Techno India NJR Institute of Technology

Course File

Object Oriented Programming (3CS4- 06)

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(Assistant Professor)
Department of CSE

For Techno India NJR Institute of Technology
पंकज पोरवाल
Dr. Pankaj Kumar Porwal
(Principal)

RAJASTHAN TECHNICAL UNIVERSITY, KOTA

Syllabus

II Year-III Semester: B.Tech. Computer Science and Engineering

3CS4-06: Object Oriented Programming

Credit-3
3L+0T+0P

Max. Marks : 150 (IA:30,ETE:120)
End Term Exam: 3 Hours

SN	CONTENTS	Hours
1	Introduction to different programming paradigm, characteristics of OOP, Class, Object, data member, member function, structures in C++, different access specifiers, defining member function inside and outside class, array of objects.	8
2	Concept of reference, dynamic memory allocation using new and delete operators, inline functions, function overloading, function with default arguments, constructors and destructors, friend function and classes, using this pointer.	8
3	Inheritance, types of inheritance, multiple inheritance, virtual base class, function overriding, abstract class and pure virtual function	9
4	Constant data member and member function, static data member and member function, polymorphism, operator overloading, dynamic binding and virtual function	9
5	Exception handling, Template, Stream class, File handling.	6
	TOTAL	40

Course Overview:

Student will learn concepts of object-oriented programming to students with a background in the procedural paradigm. Brief review of control structures and data types with emphasis on structured data types and array processing. It then moves on to introduce the object-oriented programming paradigm, focusing on the definition and use of classes along with the fundamentals of object-oriented design including Constructor and Destructor, Inheritance, Polymorphism & Exceptional Handling.

Course Outcomes:

CO. NO.	Cognitive Level	Course Outcome
1	Synthesis	Student should be able to write programs using different programming paradigm such as top down and bottom up.
2	Synthesis	Students should be able to write programs using OOPs concept, they should be able to create classes and to call the properties of classes using objects. They should be able to apply access specifiers on the members of the class.
3	Design	Students should be able to write C++ code to inherit properties of one class into another. They should be able to apply the concept of virtual functions with aspect to multiple inheritance.
4	Design	Students should be able to write the C++ code for the operator overloading function and can perform overriding of functions.
5	Design	Student should be able to create dynamic arrays using template programming. Also, he will be able to define generic functions who can perform operations on different datatypes.

Prerequisites:

1. Fundamentals of C programming.

Course Outcome Mapping with Program Outcome:

Course Outcome	Program Outcomes (PO's)											
CO. NO.	Domain Specific (PSO)					Domain Independent (PO)						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3	3	0	0	0	0	0	0	0	0	0	0
CO2	3	2	2	0	0	0	0	0	0	0	0	0
CO3	3	0	2	2	1	0	0	0	0	0	0	0
CO4	3	2	2	0	1	0	0	0	0	0	0	0

CO5	1	3	1	0	0	0	0	0	0	0	0	0
1: Slight (Low) , 2: Moderate (Medium), 3: Substantial (High)												

Course Coverage Module Wise:

Lecture No.	Unit	Topic
1.	1	Introduction to different programming paradigm,
2.	1	characteristics of OOP
3.	1	Class, Object
4.	1	data member, member function
5.	1	structures in C++, different access specifiers
6.	1	defining member function inside and outside class,
7.	1	array of objects.
8.	2	Concept of reference,
9.	2	dynamic memory allocation using
10.	2	new and delete operators
11.	2	inline functions
12.	2	function overloading
13.	2	function with default arguments
14.	2	constructors
15.	2	destructors
16.	2	friend function
17.	2	Friend and classes
18.	2	this pointer.
19.	3	Inheritance
20.	3	types of inheritance
21.	3	multiple inheritance,
22.	3	virtual base class
23.	3	function overriding
24.	3	abstract class
25.	3	pure virtual function
26.	4	Constant data member and member function
27.	4	static data member
28.	4	static member function
29.	4	polymorphism,
30.	4	operator overloading
31.	4	dynamic binding
32.	4	virtual function

