In Pursuit of Excellence	**Course and Faculty Details**	SESSION-2019-2020 SEM- 5th

Faculty Details

Name of the Faculty: **ZUBAIR IQBAL**

Designation: **ASSISTANT PROFESSOR**

Department: **COMPUTER SCIENCE & ENGINEERING**

Course Details

Name of the Programme: **B.Tech** Batch: **2017-2021**

Branch: **CSE** Section: **B**

Name of Subject: **Principles of Programming Languages** Subject Code: **RCS-503**

Category of Course: **Core Subject**

In Pursuit of Excellence	**Index**	SESSION-2019-2020 SEM- 5th

In Pursuit of Excellence	**Vision & Mission of Institute**	SESSION-2019-2020
		SEM-5th

Vision of Institute

To develop industry ready professionals with values and ethics for global needs.

Mission of Institute

- To impart education through outcome based pedagogic principles.
- To provide conducive environment for personality development, training and entrepreneurial skills.
- To induct high professional ethics and accountability towards society in students.

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Moradabad-244001

In Pursuit of Excellence	Vision & Mission Of Department	SESSION-2019-2020
		SEM-5th

Vision of Department

To develop globally recognized computer science and engineering graduates with ethical values for need of software industries.

Mission of Department

1. To impart knowledge through well-defined instructional objectives in the field of computer science and engineering.
2. To provide learning ambiance for skills, innovation, leadership and overall personality development.
3. To inculcate professional ethics, teamwork and responsiveness towards society.

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In Pursuit of Excellence	**Program Education Objectives**	SESSION-2019-2020 SEM-5th

Program Education Objectives

PEO 1: The graduates will have entrepreneurial and employable skills in software industries, by adapting themselves in the corporate world by utilizing the defined instructional objectives learnt in the program.

PEO 2: The graduates will engage in skill enhancement, that would help to work in their own area of interest, individually or in a team.

PEO 3: The graduates will demonstrate ownership and responsiveness towards the profession and the society.

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In Pursuit of Excellence	**Program Outcomes**	SESSION-2019-2020
		SEM-5th

Program Outcomes

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization for the solution of complex engineering problems.

2. Problem analysis: Identify, formulate, research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health and safety, and cultural, societal, and environmental considerations.

4. Conduct investigations of complex problems: Use research based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modeling to complex engineering activities, with an understanding of the limitations.

6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10. Communication: Communicate effectively on complex engineering activities with the engineering community and with the society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

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11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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In Pursuit of Excellence	**Program Specific Outcomes**	SESSION-2019-2020
		SEM-5th

Program Specific Outcomes (PSO's)

After completing their graduation, students of Computer Science and Engineering will be able to -

PSO1: Comprehend the core subjects of CSE and apply them to resolve domain specific tribulations.

PSO2: Extrapolate the fundamental concepts in engineering and to apply latest technology with programming language skills to develop, test, implement and maintain software products.

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In Pursuit of Excellence	**Academic Calendar**	SESSION-2019-2020 SEM-5th

Moradabad Institute of Technology

Rampuram Vihar Phase – II, Moradabad

ACADEMIC CALENDAR

ODD Semester — Session: 2019 – 2020

S. No.	Particulars	Date	Responsibility
1.	**Time Table** (a) Display on Notice Boards (b) Distribution to concerned Teachers	29 July 2019 29 July 2019	O.C. Time – Table
2.	Distribution of class lists to teachers	29 July 2019	O.C. Class / DR
3.	**Registrations** (a) 3rd / 5th /7th Semester (b) List of unregistered students to various department (c) Notifying unregistered students for getting registered at the earliest (through class O.Cs, / Faculty)	1,2,3 Aug 2019 20 Aug 2019 22 Aug 2019	Concerned Teachers OS Academic Concerned HODs
4.	**Commencement of Classes** 3rd / 5th / 7th Semester	2,3,4 Aug 2019	Concerned Teachers
5.	Blow up submission to HODs	30 July 2019	Concerned Teachers
6.	Announcement of Test series dates	16Aug 2019	Dean Academics
7.	(a) Collection of Examination forms from University and announcement of date for availability of forms (b) Last date for submission of forms to office (c) Submission of forms to University	30 Aug 2019***	OS Academic to take timely action as per University directions
8.	Procurement of stationary & materials for Test Series for full semester (a) Requirement (b) Actual Procurement	31 Aug 2019 5 Sept 2019	Convener Test Series Committee O.S. Academics
9.	(a)Short attendance compilation and information to parents and undertaking format handed over to students (b)Collection of Short attendance undertaking	09 Sept 2019 11 Sept 2019	O.C. Class
10.	1st Test Series Thu, Fri, Sat	12, 13,14, Sept 2019	
	(a) Announcement of Test Series schedule, Invigilation Programme, Seating arrangement etc.	11 Sept 2019	Class Test Committee
	(b) After completion of Test Series- Evaluation of test copies & showing of copies to students (c) Submission of test copies in Nodal Centre (d) Report of poor performance of students to class OCs	21 Sept 2019 25 Sept 2019 26 Sept 2019	Concerned Teachers Concerned Teachers Concerned Teachers
	(e)Short attendance compilation, display on notice board and information to parents	19 Oct 2019	O.C. Class
11.	2nd Test Series Wed, Thus, Fri	23,24, 25 Oct 2019	
	(a) Announcement of Test Series schedule, Invigilation Programme, seating arrangement etc	22 Oct 2019	Class Test Committee

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	(b) After completion of Test Series - Evaluation of test copies & showing of copies to students (c) Submission of test copies in Nodal Centre (d) Report of poor performance of students to class OCs	02 Nov 2019 04 Nov 2019 05 Nov 2019	Concerned Teachers Concerned Teachers Concerned Teachers
12.	Filling of student feedback forms for current semester	27 Nov 2019	Concerned HODs
13.	Requirement of additional Faculty (to be conveyed to Director) (for even semester)	30 Nov 2019	Concerned HODs
14.	(a) Floating the electives for even semester (b) Last date for students choice	26 Nov 2019 30 Nov 2019	Concerned HODs
15.	Announcement of class list and its last date for clearing dues (Current semester)	22 Oct 2019	Accounts/ OS Academic
16.	Date up to which final attendance is to be counted	29 Nov 2019	Concerned teachers
17.	Submission of consolidated list of shortage of attendance to Director and information to Parents	30 Nov 2019	Class O.Cs
18.	**3rd Test Series** **Thu, Fri, Sat**	**28,29,30 Nov 2019**	
	(a) Announcement of Test Series schedule, Invigilation Programme, Seating arrangement etc.	27 Nov 2019	Class Test Committee
	(b) After completion of Test Series- Evaluation of test copies & showing of copies to students (c) Submission of test copies in Nodal Centre (d) Report of poor performance of students to class OCs	03 Dec2019 04 Dec 2019 04 Dec 2019	Concerned Teacher Concerned Teachers Concerned Teachers
19.	**Submission of sessional marks:** (a) Meeting of Dean Academics , all HODs and Director regarding attendance and performance of students.	04 Dec 2019	Dean Academics
	(b) Checking of Teachers' Records by HODs	03 Dec 2019	Concerned HODs
	(c) Finalization of sessional marks	05 Dec 2019	Concerned Teachers
	(d) Submission of Award list after final checking and uploading to OS Academics for further necessary action	As per date announced by AKTU	HODs Concerned Teachers
20.	**Theory Examinations:** (a) Collection of Admit Cards / Roll Nos. from University (b) Preparation of Roll lists (c) Collection of stationery such as copies, practical copies drawing sheets, graph paper etc. from University (d) Procurement of stationery and other materials locally as necessary	As per AKTU schedule	OS Academics to take appropriate actions as per University directions
21.	**Practical Examinations:**	As per AKTU schedule	Concerned HODs
	(a) Appointment of Internal Examiners	3 days before the practical exam schedule	Concerned HODs
	(b) Obtaining list of panel of External Examiners from AKTU & preparation of schedule of practical examinations	As per AKTU schedule	OS Academics
	(d) Dispatch of letters/contacting the external examiners	Within 2 days of list obtained from AKTU	HODs and concerned teachers

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22.	Preparation for Even Semester (a) Load Distribution by Department (b) Submission to O.C. Time-Table (c) Display of Time Table on Notice Board	10 Dec 2019 12 Dec 2019 18 Jan 2020	Concerned Coordinators O.C. Time Table
23.	Registration for Even semester [2019 – 20]	To be announced**	OS Academic
24.	Announcement of Academic calendar for Even semester [2019 – 20]	5 Days before the start of Even sem.	Dean Academics

**May be revised as per AKTU Schedule.

27.7.2019

Dean Academics

Director

Copy to:

1. Chairman	2. Secretary	3. P.A. to Director for Director's folder
4. All HODs	5. DOSW	6. Controller Examination
7. Associate Dean Academics	8. Registrar	9. All Faculty Members through HODs
10. O.S. Academics	11. A.S. Examinations	12. Accounts Section
13. T & P Cell	14. Librarian	15. Coaching/ Test Series/ O.C. Time Table

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MORADABAD INSTITUTE OF TECHNOLOGY, MORADABAD

Ram Ganga Vihar Phase-II Moradabad (U.P.)
Approved by AICTE and Affiliated to Dr. A. P. J. Abdul Kalam Technical University, Lucknow
Website: http://mitmoradabad.edu.in

Department Academic Calendar, Odd Semester, Session (2019 – 2020)

VISION

To develop globally recognized computer science and engineering graduates with ethical values for need of software industries.

MISSION

M1: To impart knowledge through well defined instructional objectives in the field of computer science and engineering.

M2: To provide a learning ambience for skills, innovation, leadership and overall personality development.

M3: To inculcate professional ethics, teamwork and responsiveness towards society.

JULY-2019

Su	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

AUGUST-2019

Su	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

SEPTEMBER-2019

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

OCTOBER-2019

Su	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

NOVEMBER-2019

Su	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

DECEMBER-2019

Su	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

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A	Time Table Display on Notice Boards
B	Blow Up Submission to HODs
C	3rd /5th /7th semester registration
D	Commencement of Classes of 3rd /5th /7th semester
E	Eid Ul Zuha
F	Independence day and Rakshabandhan
G	Event 'Kanha ki Matki' by CSSS
H	Krishna Janmashtami
I	Short Attendance compilation and information to parents
J	Moharram
K	1st Test Series
L	Submission of Test copies in Nodal Center
M	Event 'ArtShala' by CSSS
N	Gandhi Jayanti
O	Expert Lecture on DevSecOps by Mr.Kavish Baghel, Thoughts2Binary Gurugram
P	Maha Navmi
Q	Dusshera
R	Maharishi Valmiki Jayanti
S	Event 'KuruShetra' by CSSS
T	Short Attendance compilation and information to parents
U	2nd Test Series
V	Mid Semester Break
W	Submission of Test copies in Nodal Center
X	Eid-e-eMilad
Y	Guru Nanak Birthday
Z	Event 'Coder 6.0' by CSSS
AA	Floating the electives for even sem (2019-20)
AB	Filling of Student Feedback form for current Semester
AC	3rd Test Series
AD	Submission of consolidated list of shortage of attendance to director and information to parents
AE	Submission of Test copies in Nodal Center
AF	Submission of Sessional marks
AG	Christmas

Month	Dates of Teaching Days (2nd, 3rd & 4th Year)	No. of Teaching Days	No. of Lecture Hours
Jul-19	-	NA	91* 6=546
Aug-19	3,5,6,7,8,9,10,13,14,16,17,19,20,21,22,24,26,27,28,29,30,31	22	
Sep-19	2,3,4,5,6,7,9,11,16,17,18,19,120,21,23,24,25,26,27,28,30	21	
Oct-19	1,3,4,5,9,10,11,12,14,15,16,17,18,19,21,22,31	17	
Nov-19	1,2,4,5,6,7,8,9,11,13,14,15,16,18,19,20,21,22,23,25,26,27	22	
		82	
	Sessional Examinations	09	
	Total	**91**	**546**

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In Pursuit of Excellence	**Course Evaluation Scheme**	SESSION-2019-2020
		SEM-5th

B. Tech. (CSE\CSIT)
FIFTH SEMESTER

Sl No.	Subject Code	Subject Name	L-T-P	Theory/ Lab (ESE) Marks	Sessional		Total	Credit
					Test	Assign/Att.		
1	RAS501	MANEGERIAL ECONOMICS	3---0---0	70	20	10	100	3
2	RAS502/ RUC501	INDUSTRIAL SOCIOOLOGY /CYBER SECURITY	3---0---0	70	20	10	100	3
3	RCS-501	Database Management Systems	3---0---0	70	20	10	100	3
4	RCS-502	Design and Analysis of Algorithm	3---1---0	70	20	10	100	4
5	RCS-503	Principles of Programming Languages	3---0---0	70	20	10	100	3
6	CS-Elective-1	DEPTT ELECTIVE COURSE-1	3---1---0	70	20	10	100	4
7	RCS-551	Database Management Systems Lab	0---0---2	50	-	50	100	1
8	RCS-552	Design and Analysis of Algorithm Lab	0---0---2	50	-	50	100	1
9	RCS-553	Principles of Programming Languages Lab	0---0---2	50	-	50	100	1
10	RCS-554	Web Technologies Lab	0---0---2	50	-	50	100	1
	TOTAL						**1000**	**24**

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In Pursuit of Excellence	**Course Syllabus as per University**	SESSION-2019-2020 SEM-5th

RCS-503: Principles of Programming Languages

UNIT I Introduction: Role of Programming Languages: Why Programming Languages, Towards Higher-Level Languages, Programming Paradigms, Programming Environments Language Description: Syntactic Structure, Language Translation Issues: Programming Language Syntax, Stages in Translation, Formal Translation Models

UNIT II Data, Data Types, and Basic Statements : Names , Variables , Binding, Type Checking, Scope, Scope Rules , Lifetime and Garbage Collection, Primitive Data Types, Strings, Array Types, Associative Arrays ,Record Types, Union Types, Pointers and References , Arithmetic Expressions , Overloaded Operators, Type Conversions , Relational and Boolean Expressions, Assignment Statements, Mixed Mode Assignments, Control Structures, Selection ,Iterations, Branching, Guarded Statements

UNIT III Subprograms and Implementations : Subprograms, Design Issues, Local Referencing, Parameter Passing, Overloaded Methods, Generic Methods, Design Issues for Functions , Semantics of Call and Return, Implementing Simple Subprograms, Stack and Dynamic Local Variables, Nested Subprograms, Dynamic Scoping.

