1007/978-981-13-6001-5\\_42](https://link.springer.com/chapter/10.1007/978-981-13-6001-5_42)
6. Hyperparameter search for machine learning algorithms for optimizing the computational complexity  
<https://www.mdpi.com/2227-9717/11/2/349>

## O. List of Renowned Industries / Organizations / working in the Course related areas

Following are the institutes/ organizations that are working in the course related areas:

1. DAA by Prof. Sourav Mukopadhyay at IIT Kharagpur:  
<http://www.facweb.iitkgp.ac.in/~sourav/daa.html>
2. DAA at IIT Madras:  
[http://www.cse.iitm.ac.in/course\\_details.php?arg=OTI=](http://www.cse.iitm.ac.in/course_details.php?arg=OTI=)
3. DAA by Prof. Erik Demaine, Prof. Srin Devadas, Prof. Nancy Lynch at MIT  
<https://ocw.mit.edu/courses/6-046j-design-and-analysis-of-algorithms-spring-2015/>

## P. List of Renowned Scientists / Academicians working in the Course related areas

1. **Rediet Abebe:** Assistant Professor of Computer Science at the University of California, Berkeley.  
<https://bids.berkeley.edu/people/rediet-abebe>
2. **Roland Carl Backhouse:** Emeritus Professor of Computing Science at the University of Nottingham.  
<http://www.cs.nott.ac.uk/~psarb2/>
3. **Edsger W. Dijkstra:**  
[https://en.wikipedia.org/wiki/Edsger\\_W.\\_Dijkstra](https://en.wikipedia.org/wiki/Edsger_W._Dijkstra)
4. **Andrew V. Goldberg:** Senior Principal Scientist at Amazon.com.  
<https://www.linkedin.com/in/andrew-goldberg-1a103ba5/>
5. **Narendra Karmarkar:** Independent Research Professional  
<https://www.linkedin.com/in/narendra-karmarkar-0036319/?originalSubdomain=in>

Other renowned persons working in this field are:

1. Prof. Devesh Jinwala
2. Prof. Madhvan Mukund
3. Prof. Abhiram Ranade
4. Prof. Erik Demaine
5. Prof. Jason Ku
6. Prof. Justin Solomon

## Q. Copies of the MSE and ESE Question Papers and Answer Sheets

### Solve by Greedy Strategy (Odd Roll Numbers)

You are organising a birthday party and have a set budget of money to spend on food and decoration. You can buy decorations in various quantities and at various rates, you can also buy food in various quantities and at various costs. Your aim is to maximise the number of decorations and food you can purchase while staying within your allocated budget.

The following things are given to you:

- $n$  food items; where  $x_i$  denotes the quantity and  $c_i$  denotes the cost of each food item, and  $i = 1, \dots, n$ .
- $m$  decoration items; where  $y_j$  denotes the quantity and  $r_j$  denotes the rate of each decoration item, and  $j = 1, \dots, m$ .
- total allocated budget for party:  $b$

*Print the maximum number of items (food/ decoration) that can be purchased using budget  $b$ . Also, print the indexes of the items that can be purchased.*

Test case:

Food item ( $i$ )	Quantity ( $x_i$ )	Cost ( $c_i$ )	Decoration item ( $j$ )	Quantity ( $y_j$ )	Rate ( $r_j$ )
1	2	10	1	1	20
2	1	20	2	3	50
3	2	30	3	2	30
			4	1	40

Allocate budget  $b$ : Rs. 200

### Solve by appropriate Dynamic Programming Approach (Even Roll Numbers)

You are preparing an advertising campaign for the introduction of a new product and you have a predefined budget to spend on advertisement. You can advertise on different platforms in different quantities, where each platform has a varied reach/ impact, and all of them have varying cost of advertisement. It is **compulsory** to advertise in the given quantity to get the desired reach/ impact (no partial impact will be given). Your aim is to maximize the advertisement campaign's overall reach/ impact keeping in mind the allocated budget.

The following things are given to you:

- $n$  number of advertising platforms,
- $c_i$  is the cost of one advertisement on  $i^{th}$  platform,
- $q_i$  is the amount of advertisement required on  $i^{th}$  platform to get the impact  $r_i$
- $r_i$  is the reach/ impact of advertisement on  $i^{th}$  platform.
- Maximum allocated budget:  $b$

Print the maximized reach/ impact that can be achieved by using various advertisement platform and within the given budget.

Test case:

Advertisement Platform ( $i$ )	Cost of each Advertisement ( $c_i$ )	Quantity ( $q_i$ )	Impact ( $r_i$ )
Television	80	3	10
Radio	40	4	8
Pamphlet	12	10	5
Newspaper	20	6	6

Allocated budget  $b$ : Rs. 240

## R. Attendance Record

Sr. No.	Roll No.	Name	Lab Conducted	Lab Attended	Percentage Attendance
1	20BCP215	Mandowara Anush Praveen	13	0	0
2	21BCP164	Aakash Rajesh Gupta	14	13	92.85
3	21BCP249	Jaimik Manishbhai Parmar	14	12	85.71
4	22BCP001	Jay Patel	14	14	100
5	22BCP002	Dhrumil Thakkar	14	12	85.71
6	22BCP003	Sahil Kumar Yadav	14	14	100
7	22BCP004	Meet Dholakia	14	13	92.85
8	22BCP005	Vanshika Alpesh Shah	14	13	92.85
9	22BCP006	Patel Darshan Yogeshbhai	14	13	92.85
10	22BCP007	Modi Zankrit Jigneshbhai	14	13	92.85
11	22BCP008	Soni Vaibhav Sanjaykumar	14	13	92.85
12	22BCP010	Patel Prince Pareshkumar	14	13	92.85
13	22BCP011	Sumit Dhamsaniya	14	14	100
14	22BCP012	Yash Chiragkumar Shah	14	14	100
15	22BCP013	Rahul Kamleshbhai Tanna	14	14	100
16	22BCP014	Savalia Maitri Ketanbhai	14	13	92.85
17	22BCP017	Dev Kothiya	14	14	100
18	22BCP018	Joshi Shrey Chetankumar	14	14	100
19	22BCP019	Rupapara Preet Pravinbhai	14	14	100
20	22BCP020	Kruti Bhavesh Dharsandiya	14	14	100
21	22BCP021	Jethva Anshul Urmeshbhai	14	14	100
22	22BCP023	Raol Mahimnasinh Bahadursinh	14	14	100
23	22BCP024	Kalpesh Umeshbhai Kumavat	14	13	92.85
24	22BCP025	Krushang Tanti	14	14	100
25	22BCP026	Tanay Gupta	14	13	92.85
26	22BCP027	Patel Nishant Jayeshkumar	14	14	100
27	22BCP028	Surti Khushi Chandreshbhai	14	12	85.71
28	22BCP029	Zoya Singh	14	14	100
29	22BCP030	Patel Keni Sunilbhai	14	12	85.71
30	22BCP031	Arya Bhagirath Shrimali	14	13	92.85
31	22BCP033	Solanki Priyansh Jayeshbhai	14	13	92.85
32	22BCP034	Juhilkumar Patel	14	13	92.85
33	22BCP035	Nirala Sujal Hitendrakumar	14	13	92.85
34	22BCP036	Hirani Harsh Miteshbhai	14	13	92.85
35	22BCP037	Bhalla Kashish Rajesh	14	14	100
36	22BCP038	Dev Harwani	14	13	92.85
37	22BCP039	Het Prajapati	14	13	92.85
38	22BCP042	Swati Nandha	14	14	100
39	22BCP043	Shiv Banra	15	12	80
40	22BCP044	Satyam Kumar Mishra	15	12	80
41	22BCP045	Dhairya Dipak Soni	15	11	73.33
42	22BCP046	Shreya Shah	15	13	86.66
43	22BCP047	Pal Zadafiya	15	13	86.66
44	22BCP048	Ashutosh Mishra	15	11	73.33
45	22BCP049	Dave Divyansh Sandeep	15	13	86.66
46	22BCP051	Patel Prit Kalpeshbhai	15	14	93.33
47	22BCP053	Aadish Nilesh Sheth	15	13	86.66
48	22BCP054	Patel Harsh Vishnukumar	15	13	86.66

49	22BCP055	Prajapati Pratham Dushyantkumar	15	14	93.33
50	22BCP056	Patel Dhruv Umeshbhai	15	14	93.33
51	22BCP057	Shah Smit Kirankumar	15	14	93.33
52	22BCP058	Patel Dhara Ashokkumar	15	14	93.33
53	22BCP061	Rupala Dhruv Rajnikant	15	12	80
54	22BCP062	Meghal Pankajkumar Patel	15	13	86.66
55	22BCP063	Jeet Gor	15	14	93.33
56	22BCP065	Krish Jagyasi	15	11	73.33
57	22BCP066	Solanki Tiyaarsnakumari Nitinbhai	15	13	86.66
58	22BCP067	Pansuriya Prince Vijaybhai	15	13	86.66
59	22BCP068	Mavani Rahil Vallabhbbhai	15	11	73.33
60	22BCP069	Hir Rupareliya	15	12	80
61	22BCP070	Diya Jayendrakumar Raval	15	14	93.33
62	22BCP071	Rhythm Mehul Shah	15	14	93.33
63	22BCP072	Deep Shah	15	12	80
64	22BCP073	Ishan Nirav Shah	15	14	93.33
65	22BCP074	Suthar Ved Mehulkumar	15	14	93.33
66	22BCP076	Krish Rageshkumar Lakhani	15	13	86.66
67	22BCP077	Sheth Pearl Hitendra	15	13	86.66
68	22BCP078	Shah Dharmil Dhaval	15	13	86.66
69	22BCP079	Amir Thapa	15	12	80
70	22BCP080	Patel Dhruveshkumar Himansu	15	14	93.33
71	22BCP081	Kapadia Nishit Kamleshbhai	15	13	86.66
72	22BCP082	Samyak Gandhi Vishalkumar	15	11	73.33
73	22BCP083	Jangle Parth	15	11	73.33
74	22BCP084	Dev Isotiya	14	11	78.57
75	22BCP085	Sonani Arth Hareshbhai	14	13	92.85
76	22BCP086	Kothiwala Harshil Ajaykumar	14	11	78.57
77	22BCP087	Upadhyay Nitya Pareshkumar	14	12	85.71
78	22BCP089	Sandali Prasad	14	11	78.57
79	22BCP090	Shivam Kansara	14	13	92.85
80	22BCP091	Harshkumar Rana	14	12	85.71
81	22BCP092	Janmay Jagdish Panchal	14	12	85.71
82	22BCP093	Parmar Aryan	14	13	92.85
83	22BCP094	Haasil Vasavada	14	12	85.71
84	22BCP095	Maharshi Saurabh Solanki	14	14	100
85	22BCP096	Nikunj Chetan Vaghela	14	13	92.85
86	22BCP098	Riddhi Shrenikkumar Shah	14	12	85.71
87	22BCP099	Kasundra Nisarg Dineshbhai	14	12	85.71
88	22BCP100	Priyanshi Rawat	14	12	85.71
89	22BCP101	Haard Patel	14	13	92.85
90	22BCP103	Makwana Dipan Pravinbhai	14	12	85.71
91	22BCP104	Patel Arjun Ketankumar	14	13	92.85
92	22BCP105	Soumya Birjubhai Mehta	14	13	92.85
93	22BCP106	Vyas Saumya Kamleshbhai	14	13	92.85
94	22BCP107	Patel Mann Pragneshkumar	14	13	92.85
95	22BCP108	Ayushi Desai	14	12	85.71
96	22BCP109	Aarsh T Patel	14	12	85.71
97	22BCP110	Shivanjali Srivastav	14	13	92.85
98	22BCP111	Radadiya Pushti Arvinbhai	14	14	100
99	22BCP112	Dudani Srushti Pareshbhai	14	14	100

100	22BCP113	Priyanshi Manglani	14	11	78.57
101	22BCP114	Aaditya Shukla	14	11	78.57
102	22BCP115	Dhairya Paresh Oza	14	12	85.71
103	22BCP116	Suvash Sharma Subedi	14	11	78.57
104	22BCP118	Shah Rachit Lalitkumar	14	12	85.71
105	22BCP119	Pal Shah	14	12	85.71
106	22BCP120	Tirth J Upadhyay	14	14	100
107	22BCP121	Darshil Panchal	14	11	78.57
108	22BCP122	Milonee Sharma	13	12	92.30
109	22BCP123	Manvar Umangkumar Ashokbhai	13	10	76.92
110	22BCP124	Rushil Shah	13	12	92.30
111	22BCP125	Balsariya Nihar Ashokbhai	13	12	92.30
112	22BCP126	Heet Savaliya	13	13	100
113	22BCP127	Ansh Rajeshbhai Sardhara	13	13	100
114	22BCP128	Yash Parekh	13	12	92.30
115	22BCP129	Tilak	13	12	92.30
116	22BCP130	Jhagadiawala Lahek Hiren	13	11	84.61
117	22BCP131	Solanki Kunal Mehulbhai	13	13	100
118	22BCP132	Kachhadiya Kirtan Sureshbhai	13	13	100
119	22BCP133	Maan Lo	13	12	92.30
120	22BCP134	Paija Harsh Prafulbhai	13	12	92.30
121	22BCP135	Hind Divyesh Patel	13	11	84.61
122	22BCP136	Vasu Pareshbhai Mendapara	13	13	100
123	22BCP137	Chauhan Harshrajsinh Bharatsinh	13	12	92.30
124	22BCP138	Patel Maan Mahendrabhai	13	12	92.30
125	22BCP139	Kush Natvar Bang	13	12	92.30
126	22BCP140	Jha Saomyaraj Santhoshkumar	13	13	100
127	22BCP141	Sangani Harsh Alpeshbhai	13	11	84.61
128	22BCP142	Patel Hit Shaileshbhai	13	12	92.30
129	22BCP143	Patel Tirth Anilkumar	13	11	84.61
130	22BCP144	Prajapati Yash Manubhai	13	11	84.61
131	22BCP145	Aryan Dholariya	13	11	84.61
132	22BCP146	Jeel Patel	13	11	84.61
133	22BCP148	Darsh Rashmin Doshi	13	12	92.30
134	22BCP149	Shah Rohan Samir	13	10	76.92
135	22BCP150	Katharotiya Om Mansukhbhai	14	12	85.71
136	22BCP151	Chaudhari Smitkumar Mukesh	13	12	92.30
137	22BCP153	Baria Rajnish	13	12	92.30
138	22BCP154	Kashvi Mishra Singh	13	11	84.61
139	22BCP155	Dobariya Reminkumar Dinesh	13	11	84.61
140	22BCP156	Bhatt Hetanshi Nishant	13	13	100
141	22BCP158	Trada Rudra Bhaveshbhai	13	11	84.61
142	22BCP159	Tushar Talaviya	13	12	92.30
143	22BCP161	Naaman O Jecha	14	13	92.85
144	22BCP162	Vyas Kathan Pareshbhai	14	12	85.71
145	22BCP163	Jinay Shah	14	13	92.85
146	22BCP164	Shrey Mishra	14	11	78.57
147	22BCP165	Dhruvil Rushikumar Rangrej	14	12	85.71
148	22BCP166	Sehal Vikram Maheshwari	14	12	85.71
149	22BCP167	Dhruv	14	12	85.71
150	22BCP168	Madhav Dharmesh Sampat	14	12	85.71