33.	5	Exception handling
34.	5	Try throw catch statmenets
35.	5	Template
36.	5	Function and class templates
37.	5	Stream class
38.	5	File handling
39.	5	File attributes and types
40.	5	Programming exercise

TEXT/REFERENCE BOOKS

1. Object Oriented Programming with C++, Balagurusamy
2. C++ : The Complete Reference, Herbert Schildt
3. How to Program C++, Dietel, Pearson
4. Mastering C++ ByK.R.Venugopal, TMH
5. Object Oriented Programming in C++ By Robert Lafore, Pearson
6. Object Oriented Design & Modelling, Rambaugh, Pearson

Course Level Problems (Test Items):

CO.NO.	Problem description
1	A. Write a C++ program to input 3 variables and find out the sum and average. B. Write a C++ program to swap 2 no's using function & pointer. C. Write a program to find factorial of a number using recursion function. D. Writer a program to implement struct book having book name, page no and price. Create an array of struct variable to accessing structure variables.
2	A. Write a Program to find Multiplication and Division using inline function. B. Write a Program to find volume of Different Shapes (Cube, Cylinder, Rectangular box) using Function Overloading. C. Write h program to implement class having getdata() and putdata() function.
3	A. Write a Program using class to process Shopping List for a Departmental Store. The list includes details such as the Code No and Price of each item and perform the operations like Adding, Deleting Items to the list and Printing the Total value of a Order. B. Write a Program to find Maximum out of Two Numbers using friend function. C. Write a Program to swap private data members of classes named as class_1, class_2 using friend function. D. Write a Program to design a class complex to represent complex numbers. The complex class should use an external function (use it as a friend function) to add two complex no. the function should return an object type complex representing the sum of two complex no.

4	A. Write a program to use Overloaded constructor. B. Write a Program using copy constructor to copy data of an object to another object. C. Write a Program to construct the object of a class and after that destroy all objects of that class. D. Write a Program to overload the unary minus operator.
5	A. Write a program to implement Single and multiple Inheritances. B. Write a Program to use of pointer to objects. C. Write a Program to implement the bubble sort using template function. D. Write a program to implement the exception handling with multiple catch statements.

Assessment Methodology:

1. Practical exam in lab where they have to write code on C/C++ compiler for the given problem statement. (Once in a week)
2. Assignments one from each unit.
3. Final paper at the end of the semester subjective.

Teaching and Learning resources unit-wise:

Unit-1

A. Introduction to POP/OOP

Video Tutorials: https://www.youtube.com/watch?v=wN0x9eZLix4

Theory concepts: https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/

Sample Quiz: https://www.geeksforgeeks.org/c-programming-multiple-choice-questions/

B. Concept of Class and Objects

Video Tutorials: https://www.youtube.com/watch?v=wN0x9eZLix4

Theory concepts: https://www.geeksforgeeks.org/object-oriented-programming-in-cpp/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/class-and-object-gq/

Unit-2

A. Concept of Friend Function

Video Tutorials: https://www.youtube.com/watch?v=FErlySnTBWc&ab_channel=LearningLad

Theory concepts: https://www.geeksforgeeks.org/functions-in-c/?ref=lbp

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/friend-function-and-class-gq/

B. Constructor/Destructor

Video Tutorials: https://www.youtube.com/watch?v=hAA8FBq2bA4&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/constructors-c/?ref=lbp

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/constructors-gq/

Unit-3

A. Inheritance

Video Tutorials: https://www.youtube.com/watch?v=rr7HVs4d1Qo&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/inheritance-in-c/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/inheritance-gq/

B. Virtual Functions

Video Tutorials: https://www.youtube.com/watch?v=JU8DbwBvOWE&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/virtual-function-cpp/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/virtual-functions-gq/

Unit-4

A. Static Data Member/Member Function

Video Tutorials: https://www.youtube.com/watch?v=1QTZeeDL0bc&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/static-data-members-c/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/static-keyword-gq/

B. Polymorphism

Video Tutorials: https://www.youtube.com/watch?v=uc_Hr10cBBE&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/polymorphism-in-c/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/operator-overloading-gq/

Unit-5

A. Templates

Video Tutorials: https://www.youtube.com/watch?v=CWj7lLY2GLA&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/templates-cpp/