UNIT IV Object-Orientation, Concurrency, and Event Handling : Grouping of Data and Operations — Constructs for Programming Structures, Abstraction Information Hiding, Program Design with Modules, Defined Types, Object Oriented Programming — Concept of Object, Inheritance, Derived Classes and Information Hiding – Templates, Semaphores, Monitors, Message Passing, Threads, Statement Level Concurrency Exception Handling (Using C++ and Java as Example Language).

UNIT V Functional and Logic Programming Languages: Introduction to Lambda Calculus, Fundamentals of Functional Programming Languages, Programming with Programming with ML, Introduction to Logic and Logic Programming – Programming with Prolog.

References:

1. "Programming Languages: Design and Implementations", Terrance W.Pratt, Marvin V. Zelkowitz, T.V.Gopal, Fourth ed., Prentice Hall
2. "Programming Language Design Concept", David A. Watt, Willey India
3. "Programming languages: Concepts and Constucts", Ravi Sethi, Second Ed.,Pearson.
4. "Types and programming Languages", Benjamin C. Pierce. The MIT Press Cambridge, Massachusetts London, England
5. Concepts of Programming Languages, Robert W. Sebesta, 10th Ed.,Pearson

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In Pursuit of Excellence	**Syllabus Adopted by the Program**	SESSION-2019-2020 SEM-5th

Syllabus

Pre-requisites:
The student should have basic knowledge of Programming languages and its working

RCS-503: Principles of Programming Languages

UNIT I
Introduction
Review: Brief review of programming language basics and its working phenomena of various programming languages
Role of Programming Languages: Why Programming Languages, Towards Higher-Level Languages, Programming Paradigms, Programming Environments
Bridging: Introduction to compiler and interpreter and translation process
Language Description: Syntactic Structure, Language Translation Issues: Programming Language Syntax, Stages in Translation, Formal Translation Models
Beyond: compiler design fundamentals

UNIT II
Data, Data Types, and Basic Statements
Review: Introduction to variables and other Data Typed
Names , Variables , Binding, Type Checking, Scope, Scope Rules , Lifetime and Garbage Collection, Primitive Data Types, Strings, Array Types, Associative Arrays ,Record Types, Union Types, Pointers and References , Arithmetic Expressions , Overloaded Operators, Type Conversions , Relational and Boolean Expressions, Assignment Statements, Mixed Mode Assignments, Control Structures, Selection ,Iterations, Branching, Guarded Statements
Beyond: Optimization in program development

UNIT III
Subprograms and Implementations
Review: Basic purpose of modularity and scopes in programming languages.
Subprograms, Design Issues, Local Referencing, Parameter Passing, Overloaded Methods, Generic Methods, Design Issues for Functions , Semantics of Call and Return, Implementing Simple Subprograms, Stack and Dynamic Local Variables, Nested Subprograms, Dynamic Scoping.

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UNIT IV

Object-Orientation, Concurrency, and Event Handling

Review: various paradigm of programming Languages including OOPS Concepts

Grouping of Data and Operations — Constructs for Programming Structures, Abstraction Information Hiding, Program Design with Modules, Defined Types, Object Oriented Programming — Concept of Object, Inheritance, Derived Classes and Information Hiding – Templates, Semaphores, Monitors, Message Passing, Threads, Statement Level Concurrency Exception Handling (Using C++ and Java as Example Language).

Beyond: Differences between various programming technologies

UNIT V

Functional and Logic Programming Languages

Review: introduction to smart programming using various programming paradigms

Introduction to Lambda Calculus, Fundamentals of Functional Programming Languages, Programming with Programming with ML, Introduction to Logic and Logic Programming – Programming with Prolog.

Beyond: A brief tour of Programming with LISP

References:

1. "Programming Languages: Design and Implementations", Terrance W.Pratt, Marvin V. Zelkowitz, T.V.Gopal, Fourth ed., Prentice Hall
2. "Programming Language Design Concept", David A. Watt, Willey India
3. "Programming languages: Concepts and Constucts", Ravi Sethi, Second Ed.,Pearson.
4. "Types and programming Languages", Benjamin C. Pierce. The MIT Press Cambridge, Massachusetts London, England
5. Concepts of Programming Languages, Robert W. Sebesta, 10th Ed.,Pearson

Other References:

6. "Statistics of Programming Languages", Anurag Malik, Avdesh Gupta, University Science press
7. Computers and Languages, D S Kushwaha, V M Thakkar, Tata McGraw Hill

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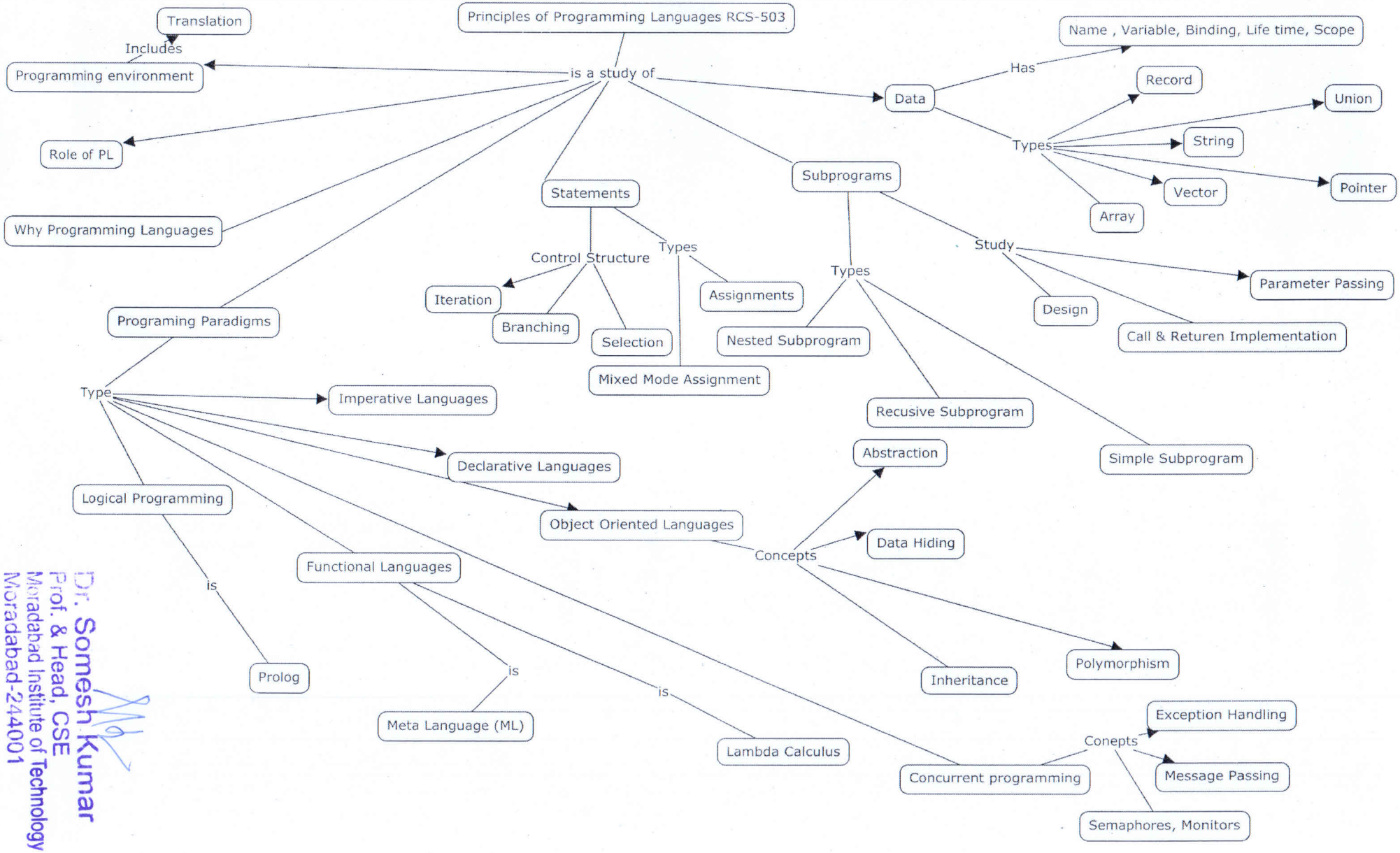
Concept Map
Principles of Programming Languages (RCS-503)



In Pursuit of Excellence	**Course Outcomes**	SESSION-2019-2020 SEM-5th

Objective of the Course

The purpose of this course is to:

1. *Introduce the evolution, principles, methods, and results of different programming languages so that students may design and develop effective programs.*
2. *Make students able to select the best suitable programming language for coding the solution of a given task*
3. *Make student learn the programming constructs so as to solve complex engineering problems*

COURSE OUTCOMES

Once the student has successfully completed this course, he/she will be able to:

CO1	**Analyze** pragmatics of programming languages on the basis of their Evolution and working Structure (BLOOMS LEVEL 4)
CO2	**Design** the structure of program using given programming constructs of programming languages (BLOOMS LEVEL 5)
CO3	**Subdivide** complex problems into modules using the Sub programs and scope rules (BLOOMS LEVEL 4)
CO4	**Combine** the constructs for programming structures with efficiently using OOPS, concurrency management and event handling (BLOOMS LEVEL 5)
CO5	**Demonstrate** the working of functional and logic programming language such as ML and PROLOG.(BLOOMS LEVEL 3)

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In Pursuit of Excellence	**Course Delivery Method**	SESSION-2019-2020 SEM-5th

Name of Subject: Principles of Programming Languages Subject Code: RCS503

Branch: Computer Science & Engineering

Course Plan

Coverage of
Unit 1 by: - Chalk & Talk, Group Discussion/Interactive session
Unit 2 by: - Chalk & Talk, Power Point Presentation, Analogy, solving Numericals
Unit 3 by: - Chalk & Talk, Power Point Presentation, Group Discussion/Interactive session
Unit 4 by: - Chalk & Talk, Power Point Presentation, Tutorials, assignments, group discussion /Interactive session
Unit 5 by: - Chalk & Talk, Power Point Presentation, assignment, and Group discussion /Interactive session

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In Pursuit of Excellence	Mapping	SESSION-2019-2020 SEM-5th

Mapping of Course Outcomes with POs & PSOs:

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3											
CO2	3	2										
CO3	3											
CO4	3											
CO5	3		3		3							

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

CO1 Analyze pragmatics of programming languages on the basis of their Evolution and working Structure (BLOOMS LEVEL 4)

CO2 Design the structure of program using given programming constructs of programming languages (BLOOMS LEVEL 5)

CO3 Subdivide complex problems into modules using the Sub programs and scope rules (BLOOMS LEVEL 4)

CO4 Combine the constructs for programming structures with efficiently using OOPS, concurrency management and event handling (BLOOMS LEVEL 5)

CO5 Demonstrate the working of functional and logic programming language such as ML and PROLOG.(BLOOMS LEVEL 3)

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In Pursuit of Excellence	**Time Table**	SESSION-2019-2020 SEM-5th

MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

FACULTY: MR.ZUBAIR IQBAL(ZI) — **FACULTY TIME TABLE 2019-20 (ODD SEM)**

w.e.f: 02/08/2019 Revised w.e.f:26/8/2019

	L	T	P	TOTAL
	5	0	14	19

TIME / DAY	9:00 AM - 10:00 AM	10:00 AM - 11:00 AM	11:00 AM - 12:00 NOON	12:00 AM - 1:00 PM	1:00 PM - 2:00 PM	2:00 PM - 3:00 PM	3:00 PM - 4:00 PM	4:00 PM - 5:00 PM
MONDAY		RCS-503 (L) 5th B B-327	RCS-553 5th B1 B-106		LUNCH	KCS-101(P) 1ST C3 B-114		
TUESDAY	RCS-553 5th C3 B-106		RCS-553 5th A2 B-106					KNC-302(L) 3rd D F-304
WEDNESDAY			RCS-553 5th B3 B-106					
THURSDAY			RCS-503 (L) 5th B B-301				RCS-553 5th C1 B-106	
FRIDAY			KNC-302(L) 3rd D F-304			RCS-503 (L) 5th B B-327	RCS-553 5th B2 B-106	
SATURDAY								