151	22BCP169	Heet	14	13	92.85
152	22BCP170	Rajat Agrawal	14	11	78.57
153	22BCP171	Dudhatra Devanshi Rajeshbhai	14	13	92.85
154	22BCP172	Ansh Akshay Soni	14	13	92.85
155	22BCP173	Krish Gaurav Jogi	14	12	85.71
156	22BCP174	Patel Maitri Vinodkumar	14	13	92.85
157	22BCP175	Pathan Harunkhan	14	12	85.71
158	22BCP176	Gor Yatri Jigneshbhai	14	12	85.71
159	22BCP177	Heet Prakashbhai Dobariya	14	13	92.85
160	22BCP179	Bhatt Meet Bhargav	14	13	92.85
161	22BCP181	Manan Rohit Padia	14	11	78.57
162	22BCP183	Rank Vaibhav Mansukhbhai	14	14	100
163	22BCP184	Samarth Detroja	14	11	78.57
164	22BCP185	Patel Dev Kiranbhai	14	13	92.85
165	22BCP186	Desai Swayam Kaushik	14	13	92.85
166	22BCP187	Taral Patel	14	14	100
167	22BCP188	Om Solanki	14	12	85.71
168	22BCP189	Khatrani Aksharkumar Jadavbhai	14	12	85.71
169	22BCP190	Patel Raj Kamleshbhai	14	13	92.85
170	22BCP191	Rami Yaxil Himanshu	14	13	92.85
171	22BCP192	Ronak Rohitkumar Panchal	14	13	92.85
172	22BCP194	Madhavendra Singh	14	12	85.71
173	22BCP195	Aayush Bhovanbhai Gondaliya	14	13	92.85
174	22BCP196	Nemi Shah	14	13	92.85
175	22BCP197	Aditya Hasmukh Patel	14	13	92.85
176	22BCP198	Digvijaysinh Jadeja	14	12	85.71
177	22BCP200	Sapara Keyur Rajeshbhai	14	14	100
178	22BCP202	Pratyay	14	14	100
179	22BCP203	Fadia Arth Manan	14	14	100
180	22BCP204	Vishal Girishbhai Lokwani	14	12	85.71
181	22BCP205	Aryan Sanjay Patel	14	12	85.71
182	22BCP206	Akbari Rushi Bharatbhai	14	14	100
183	22BCP207	Sankalpa Acharya	14	14	100
184	22BCP209	Yash Jigneshkumar Sindhav	14	14	100
185	22BCP210	Soumitra Kumar	14	13	92.85
186	22BCP211	Nishit Ajay Barbhaya	14	14	100
187	22BCP212	Dhairya Bhatt	14	14	100
188	22BCP213	Rajani Darshan Ashokbhai	14	14	100
189	22BCP214	Kathan Balkrushna Patel	14	13	92.85
190	22BCP215	Anup Miteshbhai Gandhi	14	12	85.71
191	22BCP216	Vraj Dhavalkumar Patel	14	13	92.85
192	22BCP217	Vasu Rajeshbhai Makadia	14	14	100
193	22BCP218	Mahak Lodha	14	12	85.71
194	22BCP219	Ronak Khimani	14	12	85.71
195	22BCP221	Durg Yogesh Kumar Singh	14	14	100
196	22BCP222	Mahimna Saurabh Dave	14	14	100
197	22BCP223	Chauhan Shreyas Subhashchandra	14	13	92.85
198	22BCP224	Makwana Ayush Prakashkumar	14	13	92.85
199	22BCP225	Jimit Chavda	14	13	92.85
200	22BCP226	Kirtan Jigneshbhai Patel	14	13	92.85
201	22BCP227	Patel Shreya Ashokbhai	14	13	92.85

202	22BCP228	Shubham Lakhani	14	5	35.71
203	22BCP229	Shreya Vishal Gandhi	14	14	100
204	22BCP230	Tirth Shah	14	14	100
205	22BCP231	Pratham Lathigara	14	14	100
206	22BCP232	Modi Rudra Kamleshbhai	14	14	100
207	22BCP233	Rishabh Vimal Jain	14	14	100
208	22BCP234	Uday Valera	14	13	92.85
209	22BCP235	Patel Krish Pinakin	14	14	100
210	22BCP236	Chabhadiya Richee Shaileshbhai	14	13	92.85
211	22BCP239	Shah Vatshalkumar Mahendra	13	9	69.23
212	22BCP240	Meet Patel	13	11	84.61
213	22BCP241	Saanvi Nilesh Dave	13	12	92.30
214	22BCP242	Patel Neet Rameshbhai	13	11	84.61
215	22BCP243	Patel Krishkumar Dipakbhai	13	12	92.30
216	22BCP244	Sahil Narayan Soni	13	11	84.61
217	22BCP246	Fenil Solanki	13	10	76.92
218	22BCP247	Modi Meet Jaileshkumar	13	9	69.23
219	22BCP249	Haard Shingala	13	11	84.61
220	22BCP250	Patel Anusiben Nileshkumar	13	12	92.30
221	22BCP251	Panseriya Vasu Jigneshbhai	13	10	76.92
222	22BCP252	Aaditya Kumar Jha	13	12	92.30
223	22BCP253	Kothiya Aryan Mukeshbhai	13	11	84.61
224	22BCP254	Barasara Om Hemantbhai	13	10	76.92
225	22BCP255	Akbari Kartik Rajnikantbhai	13	11	84.61
226	22BCP256	Tintoiya Altafhusen	13	12	92.30
227	22BCP257	Khunt Abhi Hiteshbhai	13	11	84.61
228	22BCP258	Khushi Shah	13	11	84.61
229	22BCP259	Barad Dhruv Virendrasinh	13	10	76.92
230	22BCP260	Het	13	10	76.92
231	22BCP261	Modi Utsav Mehulkumar	13	12	92.30
232	22BCP263	Vaishnav Komal Vijay	13	9	69.23
233	22BCP264	Chaudhari Rinavkumar Mukesh	13	11	84.61
234	22BCP265	Aditya Vekariya	13	10	76.92
235	22BCP266	Mahiv Patel	13	11	84.61
236	22BCP268	Pranshav Shah	13	11	84.61
237	22BCP269	Dhyan Amit Shah	13	11	84.61
238	22BCP270	Rathwa Jaydeepsinh Rajeshkumar	13	9	69.23
239	22BCP271	Sahaj Dineshbhai Khant	13	11	84.61
240	22BCP272	Param Bhatt	13	9	69.23
241	22BCP273	Tejash Arajanbhai Karamata	13	9	69.23
242	22BCP274	Shastri Harsh Divyeshkumar	13	11	84.61
243	22BCP275	Patel Niravkumar Hareishkumar	13	11	84.61
244	22BCP276	Vishesh Sethi	13	11	84.61
245	22BCP277	Meet Janiyani	13	12	92.30
246	22BCP278	Patel Jay Mukeshbhai	14	12	85.71
247	22BCP279	Rajvi Biren Shah	14	12	85.71
248	22BCP280	Shah Aneri	14	13	92.85
249	22BCP281	Dharmi Patel	14	13	92.85
250	22BCP282	Dev Mehta	14	13	92.85
251	22BCP283	Dhruvi Khunt	14	12	85.71
252	22BCP284	Rank Mansi Pravinkumar	14	13	92.85

253	22BCP285	Mischa Choudhary	14	11	78.57
254	22BCP286	Mansi Parmar	14	12	85.71
255	22BCP287	Teckchandani Deep Rajesh	14	11	78.57
256	22BCP289	Patel Akshat Anilbhai	14	12	85.71
257	22BCP290	Manav Jaysukhbhai Mavani	14	11	78.57
258	22BCP291	Soham Gandhi	14	12	85.71
259	22BCP292	Sonani Bhargav	14	11	78.57
260	22BCP294	Mehta Prayag Rohitbhai	14	13	92.85
261	22BCP295	Jigish Mehul Desai	14	12	85.71
262	22BCP296	Patel Aaryan Nirajbhai	14	12	85.71
263	22BCP298	Aarchi Shah	14	14	100
264	22BCP299	Ronak Kumar Shah	14	13	92.85
265	22BCP300	Mangukiya Jeelbhai Pravinbhai	14	11	78.57
266	22BCP301	Shekhaliya Dhyey Dhirajlal	14	12	85.71
267	22BCP302	Jagrat Bhavesh Pandya	14	12	85.71
268	22BCP303	Krishit Khanpara	14	11	78.57
269	22BCP304	Rangpara Mansi Jiteshbhai	14	8	57.14
270	22BCP305	Patel Arva Vimeshkumar	14	12	85.71
271	22BCP306	Vanshil Pulkitbhai Oza	14	13	92.85
272	22BCP307	Patel Radhe Shaileshbhai	14	12	85.71
273	22BCP308	Vishwam Modi	14	14	100
274	22BCP309	Yash Dadheech	14	12	85.71
275	22BCP310	Barochiya Yash Nileshbhai	14	12	85.71
276	22BCP311	Javia Namra	14	11	78.57
277	22BCP314	Jishan Pochi	14	12	85.71
278	22BCP316	Kartik Jaju	14	12	85.71
279	22BCP317	Patel Shiv Vijaykumar	14	12	85.71
280	22BCP318	Mistry Shyamani Nilesh	14	11	78.57
281	22BCP319	Devam Joshi	14	12	85.71
282	22BCP321	Darshil Vasantbhai Padmani	14	13	92.85
283	22BCP322	Krish Hitendrakumar Patel	14	12	85.71
284	22BCP323	Dhruvin Valiya	14	11	78.57
285	22BCP324	Rajput Vanshi Sandipbhai	14	10	71.42
286	22BCP325	Gupta Mithil Ajesh	14	14	100
287	22BCP326	Harsh Shah	14	14	100
288	22BCP327	Chaudhary Mihir Kamleshkumar	14	11	78.57
289	22BCP328	Shah Pratham Sanjaybhai	14	12	85.71
290	22BCP329	Dhruv Atul Ladani	14	13	92.85
291	22BCP330	Krish Kapadia	14	14	100
292	22BCP331	Divyansh Jitendra Bajaj	14	13	92.85
293	22BCP332	Jenil Ravindrakumar Patel	14	13	92.85
294	22BCP333	Anshul Parkash	14	13	92.85
295	22BCP334	Gamit Harshkumar Champakbhai	14	11	78.57
296	22BCP335	Rabindra Kumar Bhagat	14	13	92.85
297	22BCP336	Patel Jeetkumar Prakashbhai	14	12	85.71
298	22BCP337	Dev Patel	14	12	85.71
299	22BCP338	Savaliya Dhairya Bharatbhai	14	11	78.57
300	22BCP339	Naik Krishna Piyush	14	10	71.42
301	22BCP341	Solanki Dev Chetankumar	14	14	100
302	22BCP342	Sojitra Isha Hiteshbhai	14	12	85.71
303	22BCP343	Sameeksha Gupta	14	13	92.85

304	22BCP344	Astha Parekh	14	13	92.85
305	22BCP345	Dev Korat	14	12	85.71
306	22BCP346	Vekariya Kashyap Mukundbhai	14	14	100
307	22BCP347	Bhesaniya Nency Shaileshbhai	14	14	100
308	22BCP348	Mathukiya Deep Sudhirbhai	14	13	92.85
309	22BCP350	Pandya Jyot Harshadray	14	13	92.85
310	22BCP351	Vansh Mange	14	13	92.85
311	22BCP352	Dhwanit Bharat Shah	14	13	92.85
312	22BCP353	Dhruvin Dineshkumar Padsala	14	14	100
313	22BCP354	Charul Dhekekar	14	13	92.85
314	22BCP355	Vora Akshat Jignesh	14	13	92.85
315	22BCP356	Kapadia Aryan Yogesh	12	10	83.33
316	22BCP357	Kaushik Jain	12	10	83.33
317	22BCP358	Natasha Denis	12	11	91.66
318	22BCP359	Vivan Selarka	12	9	75
319	22BCP360	Kaivalya Shital Shah	12	10	83.33
320	22BCP361	Rishi S Thakor	12	9	75
321	22BCP362	Kumarpal Vakharia	12	10	83.33
322	22BCP363	Karan Alkeshbhai Babariya	12	10	83.33
323	22BCP364	Tandel Paridhi Bhupendrabhai	12	8	66.66
324	22BCP365	Saumya Talwani	12	10	83.33
325	22BCP366	Moksha Dave	12	9	75
326	22BCP367	Smit Bhavesh Patel	12	10	83.33
327	22BCP368	Yash Hiren Mavani	12	10	83.33
328	22BCP369	Heshul Mahendrakumar Patel	12	10	83.33
329	22BCP370	Dobariya Harshit Kishorbhai	12	10	83.33
330	22BCP371	Patel Uttamkumar Aravindbhai	12	10	83.33
331	22BCP372	Ramani Darshil Bhupatbhai	12	10	83.33
332	22BCP373	Joshi Kuldeep Maheshbhai	12	8	66.66
333	22BCP375	Vasava Paulkumar Narpatbhai	12	5	41.66
334	22BCP376	Chanpura Harsh Rajeshbhai	12	10	83.33
335	22BCP377	Kazi Muhammadshafinraza	12	11	91.66
336	22BCP379	Darji Vyom Brijeshbhai	12	11	91.66
337	22BCP380	Dev	12	10	83.33
338	22BCP382	Prajapati Meet Pravinbhai	12	9	75
339	22BCP383	Robin Bavarva	12	9	75
340	22BCP384	Patel Meet Sanjaybhai	12	10	83.33
341	22BCP385	Niya Haresh Patel	12	12	100
342	22BCP387	Savaliya Dhruv Yogeshkumar	12	11	91.66
343	22BCP388	Vaibhav Panday	12	11	91.66
344	22BCP389	Kadivar Dhruvin Hareshbhai	12	11	91.66
345	22BCP390	Chaudhari Kevin Dineshbhai	12	10	83.33
346	22BCP391	Krishna Soni	12	11	91.66
347	22BCP392	Tandel Keni Nandkishor	12	12	100
348	22BCP395	Poojan Paraskumar Patel	12	9	75
349	22BCP396	Harsh Panchal	16	14	87.50
350	22BCP397	Chaudhary Deep Dineshbhai	16	13	81.25
351	22BCP398	Tirth Ketankumar Doshi	16	14	87.50
352	22BCP399	Suhani Dhruvinbhai Patel	16	15	93.75
353	22BCP401	Krish Moorjani	16	15	93.75
354	22BCP402	Patel Honeyben Ashishkumar	16	16	100