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/templates-gq/

B. Exceptional Handling

Video Tutorials: https://www.youtube.com/watch?v=EyXXLpFriMc&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/exception-handling-c/?ref=lbp

Sample Quiz: https://www.geeksforgeeks.org/c-plus-plus-gq/exception-handling-gq/

C. File Handling

Video Tutorials: https://www.youtube.com/watch?v=TF2-F2duY6c&ab_channel=SimpleSnippets

Theory concepts: https://www.geeksforgeeks.org/file-handling-c-classes/?ref=lbp

Sample Quiz: https://www.sanfoundry.com/cplusplus-programming-questions-answers-file-handling/

TECHNO INDIA NJR INSTITUTE OF TECHNOLOGY, UDAIPUR

Computer Science & Engineering

B. Tech III Year (V Sem)

OPERATING SYSTEMS

Assignment 1

Answer all questions. Each questions carries 5 marks.

1. What is process? Explain process control block with the help of example. Describe the various states of a process during its lifecycle. [CO1]
2. Explain various types of Operating Systems. Explain the services offered by Operating System. [CO1]
3. Explain Multilevel Queue and Multilevel Feedback Queue Scheduling? [CO2]
4. What do you mean by threads? Discuss threads models in detail [CO2]
5. What are the components of Resource Allocation Graph? How Resource Allocation Graph determines a deadlock? [CO3]
6. Consider a system with 5 processes {P0, P1, P2, P3, P4} and 4 resources {A, B, C}:

Process	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P0	1	1	2	4	3	3	2	1	0
P1	2	1	2	3	2	2			
P2	4	0	1	9	0	2			
P3	0	2	0	7	5	3			
P4	1	1	2	1	1	2			

Is the system in safe state? If yes, determine the safe sequence. [CO3]

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Computer Science & Engineering

B. Tech III Year (V Sem)

OPERATING SYSTEMS

Assignment 2

Answer all questions. Each questions carries 5 marks.

1. What is a semaphore? What are the different types of semaphores? [CO3]
2. Consider 5 philosophers who spend their lives thinking and eating on a circular table surrounded by 5 chairs each belonging to 1 philosopher. There is a bowl of rice and five single chopsticks in front of them. When a philosopher thinks, they do not interact with each other and when they get hungry, they try to pick up two chopsticks that are closest to them (right and left). When they finished eating, they put down both their chopstick and starts thinking again. Explain how they should synchronize to eat in deadlock and starvation free manner. [CO3]
3. Explain segmentation with paging. [CO4]
4. how demand paging is done in operating System [CO4]
5. Explain directory structure with the help of diagram [CO5]
6. What are files? Write the operations performed on files. Describe the methods to access these files in operating systems. [CO5]

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B. Tech III Year (V Sem)

OPERATING SYSTEMS

Viva-Voce Set of Questions

1. What is an operating system?
2. What is the main purpose of an operating system?
3. What are the different operating systems?
4. What is a socket?
5. What is a real-time system?
6. What is kernel?
7. What do you mean by a process?
8. What are the different states of a process?
9. What is the difference between process and program?
10. What is the use of paging in operating system?
11. What is the concept of demand paging?
12. What is the advantage of a multiprocessor system?
13. What is virtual memory?
14. What is thrashing?
15. What are the four necessary and sufficient conditions behind the deadlock?
16. What is a thread?
17. What is RAID? What are the different RAID levels?
18. What is deadlock? Explain
19. Which are the necessary conditions to achieve a deadlock?
20. What is Banker's algorithm?
21. What is fragmentation?
22. How many types of fragmentation occur in Operating System?
23. What is spooling?
24. What is the difference between internal commands and external commands?
25. What is semaphore?
26. What is a binary Semaphore?
27. What is Belady's Anomaly?
28. What is starvation in Operating System?
29. What are the advantages of multithreaded programming?
30. What is the difference between logical and physical address space?

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Computer Science & Engineering

B. Tech III Year (V Sem)

OPERATING SYSTEMS

Quiz

Time: 15 Mins

Attempt all questions. Each questions carries 1 mark. No negative marking.