SUB. CODE	SUBJECT NAME
RCS-503	Principles of Programming Languages
KNC-302	Python
RCS-553	Principles of Programming Lang Lab
KCS -101(P)	Computer Programming Lab

23/9/19
Kanchan- Deptt. OC

Mr. Rakesh Kr. Gangwar – OC Time Table

3/9

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In Pursuit of Excellence	**Lecture Plan & Course Coverage Sec B**	SESSION-2019-2020 SEM-5th

Total Period: 42

Sr. No.	No. of Periods	Topics/Sub Topics	Reference Books	CO Covered	Planned Date	Coverage Date	Sign
1.	1	Introduction to Course Educational Objective, Course Outcomes, Scheme, Adopted Syllabus, PEOs, POs,PSOs Pre-requisite, Vision & Mission of Institute and Department		)	5/8/19	5/8/19	
2.	1	Brief review of programming language basics and its working phenomena of various programming languages Role of Programming Languages: Why Programming Languages, Towards Higher-Level Languages.	R1	CO1	8/8/19	8/8/19	
3.	2	Programming Paradigms	R1	CO1	9/8/19 12/8/19	9/8/19 16/8/19	
4.	2	Programming Environments Introduction to compiler and interpreter and translation process Language Description: Syntactic Structure	R1	CO1	16/8/19	19/8/19 21/8/19	
5.	1	Language Translation Issues: Programming Language Syntax	R1	CO1	19/8/19 22/8/19	22/8/19	
6.	2	Stages in Translation, Formal Translation Models, Beyond: compiler design fundamentals	R1	CO1	23/8/19 26/8/19	23/8/19 26/8/19	
7.	2	Introduction to variables and other Data Types , Names , Variables , Binding, Type Checking	R5,PPT	CO2	29/8/19 30/8/19	29/8/19 30/8/19	
8.	1	Scope, Scope Rules , Lifetime and	R5,PPT	CO2	2/9/19	2/9/19	

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		Garbage Collection					
9.	1	Primitive Data Types, Strings, Array Types, Associative Arrays Record Types, Union Types	R5,PPT	CO2	5/9/19	5/9/19	
10.	1	Pointers and References , Arithmetic Expressions	R5,PPT	CO2	6/9/19	6/9/19	
11.	1	Overloaded Operators, Type Conversions	R5,PPT	CO2	9/9/19	9/9/19	
12.	1	Relational and Boolean Expressions, Assignment Statements, Mixed Mode Assignments	R5,PPT	CO2	16/9/19	16/9/19	
13.	1	Control Structures, Selection ,Iterations, Branching, Guarded Statements , Beyond: Optimization in program development	R5,PPT	CO2	19/9/19	19/9/19	
14.	1	Basic purpose of modularity and scopes in programming languages.Subprograms, Design Issues	R5,PPT	CO3	20/9/19	20/9/19	
15.	1	Local Referencing, Parameter Passing	R5,PPT	CO3	23/9/19	23/9/19	
16.	1	Overloaded Methods, Generic Methods	R5,PPT	CO3	26/9/19	26/9/19	
17.	1	Design Issues for Functions	R5,PPT	CO3	27/9/19	27/9/19	
18.	2	Semantics of Call and Return	R5,PPT	CO3	30/9/19 3/10/19	30/9/19	
19.	1	Implementing Simple Subprograms	R5,PPT	CO3	4/10/19	3/10/19	
20.	1	Stack and Dynamic Local Variables, Nested Subprograms, Dynamic Scoping	R5,PPT	CO3	7/10/19	4/10/19	
21.	1	various paradigm of programming Languages oncluding OOPS Concepts Grouping of Data and Operations — Constructs for Programming Structures, Abstraction Information Hiding	R5,PPT	CO4	10/10/19	10/10/19	
22.	1	Program Design with Modules, Defined Types	R5,PPT	CO4	11/10/19	11/10/19	

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23.	1	Object Oriented Programming — Concept of Object, Inheritance	R5,PPT	CO4	14/10/19	12/10/19	
24.	1	Derived Classes and Information Hiding – Templates	R5,PPT	CO4	17/10/19	12/10/19	
25.	1	Semaphores, Monitors, Message Passing	R5,PPT	CO4	18/10/19	17/10/19	
26.	1	Threads	R5,PPT	CO4	21/10/19	31/10/19	
27.	1	Statement Level Concurrency	R5,PPT	CO4	1/11/19	1/11/19	
28.	1	Exception Handling (Using C++ and Java as Example Language). Beyond: Differences between various programming technologies	R5,PPT	CO4	4/11/19	4/11/19	
29.	2	introduction to smart programming using various programming paradigms, Introduction to Lambda Calculus	R1,Notes	CO5	7/11/19 8/11/19	7/11/19 8/11/19	
30.	1	Fundamentals of Functional Programming Languages	R1,Notes	CO5	11/11/19	14/11/19	
31.	1	Programming with Programming with ML	R1,Notes	CO5	14/11/19	15/11/19	
32.	1	Introduction to Logic and Logic Programming	R1,Notes	CO5	15/11/19	16/11/19	
33.	2	Programming with Prolog	R1,Notes	CO5	18/11/19 21/11/19	18/11/19	
34.	1	Beyond: A brief tour of Programming with LISP	R1,Notes	CO5	22/11/19	22/11/19	
35.	1	Assignment Test I			2/12/19	25/11/19	

Name & Sign. of Faculty

(Lubain Iqbal)

Sign. of Reviewer

Sign. of HOD

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In Pursuit of Excellence	**ASSIGNMENT - 1**	SESSION-2019-2020 SEM-5th

Home Assignments

Unit 1[CO-1]

S. No	Question	Blooms Taxonomy Level
1.	Define programming language?	Knowledge
2.	Differentiate between sentence and sentential form?	Understand
3.	Define Syntax and Semantics?	Knowledge
4.	Differentiate between Syntax and Semantics?	Understand
5.	Differentiate compiler and interpreter?	Understand
6.	Describe grammars for simple assignment statements?	Understand
7.	Describe unambiguous grammar for if-then-else?	Understand
8.	Define Parse trees?	Knowledge
9.	Define Denotational semantics?	Knowledge
10.	Define Operational semantics?	Knowledge
11.	List the three general methods of implementing a programming language?	Knowledge
12.	Explain different aspects of the costs of a programming language?	Understand

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In Pursuit of Excellence	**ASSIGNMENT - 2**	SESSION-2019-2020 SEM-5th

Unit 2 [CO- 2]

S. No	Question	Blooms Taxonomy Level
1.	Define associative arrays?	Knowledge
2.	Explain numeric types?	Understand
3.	Distinguish named type and structure type compatibility?	Understand
4.	List the merits of sub range types?	Knowledge
5.	Differentiate union and enumeration?	Understand
6.	Define data type?	Knowledge
7.	List the merits of type checking?	Knowledge
8.	Define user defined data type?	Knowledge
9.	Define widening and narrowing conversions?	Knowledge
10.	Define a pointer?	Knowledge
11.	Define a variable and what the attributes of a variable are? Elaborate on address of a variable?	Knowledge
12.	Write a note on Boolean and relational expressions?	Understand
13.	Discuss the advantages and disadvantages of mixed mode arithmetic expressions?	Understand
14.	Define array and record? Classify arrays based on storage allocation? What are the advantages and disadvantages of allocation memory	Knowledge

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In Pursuit of Excellence	**ASSIGNMENT - 3**	SESSION-2019-2020 SEM-5th

Unit 3 [CO- 3]

S. No	Question	Blooms Taxonomy Level
1.	Define procedures?	Knowledge
2.	Define local referencing environment?	Knowledge
3.	Differentiate static and dynamic binding?	Understand
4.	Define static scope?	Knowledge
5.	Define dynamic scope?	Knowledge
6.	Evaluate static scoping?	Evaluate
7.	Evaluate dynamic scoping?	Evaluate
8.	List the subprogram characteristics?	Knowledge
9.	Distinguish different types of parameters?	Understand
10.	Differentiate procedures and functions?	Understand
11.	Define pass by value?	Knowledge
12.	Discuss overloaded subprograms?	Understand
13.	Define pass by result?	Knowledge
14.	Differentiate ad hoc and parametric polymorphism?	Understand
15.	Define subprograms? What are the advantages of subprograms? Explain different methods of parameter passing mechanisms to subprograms?	Knowledge

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In Pursuit of Excellence	**ASSIGNMENT - 4**	SESSION-2019-2020 SEM-5th

Unit 4 [CO- 4]

S. No	Question	Blooms Taxonomy Level
1.	Define binary semaphore?	Knowledge
2.	Define monitors?	Knowledge
3.	Define mutual exclusion?	Knowledge
4.	Define deadlock?	Knowledge
5.	Define an abstract data type?	Knowledge
6.	Define logic programming language?	Knowledge
7.	Define data abstraction?	Knowledge
8.	Write about message passing?	Understand
9.	List the design issues for abstract data types?	Knowledge
10.	Write about object oriented programming in small talk?	Understand
11.	Evaluate java threads?	Evaluate
12.	List the design issues for object oriented languages?	Knowledge
13.	Analyze the importance of logic programming languages over functional programming languages?	Analyze

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In Pursuit of Excellence	**ASSIGNMENT - 5**	SESSION-2019-2020 SEM-5th

Unit 5 [CO- 5]

S. No	Question	Blooms Taxonomy Level
1.	List few characteristics of Python language?	Knowledge
2.	Define functional language?	Knowledge
3.	Define imperative language?	Knowledge
4.	Explain scripting language?	Understand
5.	List few examples of scripting languages?	Knowledge
6.	List keywords of Python language?	Knowledge
7.	List data types of Python language?	Knowledge
8.	Define the term separate compilation in Python?	Knowledge
9.	Define referential transparency?	Knowledge
10.	List the draw backs of using an imperative language to do functional programming	Knowledge
11.	Compare the advantages of Python scripting language over other scripting languages	Apply
12.	Illustrate Python code with example to find the roots of quadratic equation?	Apply

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In Pursuit of Excellence	List of Students	SESSION-2019-2020
		SEM-5th

Moradabad Institute of Technology

Ram Ganga Vihar, Phase-II, Moradabad

3rd Year 5th Semester Batch 2017

Computer Science and Engineering — Section B

S.No.	Student No	Roll No.	Name of Students		Remark
1.	1710256	1708210063	LALIT KUMAR	FW	
2.	1710060	1708210064	MANAS ARORA		
3.	1710021	1708210065	MANU PANWAR		
4.	1710276	1708210066	MAYANK BHATNAGAR		
5.	1710085	1708210067	MAYANK UPADHYAY		
6.	1710046	1708210068	MOHHAMMAD AMAAN		
7.	1710302	1708210069	MOHAMMAD ANAS		
8.	1710042	1708210070	MOHD. AFZAL		
9.	1710295	1708210071	MOHD. AKIF		
10.	1710283	1708210072	MOHD. ANAS		
11.	1710008	1708210073	MOHD. ASHIR		
12.	1710139	1708210074	MOHD. FARDEEN		
13.	1710054	1708210075	MOHD. HARIS	FW	
14.	1710252	1708210076	MOHD. SADIQ		
15.	1710166	1708210077	MOHD. ASIF		
16.	1710214	1708210078	MOHD. SHOAIB		
17.	1710068	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali		
18.	1710308	1708210080	MOHIT AGARWAL		
19.	1710020	1708210081	MUDIT KUMAR SHARMA		
20.	1710243	1708210082	MUKESH KUMAR		
21.	1710086	1708210083	MUKUL KUMAR		
22.	1710273	1708210084	MUSKAN MEHROTRA		
23.	1710333	1708210085	MUSKAN AGARWAL		
24.	1710248	1708210086	NAMAN AGARWAL		
25.	1710048	1708210087	NANDITA GAURI		
26.	1710186	1708210090	NIKITA SINGH		
27.	1710203	1708210091	NIRBHAY PAL		
28.	1710282	1708210092	NISHITA AGARWAL		
29.	1710320	1708210093	NITESH SAINI		
30.	1710152	1708210094	NITIKA RASTOGI	FW	
31.	1710257	1708210096	NITIN CHAUHAN		
32.	1710209	1708210097	NITIN VERMA		

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33.	1710195	1708210098	NIVESH KUMAR		
34.	1710210	1708210099	NUPUR GUPTA		
35.	1710144	1708210100	PALAK GOEL		
36.	1710018	1708210101	PALAK RASTOGI		
37.	1710096	1708210102	PARAS VISHNOI		
38.	1710029	1708210103	PARTH SHARMA		
39.	1710075	1708210104	PIYUSH DHAWAN		
40.	1710079	1708210105	PIYUSH SHARMA		
41.	1710212	1708210106	PRADEEP KUMAR S/O Sri Naresh Kumar		
42.	1710168	1708210108	PRANVI JAIN		
43.	1710313	1708210109	PRASHANT KUMAR		
44.	1710132	1708210110	PRATHAM MAHESHWARI		
45.	1710255	1708210111	PRAYAG VERMA		
46.	1710324	1708210112	PRIYANK RAGHAV		
47.	1710321	1708210113	PUSHKAR SHARMA		
48.	1710307	1708210114	RAGHAV AGARWAL		
49.	1710114	1708210115	RAHUL SUKHIJA		
50.	1710240	1708210116	RANOJIT MALIK		
51.	1710263	1708210118	RAVI RANJAN		
52.	1710285	1708210120	RISHABH CHAUDHARY		
53.	1710293	1708210121	RISHABH KUMAR SHARMA		
54.	1710134	1708210122	RISHI RAJ SINGH		
55.	1710005	1708210123	RITIKA SAXENA		