355	22BCP404	Vibhor Jain	16	14	87.50
356	22BCP405	Muhammad Saad Khan	16	14	87.50
357	22BCP406	Kavya Patel	16	13	81.25
358	22BCP407	Devang Sonavane	16	13	81.25
359	22BCP408	Mahi Chaitanya Shah	16	15	93.75
360	22BCP409	Dev Pandya	16	15	93.75
361	22BCP410	Trapasiya Raxit Prakashbhai	16	13	81.25
362	22BCP411	Yash Lokwani	16	15	93.75
363	22BCP412	Patel Vishva Amitkumar	16	14	87.50
364	22BCP413	Butani Esha Hiteshbhai	16	13	81.25
365	22BCP414	Patel Ayush Vijaybhai	16	15	93.75
366	22BCP415	Koul Achyut	16	14	87.50
367	22BCP416	Prajapati Ayush Nareshbhai	16	15	93.75
368	22BCP417	Detroja Tejas Jayeshbhai	16	15	93.75
369	22BCP418	Solanki Urvil Bipinbhai	16	15	93.75
370	22BCP419	Barad Jenis Babubhai	16	13	81.25
371	22BCP420	Prajapati Sunny Dharmendrabhai	16	14	87.50
372	22BCP421	Parmar Heneel Chetankumar	16	14	87.50
373	22BCP422	Thakkar Vinitkumar Jignesh	16	15	93.75
374	22BCP423	Farkiwala Tamanna Hetalkumar	16	14	87.50
375	22BCP424	Bhavya Jayeshkumar Patel	16	15	93.75
376	22BCP425	Pratham J Patel	16	14	87.50
377	22BCP426	Krish Modi	16	14	87.50
378	22BCP427	Prisha Dave	16	14	87.50
379	22BCP429	Dev Praful Patel	16	14	87.50
380	22BCP430	Baxi Tarj	16	14	87.50
381	22BCP431	Gajjar Vrutansh Mileshekumar	16	15	93.75
382	22BCP432	Anmolsinh M Chudasama	14	12	85.71
383	22BCP433	Rajveer Rai	14	13	92.85
384	22BCP434	Yash Ashishkumar Swami	14	12	85.71
385	22BCP435	Khush Shah	14	11	78.57
386	22BCP436	Chirag Dosi	14	11	78.57
387	22BCP437	Panchal Priyanshi Premchand	14	12	85.71
388	22BCP438	Pransu Patel	14	12	85.71
389	22BCP439	Ishan Dudhat	14	12	85.71
390	22BCP440	Yug Patel	14	13	92.85
391	22BCP441	Patel Prince Dineshbhai	14	12	85.71
392	22BCP442	Patel Arpit Nitinkumar	14	12	85.71
393	22BCP443	Patel Dhyan Jagdishbhai	14	11	78.57
394	22BCP444	Aashish Kumar Jha	14	11	78.57
395	22BCP445	Ozee Pareek	14	13	92.85
396	22BCP446	Dipesh Pandey	14	10	71.42
397	22BCP447	Achanta Sai Pranav	14	12	85.71
398	22BCP448	Keyur Sonawane	14	13	92.85
399	22BCP449	Heer Atulkumar Patel	14	12	85.71
400	22BCP450	Vyom Parag Uchat	14	12	85.71
401	22BCP451	Debnil Saha	14	10	71.42
402	22BCP454	Liza Chaurasiya	14	14	100
403	22BCP455	Rathva Hemantbhai Arvindbhai	14	13	92.85
404	22BCP458	Shekh Md. Abusad	1	1	100
405	22BCP459	Aayush Patel	14	13	92.85

406	22BCP460	Pradeep Gupta	14	8	57.14
407	22BCP461	Soshil Kumar Mukhiya	14	10	71.42
408	22BCP462	Bernabas Gemechu	1	1	100
409	22BCP464	Bishram Khatik	14	11	78.57
410	22BCP466D	Jay Ashwin	12	11	91.66
411	22BCP467D	Aarchi Patel	14	13	92.85
412	22BCP468D	Adroja Arpit Vijaybhai	14	14	100
413	22BCP469D	Aryan Kaushikkumar Randeriya	14	10	71.42
414	22BCP470D	Desai Sahil Parag	14	7	50
415	22BCP471D	Dharajiya Rajdeep Shantibhai	16	13	81.25
416	22BCP472D	Ganatra Neel Jayendrabhai	13	12	92.30
417	22BCP473D	Gokhale Vivek Liladharbhai	14	12	85.71
418	22BCP474D	Kapadia Sumeet Ketanbhai	16	16	100
419	22BCP475D	Kashish P Shah	14	13	92.85
420	22BCP476D	Katha Patel	14	13	92.85
421	22BCP477D	Khushi S Uttamani	13	11	84.61
422	22BCP478D	Krish Kansara	14	13	92.85
423	22BCP479D	Krupal Lathiya	15	13	86.66
424	22BCP480D	Maradiya Dhruv Rameshbhai	13	11	84.61
425	22BCP481D	Matariya Yash Rameshbhai	15	9	60
426	22BCP482D	Mehta Lakshy Jitendrakumar	13	11	84.61
427	22BCP483D	Paladiya Vidit Jigarbhai	12	10	83.33
428	22BCP484D	Panchal Darsh Harshadbhai	16	12	75
429	22BCP485D	Patel Dhvani Rajeshbhai	14	13	92.85
430	22BCP486D	Patel Shivam Rajeshkumar	14	13	92.85
431	22BCP488D	Patel Yashkumar Rameshbhai	14	13	92.85
432	22BCP489D	Phadke Heer Nimish	13	12	92.30
433	22BCP490D	Prachi Radadiya	14	13	92.85
434	22BCP491D	Prajapati Kaushal Kamleshbhai	14	12	85.71
435	22BCP492D	Rajan Pulse Rupsinh	14	14	100
436	22BCP493D	Rasania Purva Jayesh	12	8	66.66
437	22BCP494D	Rudra Patel	14	13	92.85
438	22BCP495D	Shah Mann Ashish	14	13	92.85
439	22BCP496D	Shah Nainesh Mukeshkumar	14	14	100
440	22BCP497D	Shiven Gohil	14	13	92.85
441	22BCP498D	Soni Umang Yogeshbhai	5	5	100
442	22BCP499D	Tilva Tirth Ashokkumar	14	12	85.71
443	22BCP500D	Vansh Chanchpara	13	11	84.61
444	22BCP501D	Vatsal Patel	15	13	86.66
445	22BCP502D	Vidhi Amishbhai Rahi	12	11	91.66

S. Records of the Continuous Assessment (Assignment, Quiz, Laboratory Work, etc.)

[illegible]

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49	22BCP055	9	9	8	7	7	7	6	6	5	6
50	22BCP056	8	8	8	8	8	7	7	7	5	4
51	22BCP057	8	8	8	7	7	5	5	5	5	4
52	22BCP058	10	9	9	9	8	8	8	8	8	7
53	22BCP061	5	5	5	5	4	4	4	4	4	4
54	22BCP062	6	6	6	5	5	5	3	3	3	2
55	22BCP063	6	6	7	5	5	2	3	4	3	3
56	22BCP065	8	8	8	7	6	5	4	4	4	4
57	22BCP066	6	6	6	6	5	5	4	4	4	4
58	22BCP067	10	10	9	8	8	8	7	7	7	6
59	22BCP068	10	9	9	9	8	8	6	6	6	5
60	22BCP069	9	9	8	8	7	7	7	6	5	4
61	22BCP070	9	9	9	8	8	7	7	5	5	5
62	22BCP071	10	9	9	8	8	8	7	6	6	5
63	22BCP072	8	8	7	7	6	6	6	5	5	6
64	22BCP073	10	9	9	8	8	8	7	6	6	5
65	22BCP074	9	9	8	8	7	5	6	6	6	6
66	22BCP076	8	8	7	7	6	7	5	4	4	4
67	22BCP077	10	10	9	9	9	8	8	8	9	6
68	22BCP078	7	7	7	6	6	5	5	6	5	6
69	22BCP079	5	5	5	5	4	4	4	4	4	4
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71	22BCP081	8	8	7	7	7	6	5	5	5	4
72	22BCP082	9	9	7	7	7	6	5	5	3	2
73	22BCP083	9	9	9	8	6	7	7	8	7	6
74	22BCP084	5	5	6	5	5	5	7	6	7	6
75	22BCP085	10	10	7	10	6	9	9	9	8	9
76	22BCP086	5	5	6	5	8	9	7	7	6	6
77	22BCP087	10	7	7	10	7	8	9	9	9	9
78	22BCP089	7	7	6	6	7	6	6	7	7	6
79	22BCP090	10	10	7	9	7	9	7	8	8	9
80	22BCP091	10	10	7	10	7	7	7	8	9	8
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83	22BCP094	6	7	6	10	6	7	7	7	7	6
84	22BCP095	10	10	7	10	8	9	10	9	8	9
85	22BCP096	10	10	7	10	9	9	7	10	9	9
86	22BCP098	9	6	9	7	7	8	7	9	10	9
87	22BCP099	10	9	7	7	7	7	7	7	7	9
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89	22BCP101	10	10	9	10	8	10	7	8	9	9
90	22BCP103	7	5	5	7	8	6	6	7	7	8
91	22BCP104	10	10	10	8	7	6	7	7	8	8
92	22BCP105	10	10	10	9	6	7	8	9	9	9
93	22BCP106	10	10	10	9	8	7	7	9	9	9
94	22BCP107	10	10	9	9	8	7	7	9	9	9
95	22BCP108	10	8	7	5	5	5	5	8	8	9
96	22BCP109	8	7	9	7	7	6	6	7	9	9



97	22BCP110	10	10	9	10	8	9	10	9	9	9
98	22BCP111	10	9	8	7	7	9	8	9	9	9
99	22BCP112	10	7	8	7	8	7	6	8	8	9
100	22BCP113	10	10	8	9	7	7	7	6	8	7
101	22BCP114	5	5	6	5	5	5	0	7	7	6
102	22BCP115	5	5	7	8	8	7	6	7	8	9
103	22BCP116	10	9	7	8	8	8	9	8	9	9
104	22BCP118	10	10	10	9	9	9	10	9	9	9
105	22BCP119	10	10	10	7	7	8	6	7	9	9
106	22BCP120	10	10	7	7	6	8	7	7	7	7
107	22BCP121	6	5	6	5	5	6	5	7	7	6
108	22BCP122	10	10	7	10	8	10	9	9	9	8
109	22BCP123	10	5	8	6	5	5	7	6	0	0
110	22BCP124	10	10	7	10	8	8	8	9	9	8
111	22BCP125	10	7	7	10	7	6	7	5	7	9
112	22BCP126	10	10	7	10	10	6	8	7	9	6
113	22BCP127	8	8	6	9	10	9	9	9	9	9
114	22BCP128	10	5	9	9	10	10	9	9	7	7
115	22BCP129	10	10	10	9	6	7	7	5	7	9
116	22BCP130	7	5	8	8	6	6	5	5	6	7
117	22BCP131	10	10	7	10	10	8	7	8	9	9
118	22BCP132	10	10	7	9	9	9	10	9	8	9
119	22BCP133	10	5	10	8	10	8	8	9	9	9
120	22BCP134	10	5	8	7	10	8	8	9	7	9
121	22BCP135	10	8	7	5	7	7	6	7	9	9
122	22BCP136	10	10	7	8	10	6	7	8	9	7
123	22BCP137	10	10	7	10	7	9	9	9	8	8
124	22BCP138	10	10	7	7	5	5	6	5	7	9
125	22BCP139	7	5	6	7	5	5	5	6	5	7
126	22BCP140	10	8	7	10	7	9	8	8	9	8
127	22BCP141	10	5	10	8	10	6	6	7	8	8
128	22BCP142	10	5	7	7	7	7	7	7	8	9
129	22BCP143	10	10	7	10	7	6	8	7	9	9
130	22BCP144	10	8	7	6	8	6	7	6	7	8
131	22BCP145	10	5	5	5	0	5	7	7	7	9
132	22BCP146	10	10	7	5	7	6	7	6	8	9
133	22BCP148	10	10	9	9	10	10	9	9	8	9
134	22BCP149	6	5	7	6	5	8	7	6	6	6
135	22BCP150	6.2	5.4	5.4	4.6	4.6	5.4	4.6	4.6	4.6	4.6
136	22BCP151	5	5	7	8	6	7	6	7	7	5
137	22BCP153	5	5	6	8	5	5	4	5	7	6
138	22BCP154	10	7	7	8	8	7	8	9	9	8
139	22BCP155	7	6	7	5	10	7	7	8	7	7
140	22BCP156	10	10	7	10	10	9	8	9	9	8
141	22BCP158	8	8	9	9	7	7	6	7	9	9
142	22BCP159	10	10	8	8	9	8	9	9	9	9
143	22BCP161	7	8	7	7	8	7	6	8	8	7
144	22BCP162	10	10	10	8	8	9	10	9	8	9
145	22BCP163	10	5	7	7	5	8	7	7	7	7
146	22BCP164	10	7	9	8	7	9	10	9	8	7
147	22BCP165	10	10	7	7	7	9	10	7	8	9