1. What is an operating system?

   a) interface between the hardware and application programs
   b) collection of programs that manages hardware resources
   c) system service provider to the application programs
   d) all of the mentioned

2. What is the main function of the command interpreter?

   a) to provide the interface between the API and application program
   b) to handle the files in the operating system
   c) to get and execute the next user-specified command
   d) none of the mentioned

3. In Operating Systems, which of the following is/are CPU scheduling algorithms?

   a) Priority
   b) Round Robin
   c) Shortest Job First
   d) All of the mentioned

4. To access the services of the operating system, the interface is provided by the _____

   a) Library
   b) System calls
   c) Assembly instructions
   d) API

5. CPU scheduling is the basis of _____

   a) multiprogramming operating systems
   b) larger memory sized systems
   c) multiprocessor systems
   d) none of the mentioned

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6. Which one of the following is not true?

a) kernel remains in the memory during the entire computer session
b) kernel is made of various modules which can not be loaded in running operating system
c) kernel is the first part of the operating system to load into memory during booting
d) kernel is the program that constitutes the central core of the operating system

7. Which one of the following errors will be handle by the operating system?

a) lack of paper in printer
b) connection failure in the network
c) power failure
d) all of the mentioned

8. Where is the operating system placed in the memory?

a) either low or high memory (depending on the location of interrupt vector)
b) in the low memory
c) in the high memory
d) none of the mentioned

9. If a process fails, most operating system write the error information to a _____

a) new file
b) another running process
c) log file
d) none of the mentioned

10. Which one of the following is not a real time operating system?

a) RTLinux
b) Palm OS
c) QNX
d) VxWorks

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Computer Science & Engineering

B. Tech III Year (V Sem)

OPERATING SYSTEMS

Quiz Answer Key

1. D
2. C
3. C
4. B
5. A
6. B
7. B
8. A
9. C
10. B

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Previous Year Question Papers:

3E1654

3E1654

B. Tech III Sem. (Main/Back) Exam. Jan. 2016
Computer Engineering & Information Technology
3CS5A & 3IT4A Object Oriented Programming
Common for EE & EX

Time: 3 Hours **Maximum Marks: 80**
Min. Passing Marks: 24

Instructions to Candidates:

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal** marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.

1. NIL 2. NIL

UNIT-I

Q.1 (a) State the important features of object oriented programming. Compare the object oriented programming with structured programming. [8]

(b) Explain the syntax for accessing members of structures using structure variables with help of suitable example. [8]

OR

Q.1 (a) Write a program that demonstrates a function that uses a pointer to a structure variable as a parameter. [8]

(b) Explain following with their syntax:

(i) Structures as function arguments. [4]

(ii) Structures as user defined types. [4]

class using scope resolution operator. [12]

OR

Q.2 (a) What is constructor? How to invoke a constructor function? With an example distinguish between parameterized constructor and copy constructor. [8]

(b) Describe the importance of destructor function. Write a program of dynamic memory management using **new & delete** operators. [8]

UNIT-III

Q.3 (a) What are the restrictions and limitations for operator overloading? [6]

(b) List the operators that cannot be overloaded. Define a complete class by name distance with feet and inches as data member and overload += operator and two objects. [10]

OR

Q.3 (a) Define operator overloading. How many arguments are required to overload unary and binary operators, respectively? [8]

(b) What is conversion function? Write a program using two classes and show how to convert data one type to another. [8]

UNIT-IV

Q.4 (a) What does inheritance mean in C++? How can we make private member inheritable without modifying. [8]

(b) How to call virtual function with same name but different parameters. [8]

(i) Dynamic Binding [4]

(ii) Virtual Destructors [4]

UNIT-V

Q.5 (a) What is meant by multiple inheritances? Write a C++ program for demonstrating multiple inheritances. [8]

(b) Write a program to illustrate the concepts of virtual base classes in multiple inheritances. [8]

OR

Q.5 (a) What is template class and template function? Use suitable example to explain them. [8]

(b) Write short note on following with example:

(i) Pointer to class and class members. [4]

(ii) Exception handling [4]

RTU paper

3E1654

Roll No. _____ [Total No. of Pages : 3]