Batch No.	S. No. in each section
B - 1	1-20
B - 2	21-38
B - 3	39-Rest

Dr. Nitin Agarwal
Dean –Academics

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Attendance Upto 06-09-2019 Sec-B
PPL (RCS-503)/PPL LAB (RCS-553)

Sno.	Roll No.	Name of Students	Lec Att	Held	PER	LAB ATT	LAB HELD
1	1708210063	LALIT KUMAR	8	14	57.14	4	4
2	1708210064	MANAS ARORA	11	14	78.57	4	4
3	1708210065	MANU PANWAR	9	14	64.29	3	4
4	1708210066	MAYANK BHATNAGAR	11	14	78.57	4	4
5	1708210067	MAYANK UPADHYAY	8	14	57.14	4	4
6	1708210068	MOHHAMMAD AMAAN	10	14	71.43	4	4
7	1708210069	MOHAMMAD ANAS	9	14	64.29	3	4
8	1708210070	MOHD. AFZAL	7	14	50.00	3	4
9	1708210071	MOHD. AKIF	11	14	78.57	4	4
10	1708210072	MOHD. ANAS	10	14	71.43	4	4
11	1708210073	MOHD. ASHIR	12	14	85.71	4	4
12	1708210074	MOHD. FARDEEN	12	14	85.71	4	4
13	1708210075	MOHD. HARIS	10	14	71.43	4	4
14	1708210076	MOHD. SADIQ	9	14	64.29	4	4
15	1708210077	MOHD. ASIF	8	14	57.14	2	4
16	1708210078	MOHD. SHOAIB	12	14	85.71	4	4
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	11	14	78.57	4	4
18	1708210080	MOHIT AGARWAL	10	14	71.43	4	4
19	1708210081	MUDIT KUMAR SHARMA	11	14	78.57	3	4
20	1708210082	MUKESH KUMAR	11	14	78.57	3	4
21	1708210083	MUKUL KUMAR	11	14	78.57	3	4
22	1708210084	MUSKAN MEHROTRA	12	14	85.71	3	4
23	1708210085	MUSKAN AGARWAL	8	14	57.14	2	4
24	1708210086	NAMAN AGARWAL	11	14	78.57	3	4
25	1708210087	NANDITA GAURI	12	14	85.71	3	4
26	1708210090	NIKITA SINGH	10	14	71.43	4	4
27	1708210091	NIRBHAY PAL	11	14	78.57	4	4
28	1708210092	NISHITA AGARWAL	13	14	92.86	4	4
29	1708210093	NITESH SAINI	9	14	64.29	3	4
30	1708210094	NITIKA RASTOGI	10	14	71.43	2	4
31	1708210096	NITIN CHAUHAN	9	14	64.29	3	4
32	1708210097	NITIN VERMA	12	14	85.71	3	4
33	1708210098	NIVESH KUMAR	10	14	71.43	3	4
34	1708210099	NUPUR GUPTA	11	14	78.57	3	4
35	1708210100	PALAK GOEL	13	14	92.86	4	4
36	1708210101	PALAK RASTOGI	11	14	78.57	3	4
37	1708210102	PARAS VISHNOI	12	14	85.71	4	4
38	1708210103	PARTH SHARMA	7	14	50.00	3	4
39	1708210104	PIYUSH DHAWAN	11	14	78.57	5	5
40	1708210105	PIYUSH SHARMA	10	14	71.43	5	5
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Ku	10	14	71.43	4	5
42	1708210108	PRANVI JAIN	9	14	64.29	4	5
43	1708210109	PRASHANT KUMAR	7	14	50.00	3	5
44	1708210110	PRATHAM MAHESHWARI	12	14	85.71	4	5
45	1708210111	PRAYAG VERMA	6	14	42.86	3	5
46	1708210112	PRIYANK RAGHAV	10	14	71.43	4	5
47	1708210113	PUSHKAR SHARMA	10	14	71.43	4	5
48	1708210114	RAGHAV AGARWAL	9	14	64.29	4	5
49	1708210115	RAHUL SUKHIJA	11	14	78.57	5	5
50	1708210116	RANOJIT MALIK	10	14	71.43	4	5
51	1708210118	RAVI RANJAN	13	14	92.86	4	5
52	1708210120	RISHABH CHAUDHARY	9	14	64.29	4	5
53	1708210121	RISHABH KUMAR SHARMA	10	14	71.43	5	5
54	1708210122	RISHI RAJ SINGH	13	14	92.86	5	5
55	1708210123	RITIKA SAXENA	13	14	92.86	5	5

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In Pursuit of Excellence	List of Students having short attendance	SESSION-2019-2020 SEM- 5th

Attendance Upto 06-09-2019 Sec-B
PPL (RCS-503)
List of students having short Attendance

Sno.	Roll No.	Name of Students	Lec Att	Held	PER
1	1708210063	LALIT KUMAR	8	14	57.14
2	1708210067	MAYANK UPADHYAY	8	14	57.14
3	1708210070	MOHD. AFZAL	7	14	50.00
4	1708210077	MOHD. ASIF	8	14	57.14
5	1708210085	MUSKAN AGARWAL	8	14	57.14
6	1708210103	PARTH SHARMA	7	14	50.00
7	1708210109	PRASHANT KUMAR	7	14	50.00
8	1708210111	PRAYAG VERMA	6	14	42.86

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MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF Computer Science & Engineering

SESSIONAL TEST 1

Set-1

Course: B.Tech. | **Semester: 5th**

Session:2019-20 | **Section: A, B & C**

Subject: Principles of Programming Languages | **Subject Code: RCS-503**

Max. Marks: 15 | **Time: 1:15**

Q.No. :	1	2	3	4	5	6
CO No. :	CO-1	CO-1	CO-1	CO-2	CO-2	CO-2

Q.No.	Question Statement	Marks
1.	Explain the attributes of good programming language in detail.	2
2.	Explain Language paradigm in detail with examples of each. Also Define Cost in reference to PL.	3
3.	With the help of a diagram explain every phase of Structure of a compiler. Show the translation of code **A=B+C*D+15** at every stage of compilation.	4
4.	Explain the following a) Record b) coercion	2
5.	What are the main difference between Vector and Record? Also give the memory representation of both.	2
6.	Convert 1460.125 into floating point IEEE single & double precision format.	2

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MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF Computer Science & Engineering

SESSIONAL TEST 1

Set-2

Course: B.Tech. | **Semester: 5th**

Session:2019-20 | **Section: A, B & C**

Subject: Principles of Programming Languages | **Subject Code: RCS-503**

Max. Marks: 15 | **Time: 1:15**

Q.No. :	1	2	3	4	5	6
CO No. :	CO-1	CO-1	CO-1	CO-2	CO-2	CO-2

Q.No.	Question Statement	Marks
1.	Define programming languages. Explain the attributes of programming Languages.	2
2.	What are the major features a project programming language should include?	3
3.	With the help of diagram explain various language translation stages?	4
4.	Draw the expression tree for a+b*c+d*e+f/g? Also evaluate the prefix and postfix equivalent	2
5.	What are the main difference between Vector and Array? Also give the memory representation of both.	2
6.	Convert 1200.01 into floating point IEEE single & double precision format.	2

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MORADABAD INSTITUTE OF TECHNOLOGY
DEPARTMENT OF Computer Science & Engineering
SESSIONAL TEST 1 Solution
Set-1

Answer-1 Explain the attributes of good programming language in detail.

There are various factors, why the programmers prefer one language over the another. And some of very good characteristics of a good programming language are,

1) Clarity, Simplicity and Unity: A Programming language provides both a conceptual framework for Algorithm planning and means of expressing them. It should provide a clear, simple and unified set of concepts that can be used as primitives in developing algorithms.

It should have

- It has minimum number of different concepts
- with Rules for their combination being
- simple and regular.

This attribute is called **conceptual integrity.**

2) Orthogonality: It is one of the most important feature of PL orthogonality is the property that means " **Changing A does not change B".**

If I take Real world example of an orthogonal system Would be a radio, where changing the station does not change the volume and vice versa.

When the features of a language are orthogonal, language is **easier to learn** and **programs are easier to write** because only few exceptions and special cases to be remembered.

3) Support for Abstraction: - There is always found that a substantial gap remaining between the abstract data structure and operations that characterize the solution to a problem and their particular data structure and operations built into a language.

4) Programming Environment: An appropriate programming environment adds an extra utility and make language to be implemented easily like

The availability of- Reliable- Efficient - Well documentation

Speeding up creation and testing by-special Editors- testing packages

Facility- Maintaining and Modifying- Multi Version of program software product.

5) Ease of program verification: - Reusability:

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The reusabi ity of program written in a language is always a central concern. A program is checked by various te sti g technique li e

Formal verification metho Desk checking Input output test checking.

We verify the program by many more techniques. A language that makes program verification difficult maybe far more troublesome to use. **Simplicity of semantic and syntactic structure is a primary aspect that tends to simplify program verification.**

6) portability of programs: Programming language should be portable means it should be easy to transfer a program from which they are developed to the other computer.

Answer-2 Explain Language paradigm in detail with examples of each. Also Define Cost in reference to PL

Paradigm: A paradigm is a new way of looking or thinking about something.

i. Imperative languages
ii. Applicative (functional) languages
iii. Rule-based languages
iv. Object-oriented languages

Imperative languages: Also known as procedural language

- Command-driven or statement-oriented
- A program consists of a sequence of statements, execution causes machine to enter a new state.
- Syntax of imperative languages is of the form

statement1;
statement2;
..

- Manipulate the program with:
  - Variables that name memory locations
  - Arithmetic and logical operations
  - Reference, evaluate, assign operations
  - Explicit control flow statements
- Fits the Von Neumann architecture closely
- Key operations: *Assignment* and *"GoTo"*
  - Examples: C, Pascal

Sum up twice each number from 1 to N.

C

```
sum = 0;
for (k = 1; k <= n; ++k)
sum += 2*k;
```

Applicative (functional) languages:

- Also known as functional languages Program develops by creating functions from previous functions that manipulate the initial data set until the solution is achieved. Once the functions are created, we apply the initial data
- The syntax of function languages is of the form:
  function_n(...function_2(function_1(data))...)
- Characteristics (in pure form):
  - Name values, not memory locations
  - Value binding through parameter passing
  - Recursion rather than iteration

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- Key operations: *Function Application* and *Function Abstraction*
  - Based on the Lambda Calculus
- Examples: LISP, Scheme

Scheme:

```
(define (sum n)
        (if (= n 0)
        0
        (+ (* n 2) (sum (- n 1)))
        )
        )
        (sum 4) evaluates to 20
```

Declarative or Rule-based (logical) languages

- Also known as logical programming languages Check for condition, executes an appropriate actionProgramming often consists of building a matrix/table of conditions and the appropriate actions
- BNF parsing techniques and YACC are rule-based techniques

• Characteristics

– Programs say *what* properties the solution must have, not *how* to find it
– Solutions are obtained through a specialized form of *theorem-proving*
• Key operations: *Unification* and *Nondeterministic Search*
– Based on First Order Predicate Logic

Example: Prolog

```
sum(0,0).
sum(N,S) :-
        N>0,
        NN is N - 1,
        sum(NN, SS),
        S is N * 2 + SS.
```

Object-oriented languages:

A program is: Communication between abstract objects.

• Characteristics:
  – "Objects" collect both the data and the operations
  – "Objects" provide *data abstraction*
  – Can be either imperative or functional (or logical)
• Key operation: *Message passing* or *Method Invocation*

```
class Calculation{
        void fact(int n){
        int fact=1;
        for(int i=1;i<=n;i++){
        fact=fact*i;
                }
        System.out.println("factorial is "+fact);
        }
    public static void main(String args[]){
        new Calculation().fact(5);//calling method with annonymous object
                }       }
```

Cost of use

- Cost of program execution
  -Main focus of early programming years
  -Speed not a high concern anymore
- Cost of program translation
  -Student programs are compiled frequently but executed few times
  -A fast compiler is important for programming education
- Cost of program creation, testing, use

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Moradabad-244001

-Smalltalk and Perl can help solve problems with minimum investment in programmer time and energy.

- Cost of program maintenance
  -Studies show largest cost is over the life of the program, not initial
  -Maintenance includes repair of errors and enhancements

Answer3- With the help of a diagram explain every phase of Structure of a compiler. Show the translation of code A=B+C*D+15 at every stage of compilation.