148	22BCP166	10	6	6	8	7	8	7	8	10	10
149	22BCP167	8	9	7	7	6	5	10	9	8	8
150	22BCP168	10	7	8	7	8	9	10	9	9	9
151	22BCP169	10	7	9	8	7	7	8	9	9	8
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155	22BCP173	10	6	9	10	8	9	9	9	8	8
156	22BCP174	10	9	10	9	10	9	9	10	9	10
157	22BCP175	10	7	6	7	9	9	10	9	10	9
158	22BCP176	10	9	9	9	10	9	10	9	9	9
159	22BCP177	10	9	10	9	10	9	10	8	8	9
160	22BCP179	10	10	10	10	10	9	9	10	9	10
161	22BCP181	6	5	6	6	6	4	5	6	6	5
162	22BCP183	10	10	8	7	9	9	10	9	8	9
163	22BCP184	5.2	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
164	22BCP185	10	10	9	8	9	10	9	9	8	8
165	22BCP186	10	10	10	10	10	9	10	10	10	9
166	22BCP187	10	7	8	8	6	8	7	8	8	8
167	22BCP188	9	8	8	6	9	8	7	9	7	7
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170	22BCP191	10	10	10	10	10	9	10	10	9	10
171	22BCP192	7	5	6	8	9	7	7	9	8	9
172	22BCP194	5	5	7	7	6	7	6	7	8	7
173	22BCP195	7	5	10	8	9	8	9	8	8	9
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175	22BCP197	10	9	9	10	8	9	10	9	7	9
176	22BCP198	8	8	8	7	7	6	6	6	5	5
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178	22BCP202	8	8	7	7	7	6	6	4	4	3
179	22BCP203	9	9	9	9	8	8	8	7	7	6
180	22BCP204	9	9	8	8	7	6	6	6	6	5
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183	22BCP207	8	8	8	7	7	5	5	6	6	4
184	22BCP209	9	9	9	8	8	8	7	7	7	8
185	22BCP210	8	8	8	7	7	5	5	6	6	4
186	22BCP211	9	9	9	8	8	7	7	8	7	4
187	22BCP212	9	9	8	8	8	7	6	6	5	4
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190	22BCP215	6	6	6	5	5	4	4	5	5	4
191	22BCP216	8	8	7	7	5	5	5	5	5	5
192	22BCP217	8	8	7	7	6	6	4	4	5	5
193	22BCP218	10	9	8	7	7	6	6	6	5	6
194	22BCP219	6	6	5	5	4	4	5	5	5	5
195	22BCP221	8	8	7	7	7	6	6	5	5	5
196	22BCP222	10	9	9	8	8	5	5	5	6	5
197	22BCP223	6	6	5	5	5	4	4	5	5	5
198	22BCP224	8	8	7	6	5	4	4	5	5	4

199	22BCP225	9	8	8	9	8	6	6	5	5	6
200	22BCP226	4	4	4	4	4	4	4	4	4	4
201	22BCP227	8	8	7	7	7	6	5	6	6	6
202	22BCP228	2	2	2	2	2	2	2	2	2	2
203	22BCP229	7	7	5	5	4	5	5	4	4	4
204	22BCP230	9	9	8	8	7	6	7	5	6	5
205	22BCP231	8	8	7	7	6	6	4	5	5	4
206	22BCP232	7	7	6	5	5	4	4	3	4	5
207	22BCP233	7	7	7	6	6	5	4	5	5	2
208	22BCP234	4	4	4	4	4	4	4	4	4	4
209	22BCP235	7	7	6	6	5	4	5	4	5	1
210	22BCP236	7	7	6	8	7	7	4	4	5	5
211	22BCP239	5	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
212	22BCP240	5.6	6.4	5.6	5.6	5.6	5.6	5.6	6.4	5.6	5.6
213	22BCP241	7.6	7.6	7.6	7.6	6.8	6	6.8	6.8	7.6	7.6
214	22BCP242	8.4	7.6	6.8	7.6	6.8	7.6	6.8	7.6	6	6.8
215	22BCP243	8.4	8.4	8.4	9.2	9.2	9.2	9.2	9.2	9.2	10
216	22BCP244	7.6	6.8	6.8	6	6	6	6.8	6.8	6	6.8
217	22BCP246	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
218	22BCP247	6	6.8	6	6.8	6	6	6	6.8	6	6
219	22BCP249	8.4	8.4	8.4	8.4	6.8	7.6	7.6	6.8	6.8	6
220	22BCP250	9.2	8.4	7.6	7.6	7.6	7.6	8.4	8.4	7.6	8.4
221	22BCP251	5	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
222	22BCP252	8.4	8.4	7.6	9.2	6.8	7.6	7.6	8.4	8.4	9.2
223	22BCP253	4.6	4.6	4.6	5.4	4.6	5.4	4.6	4.6	4.6	4.6
224	22BCP254	6.8	6.8	6	6	6.8	6	6	6	6	6
225	22BCP255	9.2	9.2	7.6	8.4	7.6	6.8	7.6	8.4	6.8	7.6
226	22BCP256	9.2	10	9.2	9.2	10	8.4	9.2	9.2	9.2	9.2
227	22BCP257	7.6	6.8	6	6.8	6.8	6	6	6	6	6.8
228	22BCP258	8.4	7.6	6.8	6	6.8	6.8	6.8	6.8	6	7.6
229	22BCP259	5.8	5.8	5	6.6	5	5	6.6	5.8	5.8	6.6
230	22BCP260	7.6	8.4	6.8	6	6.8	6	6.8	6	6.8	7.6
231	22BCP261	6.8	6.8	6.8	6	6.8	6	6	6	6	6.8
232	22BCP263	8.4	6.8	6.8	7.6	6	6.8	7.6	6.8	7.6	8.4
233	22BCP264	6.6	6.6	5.8	5.8	5.8	5	5.8	5	5.8	5.8
234	22BCP265	6	5.2	6	6	6	6	6	6	6	6
235	22BCP266	9.2	8.4	7.6	6.8	6	6.8	6.8	7.6	6	6.8
236	22BCP268	10	9.2	7.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2
237	22BCP269	9.2	9.2	9.2	9.2	9.2	7.6	9.2	9.2	9.2	10
238	22BCP270	6.8	6	6	6	6.8	6	6	6	6	6
239	22BCP271	9.2	7.6	6.8	7.6	6	6.8	6	7.6	7.6	6.8
240	22BCP272	5.8	5.8	5	5.8	5	5	5	5	5	5.8
241	22BCP273	7.6	6.8	6	6	6	6.8	6.8	8.4	6	8.4
242	22BCP274	6.6	5.8	5	5	5	5	5	5	5	5
243	22BCP275	6.8	6	6	6	6	6	6	6	6	6.8
244	22BCP276	7.6	8.4	6.8	6	6	6	6	6	6	7.6
245	22BCP277	10	9.2	9.2	9.2	8.4	8.4	9.2	8.4	9.2	9.2
246	22BCP278	9.2	9.2	8.4	7.6	6.8	6.8	6.8	6.8	6.8	6.8
247	22BCP279	10	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
248	22BCP280	9.2	8.4	7.6	7.6	6.8	6.8	7.6	7.6	7.6	6.8
249	22BCP281	9.2	8.4	7.6	8.4	6.8	8.4	6.8	7.6	7.6	6.8

250	22BCP282	7.8	7.8	7	7.8	6.2	7.8	7	7	6.2	6.2
251	22BCP283	9.2	8.4	7.6	6.8	6	6	6.8	7.6	6.8	6.8
252	22BCP284	8.4	9.2	7.6	7.6	8.4	8.4	8.4	7.6	7.6	6.8
253	22BCP285	8.4	8.4	7.6	6.8	6.8	7.6	6.8	7.6	7.6	6.8
254	22BCP286	9.2	8.4	6.8	6.8	6	6.8	7.6	6.8	7.6	6.8
255	22BCP287	6.8	6.8	6	6.8	6	6	6.8	6.8	6	6.8
256	22BCP289	9.2	8.4	6.8	7.6	6.8	6.8	6	7.6	7.6	6
257	22BCP290	8.4	8.4	6.8	6	6	6	6	6	6	6
258	22BCP291	10	9.2	10	10	9.2	8.4	9.2	9.2	9.2	9.2
259	22BCP292	8.4	7.6	7.6	6	7.6	6	6	6	5.2	6.8
260	22BCP294	9.2	9.2	8.4	7.6	7.6	6	6.8	7.6	6	5.2
261	22BCP295	9	8.2	7.4	5.8	5	5	6.6	5	5	5
262	22BCP296	9.2	9.2	8.4	8.4	8.4	7.6	9.2	9.2	7.6	8.4
263	22BCP298	9.2	9.2	8.4	8.4	9.2	8.4	8.4	8.4	8.4	8.4
264	22BCP299	9.2	8.4	7.6	6.8	6.8	6	7.6	7.6	6.8	6
265	22BCP300	8.4	7.6	7.6	7.6	6.8	6	7.6	6.8	6.8	6.8
266	22BCP301	10	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
267	22BCP302	9.2	8.4	6.8	7.6	7.6	6	6.8	6.8	6.8	6
268	22BCP303	6	6	5.2	6	5.2	6	5.2	5.2	6	5.2
269	22BCP304	7.6	7.6	6	7.6	6.8	6.8	6.8	7.6	6.8	6.8
270	22BCP305	9.2	9.2	9.2	9.2	9.2	9.2	9.2	8.4	8.4	8.4
271	22BCP306	9.2	8.4	6.8	6.8	6.8	6	6.8	6.8	6	6.8
272	22BCP307	8.4	8.4	8.4	6	8.4	6	7.6	6.8	7.6	6
273	22BCP308	8.8	8.8	8	7.2	8	6.4	7.2	6.4	7.2	7.2
274	22BCP309	8.8	8	7.2	7.2	7.2	6.4	8	7.2	7.2	7.2
275	22BCP310	6.6	7.4	6.6	7.4	5.8	5.8	6.6	5	5	5
276	22BCP311	7.6	7.6	6.8	6	6.8	6	7.6	6.8	6	6.8
277	22BCP314	7.8	7	6.2	6.2	5.4	6.2	5.4	5.4	5.4	4.6
278	22BCP316	9.2	9.2	7.6	6.8	8.4	6.8	8.4	8.4	7.6	6
279	22BCP317	9.2	8.4	6.8	7.6	7.6	6	7.6	6.8	6.8	7.6
280	22BCP318	8.4	8.4	6.8	7.6	6.8	6	7.6	6.8	6.8	7.6
281	22BCP319	7.6	8.4	7.6	6.8	7.6	7.6	7.6	6.8	7.6	6.8
282	22BCP321	6	7.6	6.8	6	7.6	6.8	7.6	6.8	7.6	6.8
283	22BCP322	6	8.4	8.4	7.6	6.8	6.8	7.6	7.6	6.8	7.6
284	22BCP323	7.6	7.6	6.8	6.8	6	6.8	6.8	6.8	6	7.6
285	22BCP324	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
286	22BCP325	9.2	9.2	8.4	8.4	6.8	6.8	6.8	6.8	6.8	6.8
287	22BCP326	7.6	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	10
288	22BCP327	6.8	8.4	8.4	6.8	7.6	6.8	6	6.8	6.8	6.8
289	22BCP328	7.6	8.4	8.4	9.2	8.4	9.2	8.4	8.4	8.4	7.6
290	22BCP329	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	10
291	22BCP330	6	6	6	6	6	5.2	7.6	6.8	6.8	6.8
292	22BCP331	7.6	8.4	8.4	7.6	8.4	8.4	7.6	7.6	7.6	6
293	22BCP332	8.4	7.6	7.6	6.8	6.8	6.8	8.4	7.6	6.8	6.8
294	22BCP333	7.6	6.8	7.6	6.8	6.8	6	6.8	6	6.8	6
295	22BCP334	4.8	4.8	4	4	4	4	4	4	4	4
296	22BCP335	5.6	6.4	5.6	5.6	5.6	5.6	5.6	5.6	4.8	4.8
297	22BCP336	7.6	7.6	7.6	8.4	6.8	6	6.8	6.8	6.8	6
298	22BCP337	6.8	6.8	6	6.8	6	5.2	6.8	5.2	6	6
299	22BCP338	7.6	7.6	6.8	6	6.8	6.8	6.8	6.8	6	6
300	22BCP339	4.8	4.8	4	4	4	4	4	4	4	4