3E1654

B.Tech. III Semester (Main/Back) Examination, Dec.- 2016
Computer Sc. & Engg.
3CS5A Object Oriented Programming
EE,EX,CS,IT

Time : 3 Hours **Maximum Marks : 80**

Min. Passing Marks : 26

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) What are the difference between homogeneous and heterogeneous data type? What are the features of structure? **(8)**

   b) Write any program to pass the structure to a function. Explain each and every step in detail. **(8)**

OR

1. Create a structure to specify data of customers, in a bank. The data to be stored is: Account number, Name, Balance in account. Assume maximum of 20 customers in the bank.

   a) Write a function to print the account number and name of each customer with balance below Rs. 100.

   b) If a customer request for withdrawal or deposit, it is given in the form :

   Acct. no, amount, code (1 for deposit, 0 for withdrawal) write a program to give a message, "The balance is insufficent for specified withdrawal". **(16)**

Unit - II

2. a) How do structures in C and C++ differ? **(8)**

   b) Explain container class and proxy classes in detail. **(8)**

RTU paper

OR

2. a) Describe the mechanism of accessing data members and member functions in the following case :

i) Inside the main program.

ii) Inside the member function of the same class. (10)

b) What are object? How are they created? (6)

Unit - III

3. a) What is operator overloading? Why is it necessary to overload an operator? (8)

b) Differentiate unary and binary operators. (8)

OR

3. a) What is an operator function? Describe the syntax of an operator function. (8)

b) When is a friend function compulsory? Give an example with detail. (8)

Unit - IV

4. a) What is inheritance? What are the different types of inheritance? Give an example of each. (10)

b) Explain the concept of base class and derived class. (6)

OR

4. a) When do we make a abstract class? Explain in detail. (8)

b) Describe how an object of a class that contains object of other classes created? (8)

Unit - V

5. a) What is a virtual base class? Explain. (8)

b) What are the difference between error and exception? Explain the keywords used in exception handling. (8)

OR

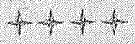
RTU paper

Write short note on : (any two)

i) Templates

ii) Pointer to classes

iii) Multiple inheritance. (8×2=16)



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Roll No: NPTEL20CS07S1521383

To
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UDAIPUR
RAJASTHAN-313002
PH. NO :7014488306

No. of credits recommended by NPTEL:2
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

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for passing the course

Programming in C++

*with Score** **93** %

A. Goswami

Prof. Adrijit Goswami
Dean, Continuing Education & NPTEL Coordinator
IIT Kharagpur

Jan-Mar 2020
(8 week course)

Indian Institute of Technology Kharagpur

swayam

*Continuous online assessment score

To validate and check scores: https://nptel.ac.in/con

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CSE III Semester Result - (2017-2021 Batch) EXAM-2018 Total 60 Students