- **Structure of compiler**

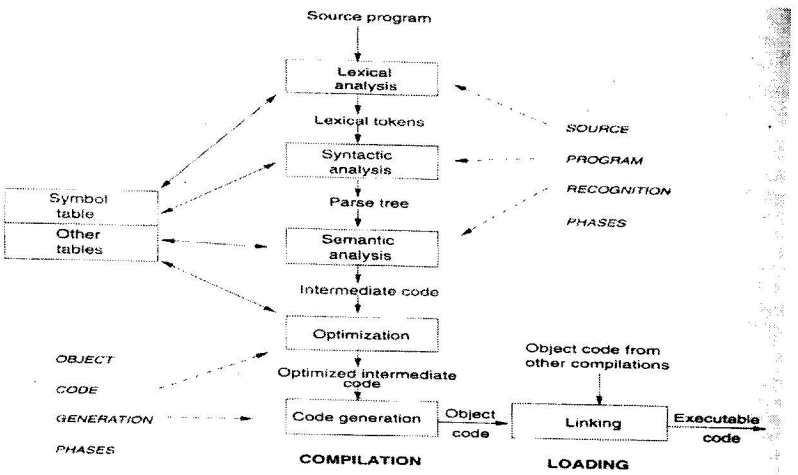


Figure 3.2. Structure of a compiler.

A := B+C*D+15

Lexical analyzer

*id1 := id2 + id3 *id4+ 15*

Syntax analyzer

Semantic Analyzer

temp1:=inttoreal(15)

Intermediate code generator

Code generator

Code optimizer

id1:= id1+15.0
id1:= id2+temp1
temp1=id3*id4
id1=temp2+temp1

temp2:=id2 + temp3
temp3:=id3 + temp2
Temp2=id4

Answer-4

Record- The re ord type is a **data type that you use to treat several different pieces of data as one unit**, for example, name and phone number. Each of these units is called a variable of record type. Each piece of data is called an attribute. ... After you define a record type, you can declare a variable as that record type.

Coercion- There are two types of conversion: implicit and explicit. The term for implicit type conversion is **coercion**. The most common form of explicit type conversion is known as **casting**. Explicit type conversion can also be achieved with separately defined conversion routines such as an overloaded object constructor.

Implicit type conversion, also known as **coercion**, is an automatic type conversion by the compiler. Some languages allow, or even require, compilers to provide coercion.

Answer-5

Record	Vector
• It may contain data objects of heterogeneous types • Its component are fetched by using Symbolic names or identifier. • It has separate description for each of its component • eg in 'C' we use " Struct" or union as a keyword to define record "record" as keyword in Pascal • Eg in 'C' Struct employee { int code ; Float salary ; Char name [20] ; Yemp; Eg in " Pascal" Var Employee : record ID : integer Dept: array [1...3] of char, • Record can be a vector type. • Some of its variations include variant records	• It contain only data objects of homogeneous type • Its component are fetched by using index / subscript no. • It has only one descriptor Since it contains homogeneous. • eg in C we don't have any such keyword to define vector except variable with data type & the subscripts no but in Pascal we use "array" of as keyword with the range. • Eg in "C" Int a [10] Eg in " Pascal" a: array [1....10] of integer; • A vector can be a component of record. • Some of its variation include, slice, association arrays.

Answer-6

Convert 1460.125 into floating point IEEE single & double precision format.

$(1460)_{10} \rightarrow (10110110100)_2$

$(.125)_{10} \rightarrow (0.001)_2$

$(1460.125)_{10} \rightarrow (10110110100.001)_2$

$\downarrow$

$1.0110111\cdots01 \times 2^{10}$

Single Precision

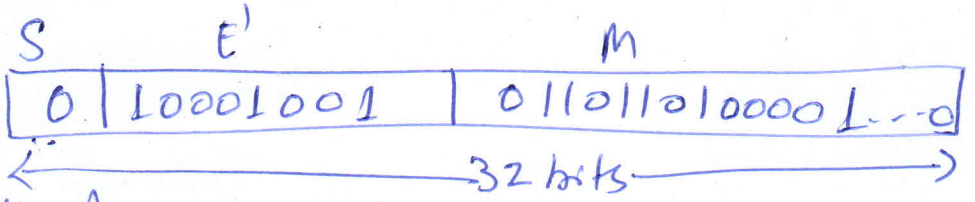
$S = 0$

$E = 10$

$M = 01101101000001$

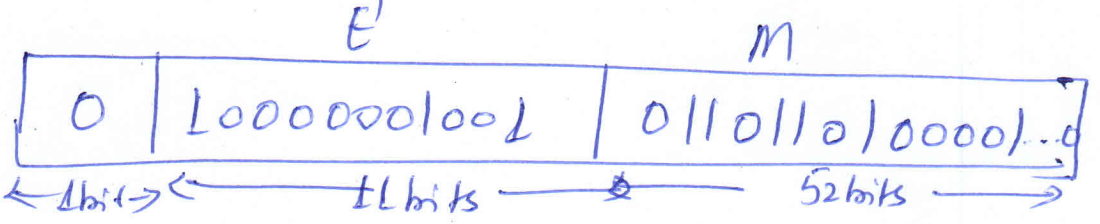
$E' = E + 127 = 10 + 127 = (137)_{10}$

$E' = (10001001)_2$



Double Precision

$E' = E + 1023 = 10 + 1023 = (1033)_{10} = (10000001001)_2$



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Moradabad-244001

Subject Teacher: Mr. Zubair Iqbal (CS)

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20 | Class Test I / II / III

Date: 12/09/19 | Shift: 3rd | Room No: B-311

Year: 3rd year | Semester: ~~3rd~~ 5th | Section/Branch: B/CS

Subject Name: PPL | Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210063	Lalit Kumar	6.5	C.S.E	Lalit
2.	1708210064	Manas Arora	6	C.S.E.	Manas
3.	1708210065	Manu Panwar	3.5	CSE	Manwar
4.	1708210066	Mayank Bhatnagar	09	C.S.E	Mayank
5.	1708210067	Mayank Upadhyay	10	CSE	Upadhyay
6.	1708210068	Mohd Amaan	11	CSE	Mohaan
7.	1708210069	Mohammad Anas	6	"	M. Anas
8.	1708210072	Mohd Anas	3.5	"	Anas
9.	1708210073	Mohd Ashiq	6.5	"	Ashiq
10.	1708210075	Mohd Haris	10.5	"	Haris
11.	1708210078	Mohd Shoaib	8.5	"	Shoaib
12.	1708210079	Mohd Sohail	7.5	"	Sohail
13.	1708210080	Mohit Agarwal	7	"	Mohit
14.	1708210081	Mudit Kr. Sharma	8.5	"	Mudit
15.	1708210082	Mukesh Kumar	10.5	"	Mukesh
16.	1708210083	MUKUL KUMAR	10	"	Mukul
17.	1708210084	Munish Mehrotra	11	"	Munish
18.	1708210085	Muskan Agarwal	7	"	Muskan
19.	1708210086	Naman Agrawal	11.5	C.S.E.	Naman
20.	1708210074	ABSENT			
21.					
22.					
23.	1708210070	Debarred			
24.	1708210071				
25.	1708210076				
26.	1708210077				
27.					
28.					
29.					
30.					

(19) Present

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Total No. of Students allotted in Room: (24-4) = (20) | Students Absent: (01) | Students Present: (19)

Invigilators: 1) Name Dr LMT Sign: 17/9/19

2) Name Prashant Singh Sign:

Subject Teacher: Mr. Zubair Iqbal

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20

Class Test I / II / III

Date: 17/9/19 Shift: 3rd Room No: B-313

Year: 3rd Semester: 5th Section/Branch: B/CSE

Subject Name: PPL Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210110	Pratham Maheshwari	6	CS	Pratham
2.	1708210112	Priyanka Raghav	7	"	Priyanka
3.	1708210113	Pushkar Sharma	10	CS	P.Sharma
4.	1708210114	Raghav Agarwal	7.5	CS	Raghav
5.	1708210108	Pranvi Jain	14.5	CS	Pranvi
6.	1708210105	Piyush Sharma	5	CS	Piyush
7.	1708210104	Piyush Dhawan	7.5	CS	Piyush
8.	1708210103	Parth Sharma	2	C.S	Parth
9.	1708210102	Paras Vishnoi	6.5	CS	Paras
10.	1708210096	Nitin Chauhan	6.5	C.S.E	NM
11.	1708210097	Nitin Verma	9.5	CSE	Nitin.
12.	1708210098	Nivesh Kumar	7	C.S.E	Nivesh
13.	1708210099	Nupur	13	CSE	Nupur
14.	1708210101	Palak Rastogi	9	CS	Palak.
15.	1708210094	Nitika Rastogi	15	CSE	Nitika.
16.	1708210093	Nilesh Saini	8	CSE	Nilesh
17.	1708210092	Nishita Agarwal	12.5	C.S.E.	Nishita
18.	1708210091	Nirbhay Pal	8	CSE	Nirbhay
19.	1708210090	Nikita Singh	9	CSE	Nikita
20.	1708210087	Nandita Gaur	7	CSE	Nandita
21.	1708210100	} ← ABSENT			→
22.	1708210106	}			
23.					
24.	1708210109	} ← Debarred			→
25.	1708210111	}			
26.					
27.					
28.					
29.					
30.					

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Total No. of Students allotted in Room: 24-2=22 Students Absent: 02 Students Present: 20

Invigilators: 1) Name Puneet Kr. Sign: 17.9.19

2) Name Ankur Kr Bansal Sign: 17/09/19

Subject Teacher.. Mr. Zubair Iqbal

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20 | Class Test I / II / III

Date: 12/09/19 | Shift: 3rd | Room No: C-301

Year: 3rd | Semester: 5th | Section/Branch: B/CS

Subject Name: PPL | Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210115	Rahul Sukhija	13	CS	Rahul
2.	1708210116	Ramajit malik	9	CS	Ramajit
3.	1708210118	Rani Ranjan	15	CS	Rani
4.	1708210120	Rishabh Chaudhary	12	CS	Rishabh Chaudhary
5.	1708210121	Rishabh Kr Sharma	14	CS.	Rishabh
6.	1708210122	Rishi Raj Singh	12	CS	Rishi Raj Singh
7.	1708210123	Ritika Saxena	13	CS	Ritika Saxena
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Total No. of Students allotted in Room: 07 | Students Absent: 00 | Students Present: 07

Invigilators: 1) Name Richa Saxena | Sign:

2) Name Shilpi Rani | Sign:

Marks CT-1 Sec-B

Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	CO-1			CO-2			TOTAL
			Q1	Q2	Q3	Q4	Q5	Q6	
1	1708210063	LALIT KUMAR	2		2		0.5	2	6.5
2	1708210064	MANAS ARORA	2	0	2	1	0	1	6
3	1708210065	MANU PANWAR	2		4		0	2	8
4	1708210066	MAYANK BHATNAGAR	2	2	3		0	2	9
5	1708210067	MAYANK UPADHYAY	2	2	2	0	2	2	10
6	1708210068	MOHHAMMAD AMAAN	2	2	3	2	1	1	11
7	1708210069	MOHAMMAD ANAS	2		4	1	0	2	9
8	1708210070	MOHD. AFZAL	D	D	D	D	D	D	D
9	1708210071	MOHD. AKIF	2	2		2	0		D
10	1708210072	MOHD. ANAS	2		4	0.5	0		6.5
11	1708210073	MOHD. ASHIR	1.5	0	4		1	2	8.5
12	1708210074	MOHD. FARDEEN	A	A	A	A	A	A	A
13	1708210075	MOHD. HARIS	2	1	3.5	1	2	1	10.5
14	1708210076	MOHD. SADIQ	D	D	D	D	D	D	D
15	1708210077	MOHD. ASIF	D	D	D	D	D	D	D
16	1708210078	MOHD. SHOAIB	1.5		2	2	2	1	8.5
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	2		2	2	1	0.5	7.5
18	1708210080	MOHIT AGARWAL	1	0	2	2	1	1	7
19	1708210081	MUDIT KUMAR SHARMA	2	2	2		2	0.5	8.5
20	1708210082	MUKESH KUMAR	2	3	3.5		0	2	10.5
21	1708210083	MUKUL KUMAR	2	3	3		0	2	10
22	1708210084	MUSKAN MEHROTRA	2	2	3	2	0	2	11
23	1708210085	MUSKAN AGARWAL	2	3	2	0	0		7
24	1708210086	NAMAN AGARWAL	2	3	3	2	0	1.5	11.5
25	1708210087	NANDITA GAURI	2	2	2	0.5	0.5	0	7
26	1708210090	NIKITA SINGH	2	2	2	1	2		9
27	1708210091	NIRBHAY PAL	2	3	2		0	1	8
28	1708210092	NISHITA AGARWAL	2	1.5	3	2	2	2	12.5
29	1708210093	NITESH SAINI	1		3	1	2	1	8
30	1708210094	NITIKA RASTOGI	2	3	4	2	2	2	15
31	1708210096	NITIN CHAUHAN	1	0.5	2.5	1	1	0.5	6.5
32	1708210097	NITIN VERMA	2	1	2	1	1.5	2	9.5
33	1708210098	NIVESH KUMAR	2		2	1		2	7
34	1708210099	NUPUR GUPTA	2	3	3	2	1	2	13
35	1708210100	PALAK GOEL	A	A	A	A	A	A	A
36	1708210101	PALAK RASTOGI	2	2.5	2	0.5	1	1	9
37	1708210102	PARAS VISHNOI	2		2.5		1	1	6.5
38	1708210103	PARTH SHARMA	1					1	2
39	1708210104	PIYUSH DHAWAN	2	2.5	1	1	0	1	7.5
40	1708210105	PIYUSH SHARMA	2	1	4	0	1	0	8
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Kumar	A	A	A	A	A	A	A
42	1708210108	PRANVI JAIN	2	3	3.5	2	2	2	14.5
43	1708210109	PRASHANT KUMAR	2	2.5	3	2	2		D
44	1708210110	PRATHAM MAHESHWARI	2		1.5	0.5	2		6
45	1708210111	PRAYAG VERMA	2	2	3	2	2		D
46	1708210112	PRIYANK RAGHAV	2	2	1	0	1	1	7
47	1708210113	PUSHKAR SHARMA	2	3	3	1	1	0	10
48	1708210114	RAGHAV AGARWAL	2		1	0.5	2	2	7.5
49	1708210115	RAHUL SUKHIJA	2	2	3	2	2	2	13
50	1708210116	RANOJIT MALIK	2	3	1.5		0.5	2	9
51	1708210118	RAVI RANJAN	2	3	4	2	2	2	15
52	1708210120	RISHABH CHAUDHARY	2	3	3	2	2	0	12
53	1708210121	RISHABH KUMAR SHARMA	2	3	3	2	2	2	14
54	1708210122	RISHI RAJ SINGH	2	3	4	1	1	1	12
55	1708210123	RITIKA SAXENA	2	2	3	2	2	2	13