301	22BCP341	8.4	8.4	9.2	8.4	7.6	6.8	8.4	6.8	7.6	6.8
302	22BCP342	7.6	6.8	7.6	8.4	6.8	5.2	7.6	8.4	6.8	8.4
303	22BCP343	7.6	7.6	7.6	6.8	6.8	8.4	8.4	7.6	6	8.4
304	22BCP344	9.2	8.4	8.4	8.4	8.4	8.4	8.4	7.6	8.4	7.6
305	22BCP345	4.6	4.6	4.6	4.6	4.6	4.6	5.4	5.4	4.6	4.6
306	22BCP346	8.4	8.4	7.6	6.8	6.8	6	7.6	7.6	7.6	6.8
307	22BCP347	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
308	22BCP348	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
309	22BCP350	6.8	7.6	6.8	7.6	6	6	6.8	6.8	6.8	6
310	22BCP351	9.2	9.2	9.2	9.2	9.2	8.4	8.4	8.4	6.8	6.8
311	22BCP352	8.4	8.4	9.2	9.2	8.4	7.6	8.4	9.2	6.8	8.4
312	22BCP353	8.4	8.4	9.2	8.4	9.2	6	8.4	7.6	7.6	7.6
313	22BCP354	6.8	6	6.8	6.8	6.8	6	6	6	6	6
314	22BCP355	8.4	8.4	7.6	8.4	8.4	9.2	9.2	8.4	7.6	6.8
315	22BCP356	8.8	8.8	8.8	7.2	8.8	8.8	8.8	8.8	8.8	7.2
316	22BCP357	8.8	9.6	8.8	8	8.8	8.8	8.8	8.8	8.8	8
317	22BCP358	10	9.2	9.2	8.4	9.2	9.2	8.4	9.2	9.2	7.6
318	22BCP359	6.8	6.8	7.6	7.6	6.8	6	6.8	6.8	7.6	6.8
319	22BCP360	8.6	7	5.4	5.4	4.6	5.4	4.6	5.4	4.6	4.6
320	22BCP361	7.4	7.4	5	5	5	4.2	4.2	4.2	4.2	4.2
321	22BCP362	8.4	6.8	6.8	6.8	7.6	9.2	7.6	7.6	7.6	6.8
322	22BCP363	8	6.4	7.2	7.2	7.2	6.4	6.4	7.2	5.6	6.4
323	22BCP364	8.4	8.4	6.8	6.8	6.8	6.8	6.8	6.8	7.6	6.8
324	22BCP365	8.4	7.6	6.8	6.8	7.6	6.8	8.4	8.4	7.6	7.6
325	22BCP366	6.6	5.8	5	5	5	5	5.8	6.6	5	4.2
326	22BCP367	8	8	8.8	7.2	8.8	9.6	8.8	8.8	8.8	7.2
327	22BCP368	6.8	6	6	6.8	6	6	6	6	5.2	6
328	22BCP369	6	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
329	22BCP370	8.8	8	7.2	6.4	6.4	8	7.2	8	7.2	6.4
330	22BCP371	5.2	6	5.2	5.2	5.2	4.4	5.2	4.4	4.4	4.4
331	22BCP372	8.4	7.6	7.6	6.8	6.8	6.8	7.6	7.6	6.8	7.6
332	22BCP373	6.6	7.4	5.8	4.2	5	5.8	5.8	6.6	5	4.2
333	22BCP375	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
334	22BCP376	8	7.2	6.4	5.6	5.6	5.6	5.6	6.4	4.8	5.6
335	22BCP377	7.2	6.4	5.6	6.4	5.6	6.4	6.4	5.6	5.6	4.8
336	22BCP379	7.4	6.6	6.6	5.8	5	7.4	6.6	6.6	6.6	5.8
337	22BCP380	5.4	4.6	4.6	5.4	4.6	4.6	4.6	5.4	4.6	3.8
338	22BCP382	7.2	7.2	6.4	5.6	6.4	4.8	4.8	6.4	4.8	5.6
339	22BCP383	7.6	6.8	6.8	6.8	6.8	7.6	7.6	7.6	6.8	6.8
340	22BCP384	8.4	9.2	7.6	9.2	9.2	6.8	9.2	8.4	7.6	6.8
341	22BCP385	8.4	8.4	7.6	8.4	6.8	7.6	7.6	7.6	7.6	7.6
342	22BCP387	6	6	5.2	6	5.2	5.2	4.4	5.2	5.2	4.4
343	22BCP388	8.8	8	8.8	7.2	8.8	8.8	8.8	8.8	8.8	7.2
344	22BCP389	8.4	7.6	6.8	6	6.8	6.8	6	7.6	6	6.8
345	22BCP390	8.4	7.6	6.8	6	6.8	6	6	6	6	6.8
346	22BCP391	7.2	6.4	6.4	7.2	6.4	6.4	7.2	7.2	6.4	7.2
347	22BCP392	9.2	9.2	8.4	6.8	6.8	7.6	7.6	8.4	7.6	7.6
348	22BCP395	8.2	6.6	6.6	5	5.8	5.8	5.8	6.6	5	5.8
349	22BCP396	8	4	4	8	6	4	8	8	8	8
350	22BCP397	6	4	4	4	4	8	8	8	4	8
351	22BCP398	4	4	8	4	8	8	4	8	8	8

352	22BCP399	7	5	5	4	8	7	8	8	8	6
353	22BCP401	16	8	8	8	8	8	8	8	8	8
354	22BCP402	8	4	8	8	8	8	8	8	4	8
355	22BCP404	5	7	6	5	6	6	4	4	7	6
356	22BCP405	7	4	8	6	8	8	8	8	5	4
357	22BCP406	8	8	4	4	8	8	8	8	8	8
358	22BCP407	6	5	3	8	8	7	7	8	7	5
359	22BCP408	6	8	7	6	7	6	8	6	4	4
360	22BCP409	8	8	4	4	8	4	4	8	4	4
361	22BCP410	7	6	5	4	7	4	7	4	6	8
362	22BCP411	7	7	8	8	8	8	8	4	8	4
363	22BCP412	4	8	5	8	7	5	8	4	7	8
364	22BCP413	8	4	6	8	8	8	4	4	8	8
365	22BCP414	6	4	7	8	4	8	6	8	4	7
366	22BCP415	8	8	4	4	8	8	7	6	5	8
367	22BCP416	6	7	4	6	7	4	8	8	8	4
368	22BCP417	7	4	5	7	8	7	7	4	4	7
369	22BCP418	8	8	4	8	7	7	4	4	8	4
370	22BCP419	6	6	6	6	5	4	6	5	5	7
371	22BCP420	8	4	8	8	4	8	5	4	4	5
372	22BCP421	6	4	6	6	7	8	4	8	5	4
373	22BCP422	8	8	8	8	8	8	8	8	8	8
374	22BCP423	7	8	8	8	7	8	8	8	8	8
375	22BCP424	7	4	5	8	4	7	8	6	7	8
376	22BCP425	7	4	6	8	4	8	4	7	4	4
377	22BCP426	4	4	4	8	8	8	8	8	4	4
378	22BCP427	7	4	7	8	7	5	8	4	4	4
379	22BCP429	4	7	7	4	4	8	6	4	8	8
380	22BCP430	7	7	6	7	8	7	4	8	6	6
381	22BCP431	8	8	6	8	4	8	8	8	4	4
382	22BCP432	8	8	8	8	8	4	8	8	8	8
383	22BCP433	7	4	8	8	4	4	4	7	4	8
384	22BCP434	4	7	8	5	8	4	6	4	7	5
385	22BCP435	8	8	8	4	4	4	4	4	8	4
386	22BCP436	4	5	8	7	7	7	8	7	7	4
387	22BCP437	8	6	7	8	8	4	4	5	8	8
388	22BCP438	8	4	4	4	4	7	7	4	8	8
389	22BCP439	6	8	8	4	4	4	8	4	4	8
390	22BCP440	8	4	4	8	4	4	8	4	8	8
391	22BCP441	7	5	8	8	8	8	6	8	8	4
392	22BCP442	6	4	7	8	8	8	8	5	8	4
393	22BCP443	4	8	8	8	8	4	8	8	7	7
394	22BCP444	4	7	4	8	8	4	4	7	4	4
395	22BCP445	5	5	7	8	7	5	4	6	8	5
396	22BCP446	4	4	8	8	7	7	4	5	4	7
397	22BCP447	4	5	7	6	6	3	7	6	6	6
398	22BCP448	8	4	7	5	7	8	4	6	4	7
399	22BCP449	8	8	4	8	4	6	8	4	4	8
400	22BCP450	6	7	4	4	8	8	7	8	4	8
401	22BCP451	5	5	8	4	8	4	8	6	4	4
402	22BCP454	4	7	7	6	4	7	6	5	5	7

[illegible]

## T. Details of Remedial Classes (with evidences)

This aspect is covered in continuous evaluation. If the performance of students is not up to the mark in previous few laboratory sessions, the respective student is counselled for the same and is advised to improve the performance. For this following is incorporated during learning process:

1. **Break Down Concepts:** Start by breaking down complex algorithmic concepts into smaller, more manageable parts. Present each part separately, allowing slow learners to grasp one concept at a time before moving on to the next.
2. **Visual Representations:** Utilize visual aids such as diagrams, flowcharts, and graphs to illustrate the algorithmic processes.
3. **Hands-On Exercises:** Provide hands-on exercises that allow slow learners to engage in step-by-step problem-solving activities, gradually increasing the complexity of the problems as they gain confidence and understanding.
4. **Collaboration:** Encourage collaboration among students, including pairing slow learners with peers who have a better grasp of the subject matter.
5. **Use Real-World Examples:** Relate algorithmic concepts to real-world scenarios to help slow learners see the practical applications.
6. **Repetition:** Repetition is essential for slow learners to consolidate their understanding and retain the material. Revision is taken again and again.



## U. Details of Expert Lectures / Industrial Visits/Events (Only related to the Course)

Not applicable for this course.

## V. List of Slow and Advanced Learners, activity planned and executed

Slow learners are identified based on their performances in Internal Assessment (IA). The student having less than **20 marks** are given below:

Sr. No.	Roll No.	Name	Marks
1	22BCP043	Shiv Banra	15
2	22BCP228	Shubham Lakhani	10
3	20BCP215	Anush Mandowara	0

### **Actions Taken:**

1. **Break Down Concepts:** Start by breaking down complex algorithmic concepts into smaller, more manageable parts. Present each part separately, allowing slow learners to grasp one concept at a time before moving on to the next.
2. **Visual Representations:** Utilize visual aids such as diagrams, flowcharts, and graphs to illustrate the algorithmic processes.
3. **Hands-On Exercises:** Provide hands-on exercises that allow slow learners to engage in step-by-step problem-solving activities, gradually increasing the complexity of the problems as they gain confidence and understanding.
4. **Collaboration:** Encourage collaboration among students, including pairing slow learners with peers who have a better grasp of the subject matter.
5. **Use Real-World Examples:** Relate algorithmic concepts to real-world scenarios to help slow learners see the practical applications.
6. **Repetition:** Repetition is essential for slow learners to consolidate their understanding and retain the material. Revision is taken again and again.

### **Improvement in ESE:**

Sr. No.	Roll No.	Name	Marks in ESE
1	22BCP043	Shiv Banra	25
2	22BCP228	Shubham Lakhani	35
3	20BCP215	Anush Mandowara	AB

Fast learners are identified based on their performances in Internal Assessment (IA). The student having more than **45 marks** are given below:

<b>Sr. No.</b>	<b>Roll No.</b>	<b>Name</b>	<b>Marks</b>
1	22BCP110	Shivanjali Srivastav	46.5
2	22BCP118	Shah Rachit Lalitkumar	47
3	22BCP148	Darsh Rashmin Doshi	46.5
4	22BCP162	Vyas Kathan Pareshbhai	45.5
5	22BCP171	Dudhatra Devanshi Rajeshbhai	46.5
6	22BCP174	Patel Maitri Vinodkumar	47.5
7	22BCP176	Gor Yatri Jigneshbhai	46.5
8	22BCP177	Heet Prakashbhai Dobariya	46
9	22BCP179	Bhatt Meet Bhargav	48
10	22BCP186	Desai Swayam Kaushik	49
11	22BCP191	Rami Yaxil Himanshu	49
12	22BCP243	Patel Krishkumar Dipakbhai	46
13	22BCP256	Tintoiya Mohammedalfez	47
14	22BCP268	Pranshav Shah	46
15	22BCP269	Dhyan Amit Shah	46
16	22BCP277	Meet Janiyani	46
17	22BCP279	Rajvi Biren Shah	47
18	22BCP291	Soham Gandhi	47
19	22BCP301	Shekhaliya Dhyey Dhirajlal	47
20	22BCP326	Harsh Shah	46
21	22BCP329	Dhruv Atul Ladani	47
22	22BCP347	Bhesaniya Nancy Shaileshbhai	46
23	22BCP348	Mathukiya Deep Sudhirbhai	46
24	22BCP476D	Katha Patel	45.5

### **Actions Taken:**

Extra experiments are given based on their understanding for practice. Also, the difficulty level of these experiments was more as compared to what was taught to whole class.

W. Direct Assessment (Result of mid, end and internal assessment components)

S. No.	Roll No	Name	Lab Work (50)	Lab Exam (50)	Total (100)
1	20BCP215	Mandowara Anush Praveen	0	0	0
2	21BCP164	Aakash Rajesh Gupta	41	35	76
3	21BCP249	Jaimik Manishbhai Parmar	27	25	52
4	22BCP001	Jay Patel	30	30	60
5	22BCP002	Dhrumil Thakkar	20	25	45
6	22BCP003	Sahil Kumar Yadav	27	25	52
7	22BCP004	Meet Dholakia	35	35	70
8	22BCP005	Vanshika Alpesh Shah	35	35	70
9	22BCP006	Patel Darshan Yogeshbhai	35	35	70
10	22BCP007	Modi Zankrit Jigneshbhai	25	35	60
11	22BCP008	Soni Vaibhav Sanjaykumar	25	20	45
12	22BCP010	Patel Prince Pareshkumar	38	35	73
13	22BCP011	Sumit Dhamsaniya	27	35	62
14	22BCP012	Yash Chiragkumar Shah	35	20	55
15	22BCP013	Rahul Kamleshbhai Tanna	30	30	60
16	22BCP014	Savalia Maitri Ketanbhai	20	30	50
17	22BCP017	Dev Kothiya	45	45	90
18	22BCP018	Joshi Shrey Chetankumar	38	35	73
19	22BCP019	Rupapara Preet Pravinbhai	40	35	75
20	22BCP020	Kruti Bhavesh Dharsandiya	40	45	85
21	22BCP021	Jethva Anshul Urmeshbhai	40	40	80
22	22BCP023	Raol Mahimnasingh Bahadursinh	25	25	50
23	22BCP024	Kalpesh Umeshbhai Kumavat	34	30	64
24	22BCP025	Krushang Tanti	22	30	52
25	22BCP026	Tanay Gupta	20	20	40
26	22BCP027	Patel Nishant Jayeshkumar	25	30	55
27	22BCP028	Surti Khushi Chandreshbhai	30	35	65
28	22BCP029	Zoya Singh	30	30	60
29	22BCP030	Patel Keni Sunilbhai	20	20	40
30	22BCP031	Arya Bhagirath Shrimali	38	25	63
31	22BCP033	Solanki Priyansh Jayeshbhai	25	25	50
32	22BCP034	Juhilkumar Patel	20	25	45
33	22BCP035	Nirala Sujal Hitendrakumar	20	25	45
34	22BCP036	Hirani Harsh Miteshbhai	40	40	80
35	22BCP037	Bhalla Kashish Rajesh	32	20	52