			OOPS			OOPS Lab		
S.No.	Roll. No.	Name	EXT.	INT.	TOT.	EXT.	INT.	TOT.
			120	30	150	30	45	75
1	17ETCCS001	AKMAL HUSSAIN	75	22	97	27	38	65
2	17ETCCS002	ANUJ SHARMA	58	25	83	28	41	69
3	17ETCCS003	APOORVA JINDAL	59	30	89	26	44	70
4	17ETCCS004	ARPITA KOTHARI	95	30	125	27	43	70
5	17ETCCS005	BHAVINI MITTAL	74	27	101	25	43	68
6	17ETCCS006	BHAVIT KANTHALIA	94	30	124	28	42	70
7	17ETCCS007	CHARUL SINGHVI	76	28	104	26	43	69
8	17ETCCS008	DEVYANI GUPTA	65	30	95	27	42	69
9	17ETCCS009	DHEERAJ DASHORA	45	26	71	25	43	68
10	17ETCCS010	DIVYA JAIN	50	29	79	27	41	68
11	17ETCCS011	EKANSH JAIN	48	28	76	26	42	68
12	17ETCCS012	GARVIT SOLANKI	70	29	99	25	42	67
13	17ETCCS013	HARSHIT KAWDIA	31*	24	55*	24	42	66
14	17ETCCS015	HIMANSHU JAIN	20*	22	42*	26	40	66
15	17ETCCS016	HIMANSHU TAK	27*	23	50*	27	36	63
16	17ETCCS017	JAYA GUPTA	46	29	75	23	41	64
17	17ETCCS018	JINISHA JAIN	46	28	74	25	40	65
18	17ETCCS019	KARTIK BOKADIA	40*	25	65	26	40	66
19	17ETCCS020	KARTIK KUMAWAT	51	27	78	24	41	65
20	17ETCCS021	KARTIK PANCHAL	80	25	105	25	39	64
21	17ETCCS022	KHUSHBOO PADDIYAR	82	28	110	26	39	65
22	17ETCCS024	M SAJID MANSOORI	74	27	101	28	42	70
23	17ETCCS025	MAHIMA KOTHARI	64	27	91	27	39	66
24	17ETCCS026	MAHIMA SHARMA	76	27	103	26	39	65
25	17ETCCS028	MIHIKA SHARMA	36*	21	57*	22	23	45
26	17ETCCS029	MILAN PURBIA	28*	23	51*	25	37	62
27	17ETCCS030	MOHAMMED AFZAL RAZA	78	26	104	25	32	57
28	17ETCCS031	MOHIT AMETA	49	24	73	24	41	65
29	17ETCCS032	NASEEBA KHAN	28*	22	50*	25	36	61
30	17ETCCS033	NAYAN SHARMA	36*	25	61	24	41	65
31	17ETCCS034	NIDHI SHUKLA	76	27	103	23	38	61
32	17ETCCS036	NIKITA JAIN	83	26	109	25	41	66
33	17ETCCS037	NIKITA LILADHAR PANDE	92	27	119	26	43	69
34	17ETCCS038	NILESH SAHITYA	78	27	105	25	42	67
35	17ETCCS039	NIMISHA SHARMA	59	22	81	24	40	64
36	17ETCCS040	NISHANT JAIN	48	25	73	23	38	61
37	17ETCCS041	PARSHAVI BOLYA	85	28	113	25	38	63
38	17ETCCS042	PRACHI PANWAR	79	28	107	26	40	66
39	17ETCCS043	PRIYA SUTHAR	59	22	81	24	36	60
40	17ETCCS044	RAHUL CHOUDHARY	64	22	86	25	36	61
41	17ETCCS046	RAKSHIT JOSHI	65	21	86	24	33	57
42	17ETCCS047	RISHIKA JAIN	53	24	77	25	41	66
43	17ETCCS048	RONAK ARORA	32*	24	56*	27	43	70
44	17ETCCS049	RUCHIKA PUROHIT	49	29	78	25	42	67
45	17ETCCS050	SACHIN GARG	09*	14	23*	26	41	67
46	17ETCCS051	SIMRAN GERA	70	30	100	27	43	70
47	17ETCCS052	SUBHASH MEGHWAL	46	26	72	28	40	68
48	17ETCCS053	SWATI DEVPURA	44	26	70	25	42	67

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49	17ETCCS054	TANISHKA JAIN	43	25	68	25	38	63
50	17ETCCS055	VARSHA CHOUDHARY	39*	30	69	24	39	63
51	17ETCCS056	VEDPRAKASH GUPTA	105	28	133	27	42	69
52	17ETCCS057	VIDIT JAIN	91	25	116	25	40	65
53	17ETCCS058	VIKAS SONI	83	30	113	28	42	70
54	17ETCCS059	VIRENDRA SINGH	77	23	100	24	42	66
55	17ETCCS060	YASH MALASIYA	87	26	113	26	41	67
56	17ETCCS300	PRERNA PALIWAL	61	28	89	25	40	65
57	17ETCCS301	ASHI KOTHARI	14	28	92	26	37	63
58	17ETCCS302	SAKSHI MADRECHA	93	29	122	25	41	66
59	17ETCCS303	RATIKSHA KHATIK	63	26	89	24	36	60
60	17ETCCS304	LOVISH THADA	57	23	80	25	36	61

OOPS
TOTAL = 60
PASS =54
FAIL = 6
PASS%= 90
FAIL% = 10

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