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In Pursuit of Excellence	**List of Weak Students** (Action taken for Improvement)	SESSION-2019-2020
		SEM-5th

Marks CT-1 Sec-B
LIST OF WEAK STUDENTS
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Total
1	1708210065	MANU PANWAR	3.5
2	1708210070	MOHD. AFZAL	D
3	1708210071	MOHD. AKIF	D
4	1708210072	MOHD. ANAS	3.5
5	1708210076	MOHD. SADIQ	D
6	1708210077	MOHD. ASIF	D
7	1708210103	PARTH SHARMA	2
8	1708210105	PIYUSH SHARMA	5
9	1708210109	PRASHANT KUMAR	D

Actions Taken:

- Improving Self-confidence and interest of student through personal counselling
- Regular discussion on performance, counseling and mentoring,

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Moradabad-244001

In Pursuit of Excellence	**List of Bright Students** (Action taken for enhancing performance)	SESSION-2019-2020
		SEM-5th

Marks CT-1 Sec-B
LIST OF BRIGHT STUDENTS
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Total
1	1708210094	NITIKA RASTOGI	**15**
2	1708210108	PRANVI JAIN	**14.5**
3	1708210118	RAVI RANJAN	**15**

Bright and diligent students are motivated and inspired to get university ranks.

Students are encouraged to take up competitive exams like GATE, GRE, TOEFL, IELTS, CAT, PGCET etc

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Moradabad-244001

Attendance Upto 17-10-2019 Sec-B
PPL (RCS-503)/PPL LAB (RCS-553)

Sno.	Roll No.	Name of Students	Lec Att	Held	PER	LAB ATT	LAB HELD
1	1708210063	LALIT KUMAR	22	29	75.86	8	8
2	1708210064	MANAS ARORA	25	29	86.21	8	8
3	1708210065	MANU PANWAR	22	29	75.86	6	8
4	1708210066	MAYANK BHATNAGAR	26	29	89.66	7	8
5	1708210067	MAYANK UPADHYAY	19	29	65.52	7	8
6	1708210068	MOHHAMMAD AMAAN	25	29	86.21	8	8
7	1708210069	MOHAMMAD ANAS	22	29	75.86	7	8
8	1708210070	MOHD. AFZAL	19	29	65.52	5	8
9	1708210071	MOHD. AKIF	21	29	72.41	8	8
10	1708210072	MOHD. ANAS	23	29	79.31	7	8
11	1708210073	MOHD. ASHIR	26	29	89.66	6	8
12	1708210074	MOHD. FARDEEN	27	29	93.10	8	8
13	1708210075	MOHD. HARIS	23	29	79.31	8	8
14	1708210076	MOHD. SADIQ	23	29	79.31	7	8
15	1708210077	MOHD. ASIF	21	29	72.41	6	8
16	1708210078	MOHD. SHOAIB	27	29	93.10	7	8
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	24	29	82.76	8	8
18	1708210080	MOHIT AGARWAL	24	29	82.76	8	8
19	1708210081	MUDIT KUMAR SHARMA	26	29	89.66	7	8
20	1708210082	MUKESH KUMAR	27	29	93.10	7	8
21	1708210083	MUKUL KUMAR	25	29	86.21	6	7
22	1708210084	MUSKAN MEHROTRA	24	29	82.76	5	7
23	1708210085	MUSKAN AGARWAL	22	29	75.86	6	7
24	1708210086	NAMAN AGARWAL	26	29	89.66	5	7
25	1708210087	NANDITA GAURI	26	29	89.66	6	7
26	1708210090	NIKITA SINGH	23	29	79.31	7	7
27	1708210091	NIRBHAY PAL	23	29	79.31	7	7
28	1708210092	NISHITA AGARWAL	28	29	96.55	6	7
29	1708210093	NITESH SAINI	25	29	86.21	6	7
30	1708210094	NITIKA RASTOGI	24	29	82.76	5	7
31	1708210096	NITIN CHAUHAN	24	29	82.76	6	7
32	1708210097	NITIN VERMA	26	29	89.66	6	7
33	1708210098	NIVESH KUMAR	22	29	75.86	6	7
34	1708210099	NUPUR GUPTA	24	29	82.76	4	7
35	1708210100	PALAK GOEL	26	29	89.66	6	7
36	1708210101	PALAK RASTOGI	23	29	79.31	5	7
37	1708210102	PARAS VISHNOI	24	29	82.76	6	7
38	1708210103	PARTH SHARMA	21	29	72.41	5	7
39	1708210104	PIYUSH DHAWAN	24	29	82.76	9	9
40	1708210105	PIYUSH SHARMA	21	29	72.41	9	9
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Ku	24	29	82.76	7	9
42	1708210108	PRANVI JAIN	22	29	75.86	8	9
43	1708210109	PRASHANT KUMAR	19	29	65.52	7	9
44	1708210110	PRATHAM MAHESHWARI	23	29	79.31	7	9
45	1708210111	PRAYAG VERMA	22	29	75.86	7	9
46	1708210112	PRIYANK RAGHAV	21	29	72.41	8	9
47	1708210113	PUSHKAR SHARMA	20	29	68.97	8	9
48	1708210114	RAGHAV AGARWAL	25	29	86.21	8	9
49	1708210115	RAHUL SUKHIJA	25	29	86.21	9	9
50	1708210116	RANOJIT MALIK	25	29	86.21	8	9
51	1708210118	RAVI RANJAN	29	29	100.00	8	9
52	1708210120	RISHABH CHAUDHARY	22	29	75.86	8	9

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53	1708210121	RISHABH KUMAR SHARMA	24	29	82.76	9	9
54	1708210122	RISHI RAJ SINGH	27	29	93.10	9	9
55	1708210123	RITIKA SAXENA	26	29	89.66	9	9

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In Pursuit of Excellence	List of Students having short attendance	SESSION-2019-2020
		SEM- 5th

Attendance Upto 17-10-2019 Sec-B
PPL (RCS-503)

Sno.	Roll No.	Name of Students	Lec Att	Held	PER
1	1708210067	MAYANK UPADHYAY	19	29	65.52
2	1708210070	MOHD. AFZAL	19	29	65.52
3	1708210071	MOHD. AKIF	21	29	72.41
4	1708210077	MOHD. ASIF	21	29	72.41
5	1708210103	PARTH SHARMA	21	29	72.41
6	1708210105	PIYUSH SHARMA	21	29	72.41
7	1708210109	PRASHANT KUMAR	19	29	65.52
8	1708210112	PRIYANK RAGHAV	21	29	72.41
9	1708210113	PUSHKAR SHARMA	20	29	68.97

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MORADABAD INSTITUTE OF TECHNOLOGY
DEPARTMENT OF Computer Science & Engineering
SESSIONAL TEST 2
Set-1

Course: B.Tech. | **Semester: 5th**
Session:2019-20 | **Section: A, B & C**
Subject: Principles of Programming Languages | **Subject Code: RCS-503**
Max. Marks: 20 | **Time: 1:15**

Q.No. :	1	2	3	4	5	6
CO No. :	CO-3	CO-4	CO-3	CO-4	CO-3	CO-4

Section A (4 Marks)

Q1. Define dynamic Scoping? Compare lifetime and scope of a variable. — 2 Mark

Q2. Distinguish between Information hiding and abstraction. — 2 Mark

Section B (6 Marks)

Q3. Point out the design issues of Subprogram. Explain the various methods of Parameter passing with examples. — 3 Mark

Q4. Illustrate: — 3 Mark
a) Mixed Mode Assignments
b) Control Structures
c) Short circuit evaluation

Section C (10 Marks)

Q5. Explain implementation of subprogram call & return with the help of diagram. Also explain the concept of CIP & CEP during subprogram call. — 5 Mark

Q6. Explain in detail: — 5 Mark
a) Semaphores
b) Monitors
c) Message Passing
d) Polymorphism
e) Inheritance

Lubain Rafaat
Subject Teacher

Shivanshu Rastogi
Subject Coordinator

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MORADABAD INSTITUTE OF TECHNOLOGY
DEPARTMENT OF Computer Science & Engineering
SESSIONAL TEST 2
Set-2

Course: B.Tech. | **Semester: 5th**
Session:2019-20 | **Section: A, B & C**
Subject: Principles of Programming Languages | **Subject Code: RCS-503**
Max. Marks: 20 | **Time: 1:15**

Q.No. :	1	2	3	4	5	6
CO No. :	CO-3	CO-4	CO-3	CO-4	CO-3	CO-4

Section A (4 Marks)

Q1. Explain generic methods with example — 2 Mark

Q2. Distinguish between Information hiding and abstraction. — 2 Mark

Section B (6 Marks)

Q3. Point out various features of object oriented programming languages — 3 Mark

Q4. Distinguish between branching and guarded statements. — 3 Mark

Section C (10 Marks)

Q5. Explain implementation of subprogram call & return with the help of diagram. Also explain the concept of CIP & CEP during subprogram call. — 5 Mark

Q6. Explain in detail exception handling using an object oriented approach. — 5 Mark

Lubna Iqbal
Subject Teacher

Shivanshu Pastogi
Subject Coordinator

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MORADABAD INSTITUTE OF TECHNOLOGY
DEPARTMENT OF Computer Science & Engineering
SESSIONAL TEST 2
Set-1

Answer-1 Define dynamic Scoping? Compare lifetime and scope of a variable.

Dynamic Scoping:
With dynamic scope, a global identifier refers to the identifier associated with the most recent environment, and is uncommon in modern languages. In technical terms, this means that each identifier has a global stack of bindings and the occurrence of an identifier is searched in the most recent binding.

The difference between lifetime and scope is quite simple. Lifetime - Refers to how long or when the variable is valid (i.e. how long will it retain its value for). **Scope - Refers to where the variable can be accessed**

Answer-2 Distinguish between Information hiding and abstraction.

ABSTRACTION	DATA HIDING
Extracts only relevant information and ignore inessential details.	Hides the data from the parts of the program.
To hide the complexity.	To achieve encapsulation.
Class uses the abstraction to derive a new user-defined datatype.	Data hiding is used in a class to make its data private.
Observable behavior of the data.	Restricting or allowing the use of data within a capsule.

Answer-3 Point out the design issues of Subprogram. Explain the various methods of Parameter passing with examples

DESIGN ISSUES FOR SUBPROGRAMS

- Subprograms are complex structures in programming languages
- An overloaded subprogram is one that has the same name as another subprogram in the same referencing environment.
- A generic subprogram is one whose computation can be don on data of different types with different calls

methods of Parameter passing

PASS BY VALUE

- When a parameter is **passed by value**, the value of the actual parameter is used to initialize the corresponding formal parameter, which then acts as a local variable in the subprogram ◆ this implements in-mode semantics.

PASS BY RESULT

- **Pass by result** is an implementation model for out-mode parameters
- When a parameter is passed by result, no value is transmitted to the subprogram
- One problem with the pass by result is that there can be an actual parameter collision such as the one created with the call

PASS BY VALUE RESULT

- **Pass by value result** is an implementation model for in-out mode parameters in which actual values are moved.
- It is a combination of pass by value and pass by result.

PASS BY REFERENCE

- **Pass by reference** is a second implementation of in-out mode parameters

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- Rather than transmitting data values back and forth, as in pass by value result, the pass by reference method transmits an access path, usually just an address, to the called subprogram. This provides the access path to the cell storing the actual parameter.

Answer-4 Illustrate:

Mixed Mode Assignments - In all languages that allow mixed-mode assignment, the coercion takes place only after the right side expression has been evaluated. For example, consider the following code: int a, b; float c; . . .

c = a / b;

– Because c is float, the values of a and b could be coerced to float before the division, which could produce a different value for c than if the coercion were delayed (for example, if a were 2 and b were 3).