36	22BCP038	Dev Harwani	35	45	80
37	22BCP039	Het Prajapati	34	40	74
38	22BCP042	Swati Nandha	35	35	70
39	22BCP043	Shiv Banra	15	25	40
40	22BCP044	Satyam Kumar Mishra	25	30	55
41	22BCP045	Dhairya Dipak Soni	38	35	73
42	22BCP046	Shreya Shah	20	30	50
43	22BCP047	Pal Zadafiya	45	45	90
44	22BCP048	Ashutosh Mishra	25	25	50
45	22BCP049	Dave Divyansh Sandeep	20	30	50
46	22BCP051	Patel Prit Kalpeshbhai	38	45	83
47	22BCP053	Aadish Nilesh Sheth	45	45	90
48	22BCP054	Patel Harsh Vishnukumar	35	35	70
49	22BCP055	Prajapati Pratham Dushyantkumar	35	30	65
50	22BCP056	Patel Dhruv Umeshbhai	35	30	65
51	22BCP057	Shah Smit Kirankumar	31	40	71
52	22BCP058	Patel Dhara Ashokkumar	42	40	82
53	22BCP061	Rupala Dhruv Rajnikant	22	25	47
54	22BCP062	Meghal Pankajkumar Patel	22	25	47
55	22BCP063	Jeet Gor	22	30	52
56	22BCP065	Krish Jagyasi	30	30	60
57	22BCP066	Solanki Tiyaarsnakumari Nitinbhai	25	30	55
58	22BCP067	Pansuriya Prince Vijaybhai	40	45	85
59	22BCP068	Mavani Rahil Vallabhbbhai	40	40	80
60	22BCP069	Hir Rupareliya	35	30	65
61	22BCP070	Diya Jayendrakumar Raval	36	35	71
62	22BCP071	Rhythm Mehul Shah	40	40	80
63	22BCP072	Deep Shah	32	30	62
64	22BCP073	Ishan Nirav Shah	40	30	70
65	22BCP074	Suthar Ved Mehulkumar	35	25	60
66	22BCP076	Krish Rageshkumar Lakhani	30	35	65
67	22BCP077	Sheth Pearl Hitendra	43	40	83
68	22BCP078	Shah Dharmil Dhaval	30	30	60
69	22BCP079	Amir Thapa	22	25	47
70	22BCP080	Patel Dhruveshkumar Himanshubhai	32	35	67
71	22BCP081	Kapadia Nishit Kamleshbhai	31	25	56
72	22BCP082	Samyak Gandhi Vishalkumar	30	35	65
73	22BCP083	Jangle Parth	40	30	70
74	22BCP084	Dev Isotiya	28.5	25	53.5
75	22BCP085	Sonani Arth Hareshbhai	43.5	25	68.5
76	22BCP086	Kothiwalla Harshil Ajaykumar	32	30	62

77	22BCP087	Upadhyay Nitya Pareshkumar	42.5	40	82.5
78	22BCP089	Sandali Prasad	32.5	25	57.5
79	22BCP090	Shivam Kansara	42	35	77
80	22BCP091	Harshkumar Rana	41.5	35	76.5
81	22BCP092	Janmay Jagdish Panchal	43	35	78
82	22BCP093	Parmar Aryan	34	30	64
83	22BCP094	Haasil Vasavada	35	20	55
84	22BCP095	Maharshi Saurabh Solanki	45	25	70
85	22BCP096	Nikunj Chetan Vaghela	45	30	75
86	22BCP098	Riddhi Shrenikkumar Shah	40.5	20	60.5
87	22BCP099	Kasundra Nisarg Dineshbhai	38.5	20	58.5
88	22BCP100	Priyanshi Rawat	40.5	25	65.5
89	22BCP101	Haard Patel	45	30	75
90	22BCP103	Makwana Dipan Pravinbhai	33	30	63
91	22BCP104	Patel Arjun Ketankumar	40.5	25	65.5
92	22BCP105	Soumya Birjubhai Mehta	43.5	20	63.5
93	22BCP106	Vyas Saumya Kamleshbhai	44	45	89
94	22BCP107	Patel Mann Pragneshkumar	43.5	45	88.5
95	22BCP108	Ayushi Desai	35	25	60
96	22BCP109	Aarsh T Patel	37.5	25	62.5
97	22BCP110	Shivanjali Srivastav	46.5	40	86.5
98	22BCP111	Radadiya Pushti Arvinbhai	42.5	25	67.5
99	22BCP112	Dudani Srushti Pareshbhai	39	25	64
100	22BCP113	Priyanshi Manglani	40	30	70
101	22BCP114	Aaditya Shukla	25.5	20	45.5
102	22BCP115	Dhairya Paresh Oza	35	30	65
103	22BCP116	Suvash Sharma Subedi	42.5	45	87.5
104	22BCP118	Shah Rachit Lalitkumar	47	35	82
105	22BCP119	Pal Shah	41.5	35	76.5
106	22BCP120	Tirth J Upadhyay	38	25	63
107	22BCP121	Darshil Panchal	30	25	55
108	22BCP122	Milonee Sharma	45	20	65
109	22BCP123	Manvar Umangkumar Ashokbhai	26	20	46
110	22BCP124	Rushil Shah	43.5	25	68.5
111	22BCP125	Balsariya Nihar Ashokbhai	37.5	25	62.5
112	22BCP126	Heet Savaliya	41.5	25	66.5
113	22BCP127	Ansh Rajeshbhai Sardhara	43	40	83
114	22BCP128	Yash Parekh	42.5	40	82.5
115	22BCP129	Tilak	40	25	65
116	22BCP130	Jhagadiawala Lahek Hiren	31.5	30	61.5
117	22BCP131	Solanki Kunal Mehulbhai	45	25	70

118	22BCP132	Kachhadiya Kirtan Sureshbhai	45	25	70
119	22BCP133	Maan Lo	43	20	63
120	22BCP134	Paija Harsh Prafulbhai	40.5	25	65.5
121	22BCP135	Hind Divyesh Patel	37.5	25	62.5
122	22BCP136	Vasu Pareshbhai Mendapara	41	25	66
123	22BCP137	Chauhan Harshrajsinh Bharatsinh	43.5	25	68.5
124	22BCP138	Patel Maan Mahendrabhai	35.5	25	60.5
125	22BCP139	Kush Natvar Bang	29	35	64
126	22BCP140	Jha Saomyaraj Santhoshkumar	42	30	72
127	22BCP141	Sangani Harsh Alpeshbhai	40	40	80
128	22BCP142	Patel Hit Shaileshbhai	37	25	62
129	22BCP143	Patel Tirth Anilkumar	41.5	40	81.5
130	22BCP144	Prajapati Yash Manubhai	36.5	25	61.5
131	22BCP145	Aryan Dholariya	30	20	50
132	22BCP146	Jeel Patel	37.5	35	72.5
133	22BCP148	Darsh Rashmin Doshi	46.5	35	81.5
134	22BCP149	Shah Rohan Samir	31	35	66
135	22BCP150	Katharotiya Om Mansukhbhai	25	25	50
136	22BCP151	Chaudhari Smitkumar Mukeshbhai	31.5	20	51.5
137	22BCP153	Baria Rajnish	30	40	70
138	22BCP154	Kashvi Mishra	40.5	30	70.5
139	22BCP155	Dobariya Reminkumar Dineshbhai	35.5	30	65.5
140	22BCP156	Bhatt Hetanshi Nishant	45	40	85
141	22BCP158	Trada Rudra Bhaveshbhai	40	30	70
142	22BCP159	Tushar Talaviya	44.5	40	84.5
143	22BCP161	Naaman O Jecha	36.5	30	66.5
144	22BCP162	Vyas Kathan Pareshbhai	45.5	35	80.5
145	22BCP163	Jinay Shah	35	35	70
146	22BCP164	Shrey Mishra	42	40	82
147	22BCP165	Dhruvil Rushikumar Rangrej	42	35	77
148	22BCP166	Sehal Vikram Maheshwari	40	35	75
149	22BCP167	Dhruv	38.5	30	68.5
150	22BCP168	Madhav Dharmesh Sampat	43	20	63
151	22BCP169	Heet	41	40	81
152	22BCP170	Rajat Agrawal	36.5	35	71.5
153	22BCP171	Dudhatra Devanshi Rajeshbhai	46.5	40	86.5
154	22BCP172	Ansh Akshay Soni	44	40	84
155	22BCP173	Krish Gaurav Jogi	43	40	83
156	22BCP174	Patel Maitri Vinodkumar	47.5	40	87.5
157	22BCP175	Pathan Nazeefahemadkhan Harunkhan	43	30	73
158	22BCP176	Gor Yatri Jigneshbhai	46.5	25	71.5

159	22BCP177	Heet Prakashbhai Dobariya	46	30	76
160	22BCP179	Bhatt Meet Bhargav	48.5	35	83.5
161	22BCP181	Manan Rohit Padia	27.5	20	47.5
162	22BCP183	Rank Vaibhav Mansukhbhai	45	35	80
163	22BCP184	Samarth Detroja	25	25	50
164	22BCP185	Patel Dev Kiranbhai	45	40	85
165	22BCP186	Desai Swayam Kaushik	49	40	89
166	22BCP187	Taral Patel	39	35	74
167	22BCP188	Om Solanki	40	30	70
168	22BCP189	Khatrani Aksharkumar Jadavbhai	35	25	60
169	22BCP190	Patel Raj Kamleshbhai	36	40	76
170	22BCP191	Rami Yaxil Himanshu	49	35	84
171	22BCP192	Ronak Rohitkumar Panchal	37.5	35	72.5
172	22BCP194	Madhavendra Singh	32.5	25	57.5
173	22BCP195	Aayush Bhovanbhai Gondaliya	40.5	45	85.5
174	22BCP196	Nemi Shah	36.5	40	76.5
175	22BCP197	Aditya Hasmukh Patel	45	40	85
176	22BCP198	Digvijaysinh Jadeja	35	35	70
177	22BCP200	Sapara Keyur Rajeshbhai	30	25	55
178	22BCP202	Pratyay	30	30	60
179	22BCP203	Fadia Arth Manan	40	35	75
180	22BCP204	Vishal Girishbhai Lokwani	35	35	70
181	22BCP205	Aryan Sanjay Patel	30	40	70
182	22BCP206	Akbari Rushi Bharatbhai	38	35	73
183	22BCP207	Sankalp Acharya	32	35	67
184	22BCP209	Yash Jigneshkumar Sindhav	40	40	80
185	22BCP210	Soumitra Kumar	32	40	72
186	22BCP211	Nishit Ajay Barbhaya	40	40	80
187	22BCP212	Dhairya Bhatt	35	35	70
188	22BCP213	Rajani Darshan Ashokbhai	42	35	77
189	22BCP214	Kathan Balkrushna Patel	25	40	65
190	22BCP215	Anup Miteshbhai Gandhi	25	25	50
191	22BCP216	Vraj Dhavalkumar Patel	30	40	70
192	22BCP217	Vasu Rajeshbhai Makadia	30	35	65
193	22BCP218	Mahak Lodha	35	30	65
194	22BCP219	Ronak Khimani	25	40	65
195	22BCP221	Durg Yogesh Kumar Singh	32	30	62
196	22BCP222	Mahimna Saurabh Dave	35	40	75
197	22BCP223	Chauhan Shreyas Subhashchandra	25	35	60
198	22BCP224	Makwana Ayush Prakashkumar	28	25	53
199	22BCP225	Jimit Chavda	35	30	65



200	22BCP226	Kirtan Jigneshbhai Patel	20	30	50
201	22BCP227	Patel Shreya Ashokbhai	33	40	73
202	22BCP228	Shubham Lakhani	10	35	45
203	22BCP229	Shreya Vishal Gandhi	25	35	60
204	22BCP230	Tirth Shah	35	40	75
205	22BCP231	Pratham Lathigara	30	30	60
206	22BCP232	Modi Rudra Kamleshbhai	25	30	55
207	22BCP233	Rishabh Vimal Jain	27	35	62
208	22BCP234	Uday Valera	20	30	50
209	22BCP235	Patel Krish Pinakin	25	40	65
210	22BCP236	Chabhadiya Richee Shaileshbhai	30	35	65
211	22BCP239	Shah Vatshalkumar Mahendra	22	30	52
212	22BCP240	Meet Patel	29	35	64
213	22BCP241	Saanvi Nilesh Dave	36	40	76
214	22BCP242	Patel Neet Rameshbhai	36	40	76
215	22BCP243	Patel Krishkumar Dipakbhai	46	35	81
216	22BCP244	Sahil Narayan Soni	35	35	70
217	22BCP246	Fenil Solanki	21	25	46
218	22BCP247	Modi Meet Jaileshkumar	32	20	52
219	22BCP249	Haard Shingala	40	40	80
220	22BCP250	Patel Anusiben Nileshkumar	41	30	71
221	22BCP251	Panseriya Vasu Jigneshbhai	22	25	47
222	22BCP252	Aaditya Kumar Jha	41	25	66
223	22BCP253	Kothiya Aryan Mukeshbhai	25	30	55
224	22BCP254	Barasara Om Hemantbhai	32	25	57
225	22BCP255	Akbari Kartik Rajnikantbhai	40	30	70
226	22BCP256	Tintoiya Mohammedalfez Altafhusen	47	25	72
227	22BCP257	Khunt Abhi Hiteshbhai	35	25	60
228	22BCP258	Khushi Shah	35	30	65
229	22BCP259	Barad Dhruv Virendrasinh	29	35	64
230	22BCP260	Het	35	35	70
231	22BCP261	Modi Utsav Mehulkumar	32	30	62
232	22BCP263	Vaishnav Komal Vijay	37	30	67
233	22BCP264	Chaudhari Rinavkumar Mukeshbhai	30	30	60
234	22BCP265	Aditya Vekariya	30	30	60
235	22BCP266	Mahiv Patel	36	40	76
236	22BCP268	Pranshav Shah	46	35	81
237	22BCP269	Dhyan Amit Shah	46	45	91
238	22BCP270	Rathwa Jaydeepsinh Rajeshkumar	31	25	56
239	22BCP271	Sahaj Dineshbhai Khant	36	35	71
240	22BCP272	Param Bhatt	27	25	52