Control Structures - Control Structures are just a way to specify flow of control in programs. Any algorithm or program can be clearer and more understood if they use self-contained modules called as logic or control structures. It basically analyzes and chooses in which direction a program flows based on certain parameters or conditions. There are three basic types of logic, or flow of control, known as:

1. Sequence logic, or sequential flow
2. Selection logic, or conditional flow

Short circuit evaluation- A short-circuit evaluation of an expression is one in which the result is determined without evaluating all of the operands and/or operators. For example, the value of the arithmetic expression

(13 * a) * (b / 13 - 1)

is independent of the value of (b / 13 - 1) if a is 0, because 0 * x = 0 for any x. So, when a is 0, there is no need to evaluate (b / 13 - 1) or perform the second multiplication. However, in arithmetic expressions, this shortcut is not easily detected during execution, so it is never taken.

Answer-5 Explain implementation of subprogram call & return with the help of diagram. Also explain the concept of CIP & CEP during subprogram call.

- **Implementation of simple call return subprograms:** While implementing a subprogram there are certain aspects which should be clear in mind so that what one wants to implement can do so. Some of them we are dealing:
  (1) There is distinction Between subprogram activations. The definition is what we see in the written program, which is translated in to a template. Activation is created each time a subprogram is called using the template created from the definition.
  (2) Activation is implementing as two parts a code segment containing the executable code & constants, and an activation record containing local data parameters & various other data items.
  (3) The code segment is invariant during execution. During execution it is used but never modified every activation of the subprogram uses the same code segment.
  (4) The activation record is created a new each time the subprogram is called & it is destroyed when the executing the contents of the activation's record are constantly changing.
  When a program calls a subprogram and that subprogram calls another subprogram and such sequence of calls of subprograms and statements in those subprograms are continue to execute. How, one can come to know about which subprogram is currently running and what statement and in which subprogram is currently is running(caller and called program)? For such type of requirement and to get distinguish between the current subprogram, its statements, and previous or next subprogram, its

statements we need some data structures to store such information. There are two types of system – defined pointer type variables.

- **Current Instruction Pointer (CIP)**

At any point during execution there is some instruction or command in some code segment that is currently being executed by the H/W or S/W interpreter. This instruction is termed as the current instruction or current command and a pointer to it is maintained in the variable called the current command pointer or CCP. Thus at any time it is known that which command is executed currently by this pointer.

- **Current Environment Pointer (CEP)**

Since all activation of same subprogram use the same code segment, it is not enough simply to know the current instruction or command being executed; a pointer to the activation record being used is also needed to know about the details regarding variables related to the program in current use. The activation record represents the "referencing environment" of the subprogram, so a pointer to an activation record is commonly known as a reference environment pointer. The pointer to the current activation record (or current referencing-environment) is maintained during execution in the variable we term the current reference environment pointer or CREP.

Answer-6 Explain in detail:

a) Semaphores- A semaphore is a **programming construct that helps us achieve concurrency**, by implementing both synchronization and mutual exclusion. Semaphores are of two types, Binary and Counting. A semaphore has two parts : a counter, and a list of tasks waiting to access a particular resource.

b) Monitors- In concurrent programming (also known as parallel programming), a monitor is **a synchronization construct that allows threads to have both mutual exclusion and the ability to wait (block) for a certain condition to become false**.

c) Message Passing- Message passing model **allows multiple processes to read and write data to the message queue without being connected to each other**. Messages are stored on the queue until their recipient retrieves them. Message queues are quite useful for interprocess communication and are used by most operating systems.

d) Polymorphism - Polymorphism is an object-oriented programming concept that refers to the ability of a variable, function or object to take on multiple forms. A language that features polymorphism allows developers to program in the general rather than program in the specific.

e) Inheritance - Inheritance is one of the most important aspects of Object Oriented Programming (OOP). The key to understanding Inheritance is that it provides code re-usability. In place of writing the same code, again and again, we can simply inherit the properties of one class into the other.

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Subject Teacher: Mr. Zubair Iqbal

CT-2

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ATTENDANCE SHEET

Session: 2019-20

Class Test I / II / III

Date: 22/10/19 Shift: 2nd Room No: A-316

Year: 3rd Semester: 5th Section/Branch: B

Subject Name: Principle of programming language Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210063	Lalit Kumar	14	CSE	Lalit
2.	1708210064	Manas Arora	12.5	CSE	Manas
3.	1708210065	Manu Panwar	7.5	CSE	Manwar
4.	1708210066	Mayank Bhatnagar	12	CSE	Mayank
5.	1708210067	Mayank Upadhyay	13	CSE	Mayank
6.	1708210068	Mohd Amaan	16	CSE	Mohd
7.	1708210069	Mohammad Anas	08	CSE	Anas
8.	1708210075	Mohd Haris	17	CSE	Haris
9.	1708210074	Mohd Fardeen	16	CSE	Fardeen
10.	1708210073	mohd Ashir	7	CSE	Ashir
11.	1708210072	Mohd Anas	10	CSE	Anas
12.	1708210071	Mohd Akif	10	CSE	Akif
13.	1708210070	Mohd Afzal	4.5	CSE	Afzal
14.	1708210077	Mohd. Asif	7	CSE	Asif
15.	1708210078	Mohd Shoaib	9.5	CSE	Shoaib
16.	1708210079	Mohd Suhail	11	CSE	Suhail
17.	1708210081	Mudit Kr. Sharma	12	CSE	Mudit
18.	1708210082	Muresh kumar	9	"	muresh
19.	1708210083	Mukul kumar	11	"	Mukul
20.	1708210093	Nitesh saini	12	"	Nitesh
21.	1708210092	Nishita Agarwal	15	"	Nishita
22.	1708210090	Nikita Singh	9	CSE	Nikita
23.	1708210087	Nandita Gauri	11	CSE	Nandita
24.	1708210086	Naman Agarwal	19	CSE	Naman
25.	1708210085	Muskan Agarwal	11.5	"	Muskan
26.	1708210084	Murlem Meenona	15	"	Murlem
27.	80	absent			
28.	91				
29.					
30.					

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Total No. of Students allotted in Room: 28 Students Absent: 02 Students Present: 26

Invigilators: 1) Name Vipin Kumar Sign:

2) Name Dr. Nitin Kumar Agrawal Sign:

Subject Teacher: Mr. Zubair Iqbal

MIT Group of Institutions, Moradabad

CT-2

ATTENDANCE SHEET

Session: 2019-20 | **Class Test** I / II / III

Date: 22/10/19 | **Shift:** 2nd | **Room No:** B-302

Year: 3rd | **Semester:** 5th | **Section/Branch:** B

Subject Name: Principles of Programming Languages | **Subject Code:** RCS503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210094	Nitika Rastogi	18	CSE	Nitika
2.	1708210096	Nitin Chauhan	15	"	Nitin
3.	1708210097	Nitin Verma +1	15	CSE	Nitin
4.	1708210098	Nivesh Kumar	12	C.S.E	Nivesh
5.	1708210099	Nupur Gupta	15	C.S.E	Nupur
6.	1708210100	Palak Goel	16	CSE	palak
7	1708210106	Pradeep Kumar	8	C.S.C	Pradeep Kum
8.	1708210114	Raghav Agarwal	4	CSE	Raghav
9.	1708210113	Pusukar Sharma	10	CSE	P. Sharma
10	1708210112	Priyanka Raghav	8	CSE	Priyanka
11	1708210111	Prayag Verma +1	19	CSE	Prayag
12	1708210110	Pratham Maheshwari	5	"	Pratham
13.	1708210109	Prashant Kumar	6	CSE	Prashant Kumar
14.	1708210108	Pranvi Jain	18	CSE	Pranvi
15.	1708210115	Rahul Sukhija	17	CS	Rahul
16.	1708210118	Rani Ranjan	18	CS	Rani
17.	1708210120	Rishabh Chaudhary +1	16	C.S	Rishabh Chaudhary
18.	1708210121	Rishabh Kr Sharma	18	CS	Rishabh Kr Sharma
19.	1708210122	Rishi Raj Singh	10.5	CS	Rishi Raj Singh
20.	1708210123	Ritika Saxena	17	CS	Ritika Saxena
21	1708210102	Paras Vishnoi	6	CS	Paras
22.	1708210104	Piyush Dhawan	10.5	CS	Piyush
23.	1708210105	Absent			
24.	1708210103				
25.	1708210116				
26.					
27.					
28.					
29.					
30					

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Moradabad-244001

Total No. of Students allotted in Room: 25 | Students Absent: 03 | Students Present: 22

Invigilators: 1) Name: Mandhir Singh | Sign:

2) Name: | Sign:

Marks CT-2 Sec-B

Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	CO-3	CO-4	CO-3	CO-2	CO-3	CO-4	TOTAL
			Q1	Q2	Q3	Q4	Q5	Q6	
1	1708210063	LALIT KUMAR	2	2	1	1	3	5	14
2	1708210064	MANAS ARORA	1	2	2	0.5	2	5	12.5
3	1708210065	MANU PANWAR	1	2			0.5	4	7.5
4	1708210066	MAYANK BHATNAGAR	1	2	2		3	4	12
5	1708210067	MAYANK UPADHYAY	1	2	2		4	4	13
6	1708210068	MOHHAMMAD AMAAN	1	2	3	1	4	5	16
7	1708210069	MOHAMMAD ANAS		2	2	0.5	0.5	3	8
8	1708210070	MOHD. AFZAL		0.5	2	2	0	3	7.5
9	1708210071	MOHD. AKIF	1	2		3		4	10
10	1708210072	MOHD. ANAS		2	1		3	4	10
11	1708210073	MOHD. ASHIR	1	1	1		1	3	7
12	1708210074	MOHD. FARDEEN	2	2	2	2	4	4	16
13	1708210075	MOHD. HARIS	2	2	3	1	4	5	17
14	1708210076	MOHD. SADIQ	D	D	D	D	D	D	D
15	1708210077	MOHD. ASIF	2	2			4	5	13
16	1708210078	MOHD. SHOAIB	2	2	0.5		1	4	9.5
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	2	2	0	0	3	4	11
18	1708210080	MOHIT AGARWAL	A	A	A	A	A	A	A
19	1708210081	MUDIT KUMAR SHARMA	0.5	2	1.5	0	3	5	12
20	1708210082	MUKESH KUMAR	1	2	1		3	2	9
21	1708210083	MUKUL KUMAR	1.5	1.5	1		3	4	11
22	1708210084	MUSKAN MEHROTRA	2	2	2	2	2	5	15
23	1708210085	MUSKAN AGARWAL	0.5	2	1	1	3	4	11.5
24	1708210086	NAMAN AGARWAL	2	2	3	2	5	5	19
25	1708210087	NANDITA GAURI	1	2	3	2	1	2	11
26	1708210090	NIKITA SINGH	1	2	1		1	4	9
27	1708210091	NIRBHAY PAL	A	A	A	A	A	A	A
28	1708210092	NISHITA AGARWAL	1	2	3	0	4	5	15
29	1708210093	NITESH SAINI		2	3		3	4	12
30	1708210094	NITIKA RASTOGI	1	2	3	2	5	5	18
31	1708210096	NITIN CHAUHAN	2	2	2	1	4	4	15
32	1708210097	NITIN VERMA	2	2	2	0	5	4	15
33	1708210098	NIVESH KUMAR	2	2	2		2	4	12
34	1708210099	NUPUR GUPTA	2	2	3		4	4	15
35	1708210100	PALAK GOEL	1	2	3	1	4	5	16
36	1708210101	PALAK RASTOGI	A	A	A	A	A	A	A
37	1708210102	PARAS VISHNOI		2	2	0	1	4	9
38	1708210103	PARTH SHARMA	D	D	D	D	D	D	D
39	1708210104	PIYUSH DHAWAN	2	2	1.5	0	1	4	10.5
40	1708210105	PIYUSH SHARMA	A	A	A	A	A	A	A
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Kumar	2	2	1		5	2	12
42	1708210108	PRANVI JAIN	2	2	3	2	4	5	18
43	1708210109	PRASHANT KUMAR		1	1		4	0	6
44	1708210110	PRATHAM MAHESHWARI		2	2		5	3	12
45	1708210111	PRAYAG VERMA	2	2	3	2	5	5	19
46	1708210112	PRIYANK RAGHAV	0	2	2		4	3	11
47	1708210113	PUSHKAR SHARMA	2	2	1		2	3	10
48	1708210114	RAGHAV AGARWAL	2	2	4	0		2	10
49	1708210115	RAHUL SUKHIJA	1	2	3	1	5	5	17
50	1708210116	RANOJIT MALIK	A	A	A	A	A	A	A
51	1708210118	RAVI RANJAN	2	2	3	1	5	5	18
52	1708210120	RISHABH CHAUDHARY	2	2	3	1	4	4	16
53	1708210121	RISHABH KUMAR SHARMA	2	2	3	1	5	5	18
54	1708210122	RISHI RAJ SINGH	2	2	0.5		3	3	10.5
55	1708210123	RITIKA SAXENA	2	2	3	1	4	5	17

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In Pursuit of Excellence	**List of Weak Students** (Action taken for Improvement)	SESSION-2019-2020
		SEM-5th

Marks CT-2 Sec-B
LIST OF WEAK STUDENTS
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Total
1	1708210065	MANU PANWAR	7.5
2	1708210070	MOHD. AFZAL	4.5
3	1708210073	MOHD. ASHIR	7
4	1708210076	MOHD. SADIQ	D
5	1708210077	MOHD. ASIF	7
9	1708210102	PARAS VISHNOI	6
10	1708210103	PARTH SHARMA	D
12	1708210109	PRASHANT KUMAR	6
13	1708210110	PRATHAM MAHESHWARI	5
14	1708210114	RAGHAV AGARWAL	4

Actions Taken:

- Improving Self-confidence and interest of student through personal counselling
- Regular discussion on performance, counseling and mentoring,

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In Pursuit of Excellence	**List of Bright Students** (Action taken for enhancing performance)	SESSION-2019-2020
		SEM-5th

Marks CT-2 Sec-B
LIST OF BRIGHT STUDENTS
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Total
1	1708210086	NAMAN AGARWAL	19
2	1708210094	NITIKA RASTOGI	18
3	1708210108	PRANVI JAIN	18
4	1708210111	PRAYAG VERMA	19
5	1708210118	RAVI RANJAN	18
6	1708210121	RISHABH KUMAR SHARMA	18

Bright and diligent students are motivated and inspired to get university ranks.