241	22BCP273	Tejash Arajانبhai Karamata	35	20	55
242	22BCP274	Shastri Harsh Divyeshkumar	27	20	47
243	22BCP275	Patel Niravkumar Hareshkumar	31	20	51
244	22BCP276	Vishesh Sethi	34	30	64
245	22BCP277	Meet Janiyan	46	40	86
246	22BCP278	Patel Jay Mukeshbhai	40	30	70
247	22BCP279	Rajvi Biren Shah	47	40	87
248	22BCP280	Shah Aneri	40	40	80
249	22BCP281	Dharmi Patel	39	25	64
250	22BCP282	Dev Mehta	36	35	71
251	22BCP283	Dhruvi Khunt	36	25	61
252	22BCP284	Rank Mansi Pravinkumar	40	35	75
253	22BCP285	Mischa Choudhary	38	25	63
254	22BCP286	Mansi Parmar	37	30	67
255	22BCP287	Teckchandani Deep Rajesh	33	30	63
256	22BCP289	Patel Akshat Anilbhai	37	35	72
257	22BCP290	Manav Jaysukhbhai Mavani	33	30	63
258	22BCP291	Soham Gandhi	47	45	92
259	22BCP292	Sonani Bhargav	35	35	70
260	22BCP294	Mehta Prayag Rohitbhai	37	30	67
261	22BCP295	Jigish Mehul Desai	31	35	66
262	22BCP296	Patel Aaryan Nirajbhai	43	25	68
263	22BCP298	Aarchi Shah	45	35	80
264	22BCP299	Ronak Kumar Shah	37	45	82
265	22BCP300	Mangukiya Jeelbhai Pravinbhai	36	35	71
266	22BCP301	Shekhaliya Dhyey Dhirajlal	47	45	92
267	22BCP302	Jagrat Bhavesh Pandya	36	45	81
268	22BCP303	Krishit Khanpara	30	30	60
269	22BCP304	Rangpara Mansi Jiteshbhai	36	30	66
270	22BCP305	Patel Arva Vimeshkumar	45	30	75
271	22BCP306	Vanshil Pulkitbhai Oza	36	25	61
272	22BCP307	Patel Radhe Shaileshbhai	37	30	67
273	22BCP308	Vishwam Modi	38	35	73
274	22BCP309	Yash Dadheech	38	35	73
275	22BCP310	Barochiya Yash Nileshbhai	31	45	76
276	22BCP311	Javia Namra	34	30	64
277	22BCP314	Jishan Pochi	30	30	60
278	22BCP316	Kartik Jaju	40	45	85
279	22BCP317	Patel Shiv Vijaykumar	40	30	70
280	22BCP318	Mistry Shyamani Nilesh	37	40	77
281	22BCP319	Devam Joshi	40	40	80

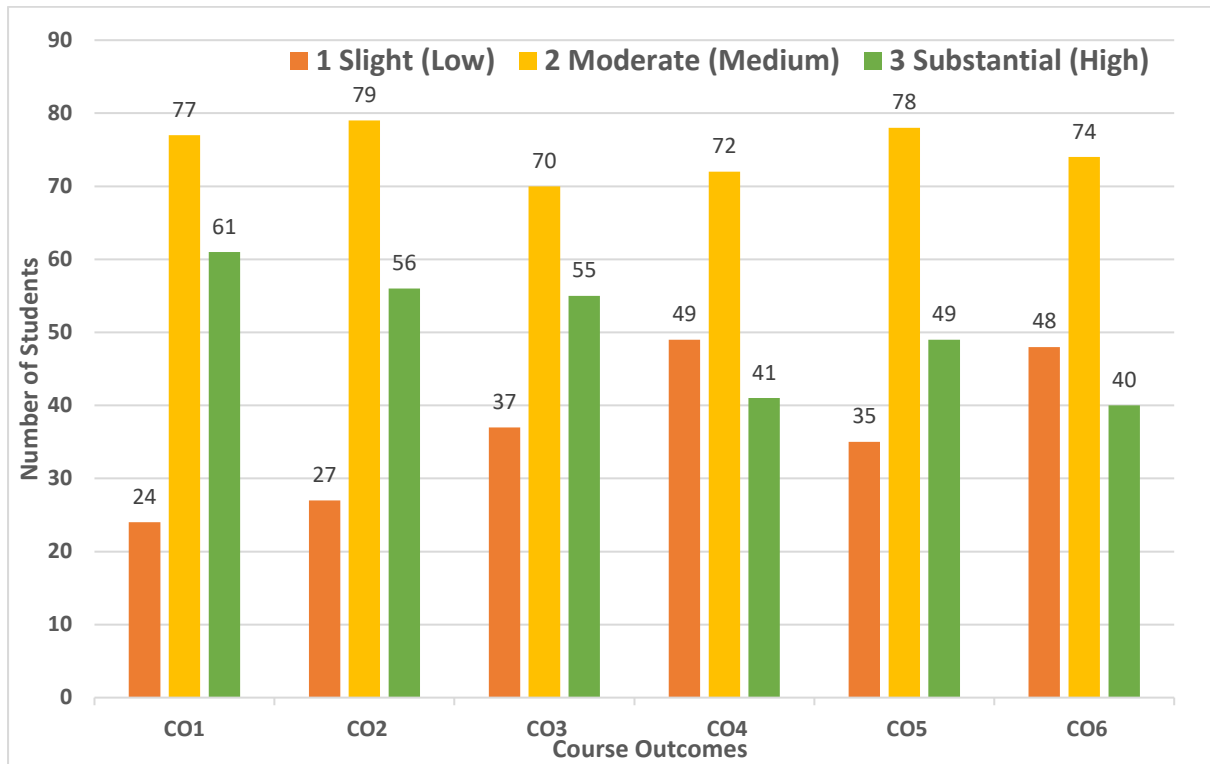
282	22BCP321	Darshil Vasantbhai Padmani	35	35	70
283	22BCP322	Krish Hitendrakumar Patel	37	30	67
284	22BCP323	Dhruvin Valiya	35	45	80
285	22BCP324	Rajput Vanshi Sandipbhai	25	25	50
286	22BCP325	Gupta Mithil Ajesh	40	40	80
287	22BCP326	Harsh Shah	46	45	91
288	22BCP327	Chaudhary Mihir Kamleshkumar	36	30	66
289	22BCP328	Shah Pratham Sanjaybhai	42	45	87
290	22BCP329	Dhruv Atul Ladani	47	45	92
291	22BCP330	Krish Kapadia	32	25	57
292	22BCP331	Divyansh Jitendra Bajaj	39	45	84
293	22BCP332	Jenil Ravindrakumar Patel	37	30	67
294	22BCP333	Anshul Parkash	35	20	55
295	22BCP334	Gamit Harshkumar Champakbhai	21	20	41
296	22BCP335	Rabindra Kumar Bhagat	30	20	50
297	22BCP336	Patel Jeetkumar Prakashbhai	36	20	56
298	22BCP337	Dev Patel	31	35	66
299	22BCP338	Savaliya Dhairya Bharatbhai	35	45	80
300	22BCP339	Naik Krishna Piyush	21	20	41
301	22BCP341	Solanki Dev Chetankumar	40	35	75
302	22BCP342	Sojitra Isha Hiteshbhai	37	20	57
303	22BCP343	Sameeksha Gupta	38	25	63
304	22BCP344	Astha Parekh	42	45	87
305	22BCP345	Dev Korat	24	20	44
306	22BCP346	Vekariya Kashyap Mukundbhai	37	25	62
307	22BCP347	Bhesaniya Nancy Shaileshbhai	46	45	91
308	22BCP348	Mathukiya Deep Sudhirbhai	46	45	91
309	22BCP350	Pandya Jyot Harshadray	34	30	64
310	22BCP351	Vansh Mange	43	40	83
311	22BCP352	Dhwanit Bharat Shah	42	30	72
312	22BCP353	Dhruvin Dineshkumar Padsala	41	30	71
313	22BCP354	Charul Dhekekar	32	40	72
314	22BCP355	Vora Akshat Jignesh	42	45	87
315	22BCP356	Kapadia Aryan Yogesh	45	25	70
316	22BCP357	Kaushik Jain	44	45	89
317	22BCP358	Natasha Denis	45	40	85
318	22BCP359	Vivan Selarka	35	20	55
319	22BCP360	Kaivalya Shital Shah	30	40	70
320	22BCP361	Rishi S Thakor	26	25	51
321	22BCP362	Kumarpal Vakharia	40	40	80
322	22BCP363	Karan Alkeshbhai Babariya	35	25	60

323	22BCP364	Tandel Paridhi Bhupendrabhai	36	20	56
324	22BCP365	Saumya Talwani	40	40	80
325	22BCP366	Moksha Dave	27	30	57
326	22BCP367	Smit Bhavesh Patel	42	40	82
327	22BCP368	Yash Hiren Mavani	31	30	61
328	22BCP369	Heshul Mahendrakumar Patel	25	25	50
329	22BCP370	Dobariya Harshit Kishorbhai	37	30	67
330	22BCP371	Patel Uttamkumar Aravindbhai	25	20	45
331	22BCP372	Ramani Darshil Bhupatbhai	37	35	72
332	22BCP373	Joshi Kuldeep Maheshbhai	30	30	60
333	22BCP375	Vasava Paulkumar Narpatbhai	26	25	51
334	22BCP376	Chanpura Harsh Rajeshbhai	31	30	61
335	22BCP377	Kazi Mustakhusain	30	25	55
336	22BCP379	Darji Vyom Brijeshbhai	33	30	63
337	22BCP380	Dev	25	30	55
338	22BCP382	Prajapati Meet Pravinbhai	30	25	55
339	22BCP383	Robin Bavarva	36	30	66
340	22BCP384	Patel Meet Sanjaybhai	42	35	77
341	22BCP385	Niya Haresh Patel	39	35	74
342	22BCP387	Savaliya Dhruv Yogeshkumar	27	30	57
343	22BCP388	Vaibhav Panday	42	30	72
344	22BCP389	Kadivar Dhruvin Hareshbhai	35	35	70
345	22BCP390	Chaudhari Kevin Dineshbhai	34	30	64
346	22BCP391	Krishna Soni	35	25	60
347	22BCP392	Tandel Keni Nandkishor	40	25	65
348	22BCP395	Poojan Paraskumar Patel	31	30	61
349	22BCP396	Harsh Panchal	33	30	63
350	22BCP397	Chaudhary Deep Dineshbhai	30	25	55
351	22BCP398	Tirth Ketankumar Doshi	32	30	62
352	22BCP399	Suhani Dhruvinbhai Patel	33	30	63
353	22BCP401	Krish Moorjani	44	45	89
354	22BCP402	Patel Honeyben Ashishkumar	36	25	61
355	22BCP404	Vibhor Jain	30	25	55
356	22BCP405	Muhammad Saad Khan	35	45	80
357	22BCP406	Kavya Patel	36	35	71
358	22BCP407	Devang Sonavane	32	30	62
359	22BCP408	Mahi Chaitanya Shah	31	40	71
360	22BCP409	Dev Pandya	30	30	60
361	22BCP410	Trapasiya Raxit Prakashbhai	30	30	60
362	22BCP411	Yash Lokwani	35	30	65
363	22BCP412	Patel Vishva Amitkumar	32	30	62

364	22BCP413	Butani Esha Hiteshbhai	33	35	68
365	22BCP414	Patel Ayush Vijaybhai	31	40	71
366	22BCP415	Koul Achyut	33	30	63
367	22BCP416	Prajapati Ayush Nareshbhai	31	35	66
368	22BCP417	Detroja Tejas Jayeshbhai	30	25	55
369	22BCP418	Solanki Urvil Bipinbhai	31	35	66
370	22BCP419	Barad Jenis Babubhai	30	30	60
371	22BCP420	Prajapati Sunny Dharmendrabhai	30	40	70
372	22BCP421	Parmar Heneel Chetankumar	30	20	50
373	22BCP422	Thakkar Vinitkumar Jigneshkumar	40	45	85
374	22BCP423	Farkiwala Tamanna Hetalkumar	40	40	80
375	22BCP424	Bhavya Jayeshkumar Patel	32	40	72
376	22BCP425	Pratham J Patel	30	30	60
377	22BCP426	Krish Modi	30	40	70
378	22BCP427	Prisha Dave	30	30	60
379	22BCP429	Dev Praful Patel	30	30	60
380	22BCP430	Baxi Tarj	35	35	70
381	22BCP431	Gajjar Vrutansh Mileshekumar	33	30	63
382	22BCP432	Anmolsinh M Chudasama	38	35	73
383	22BCP433	Rajveer Rai	30	30	60
384	22BCP434	Yash Ashishkumar Swami	30	40	70
385	22BCP435	Khush Shah	28	35	63
386	22BCP436	Chirag Dosi	32	40	72
387	22BCP437	Panchal Priyanshi Premchand	35	25	60
388	22BCP438	Pransu Patel	29	35	64
389	22BCP439	Ishan Dudhat	30	25	55
390	22BCP440	Yug Patel	30	30	60
391	22BCP441	Patel Prince Dineshbhai	35	40	75
392	22BCP442	Patel Arpit Nitinkumar	33	40	73
393	22BCP443	Patel Dhyan Jagdishbhai	35	35	70
394	22BCP444	Aashish Kumar Jha	27	25	52
395	22BCP445	Ozee Pareek	30	25	55
396	22BCP446	Dipesh Pandey	30	25	55
397	22BCP447	Achanta Sai Pranav	30	25	55
398	22BCP448	Keyur Sonawane	30	25	55
399	22BCP449	Heer Atulkumar Patel	31	25	56
400	22BCP450	Vyom Parag Uchat	32	35	67
401	22BCP451	Debnil Saha	28	35	63
402	22BCP454	Liza Chaurasiya	30	30	60
403	22BCP455	Rathva Hemantbhai Arvindbhai	30	20	50
404	22BCP458	Shekh Md. Abusad	27	20	47

405	22BCP459	Aayush Patel	28	35	63
406	22BCP460	Pradeep Gupta	25	25	50
407	22BCP461	Soshil Kumar Mukhiya	27	25	52
408	22BCP462	Bernabas Gemechu	27	20	47
409	22BCP464	Bishram Khatik	30	25	55
410	22BCP466D	Jay Ashwin Paladia	45	35	80
411	22BCP467D	Aarchi Patel	33	30	63
412	22BCP468D	Adroja Arpit Vijaybhai	20	35	55
413	22BCP469D	Aryan Kaushikkumar Randeriya	42.5	35	77.5
414	22BCP470D	Desai Sahil Parag	20	30	50
415	22BCP471D	Dharajiya Rajdeep Shantibhai	30	25	55
416	22BCP472D	Ganatra Neel Jayendrabhai	35	35	70
417	22BCP473D	Gokhale Vivek Liladharbhai	31	45	76
418	22BCP474D	Kapadia Sumeet Ketanbhai	32	30	62
419	22BCP475D	Kashish P Shah	30	35	65
420	22BCP476D	Katha Patel	45.5	40	85.5
421	22BCP477D	Khushi S Uttamani	32.5	30	62.5
422	22BCP478D	Krish Kansara	35	25	60
423	22BCP479D	Krupal Lathiya	35	25	60
424	22BCP480D	Maradiya Dhruv Rameshbhai	37	40	77
425	22BCP481D	Matariya Yash Rameshbhai	35	35	70
426	22BCP482D	Mehta Lakshy Jitendrakumar	29	35	64
427	22BCP483D	Paladiya Vidit Jigarbhai	33	30	63
428	22BCP484D	Panchal Darsh Harshadbhai	26	30	56
429	22BCP485D	Patel Dhvani Rajeshbhai	35	25	60
430	22BCP486D	Patel Shivam	40.5	25	65.5
431	22BCP488D	Patel Yashkumar Rameshbhai	35	25	60
432	22BCP489D	Phadke Heer Nimish	35.5	30	65.5
433	22BCP490D	Prachi Radadiya	30	25	55
434	22BCP491D	Prajapati Kaushal Kamleshbhai	37	40	77
435	22BCP492D	Rajan Pulse Rupsinh	34	40	74
436	22BCP493D	Rasania Purva Jayesh	30	30	60
437	22BCP494D	Rudra Patel	36.5	35	71.5
438	22BCP495D	Shah Mann Ashish	33	40	73
439	22BCP496D	Shah Nainesh Mukeshkumar	27	20	47
440	22BCP497D	Shiven Gohil	27	25	52
441	22BCP498D	Soni Umang Yogeshbhai	32	20	52
442	22BCP499D	Tilva Tirth Ashokkumar	25	40	65
443	22BCP500D	Vansh Chanchpara	32.5	35	67.5
444	22BCP501D	Vatsal Patel	32	40	72
445	22BCP502D	Vidhi Amishbhai Rahi	22	35	57

## X. Indirect Assessment (Exit Survey/ Post Test)



## Y. Final Attainment of COs and POs and Interpretation

PANDIT DEENDAYAL ENERGY UNIVERSITY	
SCHOOL OF TECHNOLOGY	
DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING	
ACADEMIC YEAR	2023-24 (Even Sem)
BTECH/MTECH	BTECH
BRANCH	CSE
SEMESTER	4
SUBJECT	Design and Analysis of Algorithms
SUBJECT CODE	20CP209P
COURSE COORDINATOR	Dr. Aditya Shastri
SUBJECT TEACHERS WITH DIVISION	Dr. Aditya (G1, G2, G6) Dr. Hargeet (G3, G4, G5) Dr. Rajendra (G7, G8, G9, G10) Dr. Hiren (G10)
L-T-P-C	0-0-2-1
Total No of Student	445

Course Outcomes	
CO No.: Blooms Level	Course Outcome Statements
CO 1: Recall	Understand Need of Complexity Analysis
CO 2: Explain	Solve Homogenous and Inhomogeneous recurrence relations using Master Theorem, Substitution method, and Recurrence tree.
CO 3: Apply	Apply Dynamic Programming, Divide and Conquer Strategy and greedy method to solve computational and graph problems.
CO 4: Analyze	Compare different algorithmic Strategies on efficiency parameters for optimization problems.
CO 5: Estimate	Evaluate Classical problems through Backtracking and Branch & Bound techniques.
CO 6: Design	Create algorithms for real time problemsDesign algorithms for computational problems of moderate complexity.
TOTAL NO OF COS	6

Course Attainment Level						
CO 1	CO 2	CO 3	CO 4	CO 5	CO 6	Avg. Level
2.7	2.71	2.55	2.67	2.472	2.32135	2.520225



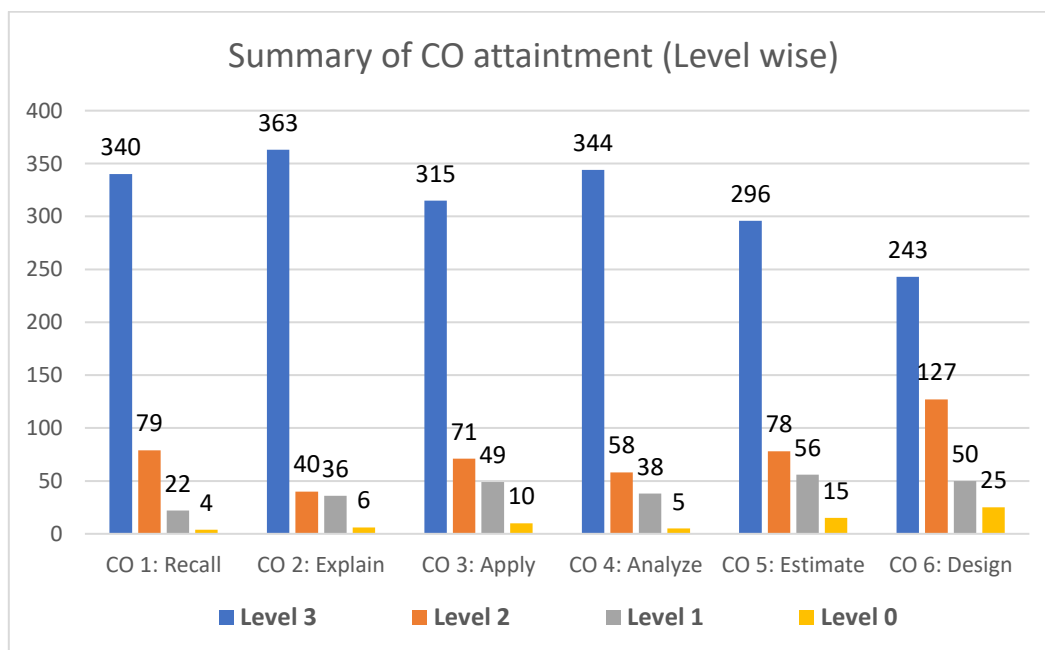
CO to PO mapping															
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	3	3										1	1		
CO 2	3	3	3	2								1	1		
CO 3	2	2	3	2								1	1		
CO 4	1	2	2	3								1	1		
CO 5	1	3	3	3								1	1		
CO 6	2	2	3	3								1	1		
AVG	2	2.5	2.8	2.6								1	1		

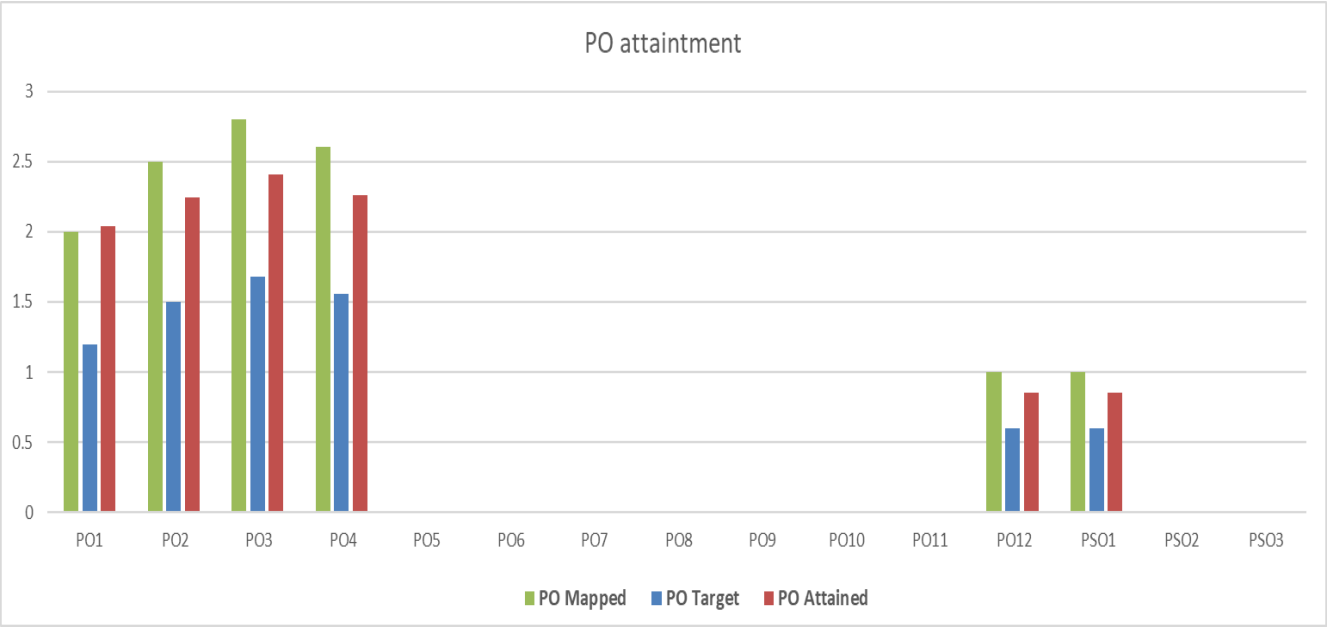
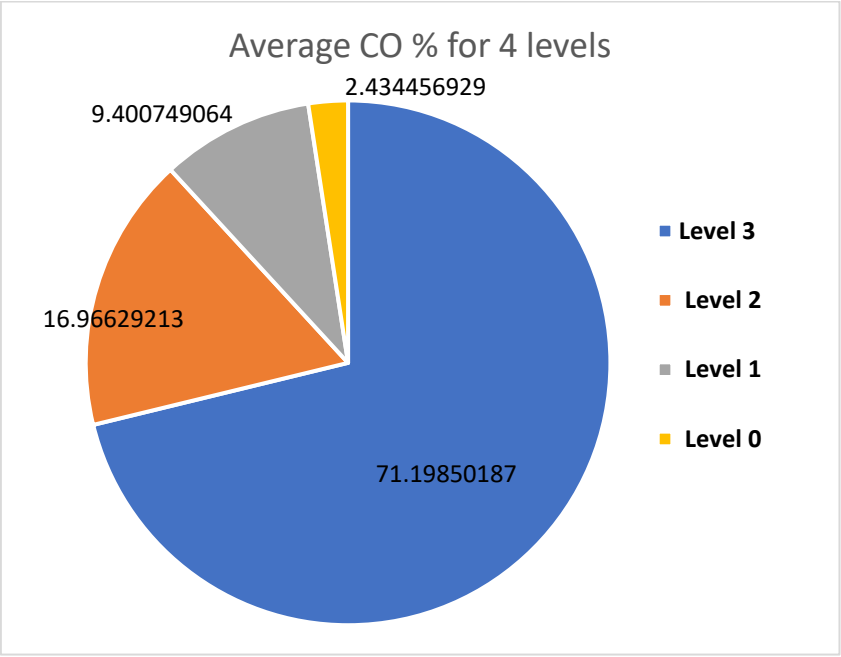
Cos mapping with Exams/Assessments				
Mid Semester Examination				
			Marks	Explanation
IA	CO 1		20	Experiment 1 and 2: Sorting algorithms with their analysis
	CO 2		10	Experiment 3: Various operations using linked list
	CO 3		30	Experiments 5, 6 and 7 (Greedy, Divide and Conquer, Dynamic)
	CO 4		10	Experiment 4: Implementing City dataset using linked list and array
	CO 5		20	Experiments 8 and 9: Backtracking and Branch and Bound
	CO 6		10	Experiment 10: General Question

Lab Examination				
			Marks	Explanation
Exam	CO 1		20	20 marks for complexity analysis
	CO 2		0	
	CO 3		0	
	CO 4		0	
	CO 5		0	
	CO 6		30	30 marks for implementation of program.

CO to PO attainment														
Total No of Students	Level	CO 1: Recall	CO 2: Explain	CO 3: Apply	CO 4: Analyze	CO 5: Estimate	CO 6: Design	CO 1: Recall	CO 2: Explain	CO 3: Apply	CO 4: Analyze	CO 5: Estimate	CO 6: Design	AVG
445	3	340	363	315	344	296	243	76.4	81.6	70.8	77.3	66.52	54.61	71.2
	2	79	40	71	58	78	127	17.75	8.99	16	13	17.53	28.54	17
	1	22	36	49	38	56	50	4.944	8.09	11	8.54	12.58	11.24	9.4
	0	4	6	10	5	15	25	0.899	1.35	2.25	1.12	3.371	5.618	2.43
% of students scored Level 2 and above		95	91	87	91	85	84	60 % students should score level 2 and above : CO is said to be attained (Applicable to 2017-2021 Batch), This needs to be changed as per target set by specific department						
Attained Yes=1/No=0		1	1	1	1	1	1							

Course Name	COs	level	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
DAA	CO1	2.7	2.69	2.7	0	0	0	0	0	0	0	0	0	0.9	0.9	0	0
	CO2	2.71	2.70	2.71	2.71	1.81	0	0	0	0	0	0	0	0.9	0.9	0	0
	CO3	2.55	1.70	1.7	2.55	1.7	0	0	0	0	0	0	0	0.85	0.85	0	0
	CO4	2.67	0.88	1.78	1.78	2.67	0	0	0	0	0	0	0	0.89	0.89	0	0
	CO5	2.47	0.82	2.47	2.47	2.47	0	0	0	0	0	0	0	0.82	0.82	0	0
	CO6	2.32	1.54	1.55	2.32	2.32	0	0	0	0	0	0	0	0.77	0.77	0	0
POs Attainment of Course			2.03	2.25	2.41	2.26								0.86	0.86		
Planned Mapping			2	2.5	2.8	2.6								1	1		
Target			1.2	1.5	1.68	1.56								0.6	0.6		
Attainment Yes=1, No=0			1	1	1	1								1	1		
POs			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2	PSO 3





Z. Actions to be taken if COs and POs are not achieved

Course Outcome Action Proposed		
CO No.: Blooms Level	Attained Y=1/N=0	Comments if Not Attained
CO 1: Recall	1	
CO 2: Explain	1	
CO 3: Apply	1	
CO 4: Analyze	1	
CO 5: Estimate	1	
CO 6: Design	1	
Program Outcome Action Proposed		
POS	Attained Y=1/N=0	Comments if not attained
PO1	1	
PO2	1	
PO3	1	
PO4	1	
PO5	#DIV/0!	
PO6	#DIV/0!	Not mapped
PO7	#DIV/0!	Not mapped
PO8	#DIV/0!	
PO9	#DIV/0!	Not mapped
PO10	#DIV/0!	Not mapped
PO11	#DIV/0!	Not mapped
PO12	1	
PSO1	1	
PSO2	#DIV/0!	
PSO3	#DIV/0!	