Students are encouraged to take up competitive exams like GATE, GRE, TOEFL, IELTS, CAT, PGCET etc

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Attendance Upto 23-11-2019 Sec-B
PPL (RCS-503)/PPL LAB (RCS-553)

Sno.	Roll No.	Name of Students	Lec Att	Held	PER	LAB ATT	LAB HELD
1	1708210063	LALIT KUMAR	30	39	76.92	10	10
2	1708210064	MANAS ARORA	33	39	84.62	10	10
3	1708210065	MANU PANWAR	30	39	76.92	8	10
4	1708210066	MAYANK BHATNAGAR	34	39	87.18	8	10
5	1708210067	MAYANK UPADHYAY	28	39	71.79	9	10
6	1708210068	MOHHAMMAD AMAAN	35	39	89.74	10	10
7	1708210069	MOHAMMAD ANAS	31	39	79.49	8	10
8	1708210070	MOHD. AFZAL	27	39	69.23	7	10
9	1708210071	MOHD. AKIF	31	39	79.49	9	10
10	1708210072	MOHD. ANAS	33	39	84.62	9	10
11	1708210073	MOHD. ASHIR	34	39	87.18	7	10
12	1708210074	MOHD. FARDEEN	37	39	94.87	10	10
13	1708210075	MOHD. HARIS	32	39	82.05	10	10
14	1708210076	MOHD. SADIQ	32	39	82.05	8	10
15	1708210077	MOHD. ASIF	30	39	76.92	7	10
16	1708210078	MOHD. SHOAIB	37	39	94.87	9	10
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	33	39	84.62	10	10
18	1708210080	MOHIT AGARWAL	33	39	84.62	10	10
19	1708210081	MUDIT KUMAR SHARMA	33	39	84.62	8	10
20	1708210082	MUKESH KUMAR	35	39	89.74	9	10
21	1708210083	MUKUL KUMAR	34	39	87.18	10	11
22	1708210084	MUSKAN MEHROTRA	33	39	84.62	8	11
23	1708210085	MUSKAN AGARWAL	30	39	76.92	10	11
24	1708210086	NAMAN AGARWAL	34	39	87.18	9	11
25	1708210087	NANDITA GAURI	35	39	89.74	9	11
26	1708210090	NIKITA SINGH	31	39	79.49	11	11
27	1708210091	NIRBHAY PAL	33	39	84.62	11	11
28	1708210092	NISHITA AGARWAL	38	39	97.44	10	11
29	1708210093	NITESH SAINI	34	39	87.18	10	11
30	1708210094	NITIKA RASTOGI	32	39	82.05	9	11
31	1708210096	NITIN CHAUHAN	33	39	84.62	10	11
32	1708210097	NITIN VERMA	35	39	89.74	10	11
33	1708210098	NIVESH KUMAR	31	39	79.49	10	11
34	1708210099	NUPUR GUPTA	32	39	82.05	7	11
35	1708210100	PALAK GOEL	35	39	89.74	10	11
36	1708210101	PALAK RASTOGI	32	39	82.05	9	11
37	1708210102	PARAS VISHNOI	33	39	84.62	10	11
38	1708210103	PARTH SHARMA	30	39	76.92	8	11
39	1708210104	PIYUSH DHAWAN	32	39	82.05	10	11
40	1708210105	PIYUSH SHARMA	30	39	76.92	11	11
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Kı	33	39	84.62	8	11
42	1708210108	PRANVI JAIN	31	39	79.49	10	11
43	1708210109	PRASHANT KUMAR	29	39	74.36	9	11
44	1708210110	PRATHAM MAHESHWARI	31	39	79.49	9	11
45	1708210111	PRAYAG VERMA	32	39	82.05	9	11
46	1708210112	PRIYANK RAGHAV	29	39	74.36	10	11
47	1708210113	PUSHKAR SHARMA	28	39	71.79	10	11
48	1708210114	RAGHAV AGARWAL	33	39	84.62	10	11
49	1708210115	RAHUL SUKHIJA	34	39	87.18	11	11
50	1708210116	RANOJIT MALIK	33	39	84.62	9	11
51	1708210118	RAVI RANJAN	39	39	100.00	10	11
52	1708210120	RISHABH CHAUDHARY	32	39	82.05	9	11
53	1708210121	RISHABH KUMAR SHARMA	33	39	84.62	11	11
54	1708210122	RISHI RAJ SINGH	36	39	92.31	11	11
55	1708210123	RITIKA SAXENA	36	39	92.31	10	11

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In Pursuit of Excellence	List of Students having short attendance	SESSION-2019-2020 SEM- 5th

Attendance Upto 23-11-2019 Sec-B
PPL (RCS-503)

Sno.	Roll No.	Name of Students	Lec Att	Held	PER
1	1708210067	MAYANK UPADHYAY	28	39	71.79
2	1708210070	MOHD. AFZAL	27	39	69.23
3	1708210109	PRASHANT KUMAR	29	39	74.36
4	1708210112	PRIYANK RAGHAV	29	39	74.36
5	1708210113	PUSHKAR SHARMA	28	39	71.79

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Moradabad-244001

MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF Computer Science & Engineering

SESSIONAL TEST 3

Set-1

Course: B.Tech. | **Semester: 5th**

Session:2019-20 | **Section: A, B & C**

Subject: Principles of Programming Languages | **Subject Code: RCS-503**

Max. Marks: 20 | **Time: 1:15**

Q.No. :	1	2	3	4	5	6
CO No. :	CO-4	CO-5	CO-5	CO-5	CO-4	CO-5

Section A (4 Marks)

Q1. Compare and contrast widening and narrowing? 2 Mark

Q2. What is lambda calculus? Write a note on free and bound variables in lambda calculus. 2 Mark

Section B (6 Marks)

Q3. Illustrate programming constructs of LISP and PYTHON. Define a procedure in LISP or PYTHON to calculate cube of a number. 3 Mark

Q4. Evaluate 1 PLUS 2 using lambda calculus 3 Mark

Section C (10 Marks)

Q5. Compare C, C++ and LISP on the basis of various attributes. 5 Mark

Q6. Describe logic programming? Explain with example. Also differentiate it with concurrent programming in terms of application areas 5 Mark

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MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF Computer Science & Engineering

SESSIONAL TEST 3

Set-2

Course: B.Tech.
Session:2019-20
Subject: Principles of Programming Languages
Max. Marks: 20

Semester: 5th
Section: A, B & C
Subject Code: RCS-503
Time: 1:15

Q.No. :	1	2	3	4	5	6
CO No. :	CO-4	CO-5	CO-5	CO-5	CO-4	CO-5

Section A (4 Marks)

Q1. What is the difference between type checking and type conversion with examples — 2 Mark

Q2. What is lambda calculus? Write down its uses. Discuss the various reduction operations performed on Lambda expression. — 2 Mark

Section B (6 Marks)

Q3. Discuss about the fundamentals of functional programming languages. — 3 Mark

Q4. Evaluate 3 PLUS 4 using lambda calculus — 3 Mark

Section C (10 Marks)

Q5. Explain two functional programming languages in details — 5 Mark

Q6. What is logic programming? Explain with example. Discuss the normal forms in propositional logic and the conversion procedure to normal form. — 5 Mark

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MORADABAD INSTITUTE OF TECHNOLOGY
DEPARTMENT OF Computer Science & Engineering
SESSIONAL TEST 3 Solution
Set-1

Answer-1 Compare and contrast widening and narrowing?

Widening conversions preserve the source **value** but can change its representation. This occurs if you convert from an integral type to Decimal, or from Char to String. A narrowing conversion changes a value to a data type that might not be able to hold some of the possible values.

Answer-2 What is lambda calculus? Write a note on free and bound variables in lambda calculus.

The λ calculus can be called the smallest universal programming language of the world. The λ calculus consists of a single transformation rule (variable substitution) and a single function definition scheme. It was introduced in the 1930s by Alonzo Church as a way of formalizing the concept of effective computability. The λ calculus is universal in the sense that any computable function can be expressed and evaluated using this formalism. It is thus equivalent to Turing machines. However, the λ calculus emphasizes the use of transformation rules and does not care about the actual machine implementing them. It is an approach more related to software than to hardware

In λ calculus all names are local to definitions. In the function λx.x we say that x is "bound" since its occurrence in the body of the definition is preceded by λx. A name not preceded by a λ is called a "free variable". In the expression (λx.xy) the variable x is bound and y is free. In the expression (λx.x)(λy.yx) the x in the body of the first expression from the left is bound to the first λ. The y in the body of the second expression is bound to the second λ and the x is free. It is very important to notice that the x in the second expression is totally independent of the x in the first expression.

Answer-3 Illustrate programming constructs of LISP and PYTHON. Define a procedure in LISP or PYTHON to calculate cube of a number.

- Symbolic computation is difficult to be performed in Python Programming language whereas is it is much easier to be performed in Lisp Programming Language.
- Symbolic computation happens naturally in the Lisp programming language, whereas it doesn't happen naturally in the Python Programming language.
- Domain-Specific languages take longer in Python programming language, whereas it is less time-consuming in Lisp Programming language.
- The Python programming language's performance is less when compared to the performance of the Lisp Programming language.
- There are no macros in Python Programming language, whereas Lisp Programming language consists of macros.
- Pre-defined syntaxes must be used in Python Programming language, whereas own syntaxes can be written in Lisp Programming language.
- There are limitations on using only the available features in the Python programming language because pre-defined features and syntaxes must only be used in the Python Programming language.
- There are no limitations on using only the Lisp Programming language's available features because own syntaxes can be written in Lisp Programming language.
- The Lisp programming language can be customized, whereas it is not possible to customize the Python Programming language.
- Lisp programming language consists of multiline anonymous functions, whereas Python programming language does not consist of multiline anonymous functions.
- Lisp programming language is more suitable for metaprogramming when compared to Python programming language.

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Python Program to Find Cube of a Number

```
1. def cube(x):
2. return x * x * x.
3. n = int(input(" Enter the number : "))
4. cube1 = cube(n)
5. print("The Cube of {0} = {1}". format(n, cube1))
```

LISP Program to Find Cube of a Number

```
(defun triple (X)(* 3 X))
```

Answer-4 Evaluate 1 PLUS 2 using lambda calculus

$1 \rightarrow \lambda sz.sz$

$2 \rightarrow \lambda ab.aab$

Plus function $\rightarrow \lambda mnfx.nf(mfx)$

1 Plus 2

$((\lambda mnfx.nf(mfx)\ \lambda sz.sz)\ \lambda ab.aab)$

$\lambda nfx.nf(\lambda sz.sz\ fx)\ \lambda ab.aab)$

$\lambda nfx.nf\ fx)\ \lambda ab.aab$

$\lambda fx.(\lambda ab.aab)f)f)x$

$\lambda fx.\lambda b.ffb)f)x$

$\lambda fx.fffb = (3)$

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Answer-5 Compare C, C++ and LISP on the basis of various attributes.

No.	Attribute	Other languages	Multi-Paradigm Languages	
		C	C++	Lisp
1	Paradigm	C is procedural programming language	C++ is a multi-paradigm language i.e., it supports both procedural and object-oriented programming paradigm	It support both functional and object-oriented programming paradigm
2	Types	C is middle level language	C++ is a high level language	LISP is a high level language
3	Function	Concept of virtual function is not present in C	C++ offers the facility of using virtual functions	LISP also supports virtual function known as generic function
4	Approach	C programs use top-down approach	C++ programs use bottom-up approach	Programs in LISP are bottom-up approach
5	Extension	C program are saved in files with extension .c	C++ programs are saved in files with extension .cpp	LISP programs are saved in files with extension .lisp
6	Object-oriented feature	In C, polymorphism and inheritance is not possible	C++ supports both polymorphism and inheritance	LISP supports both polymorphism and inheritance
7	Data Type	C supports only built-in data types	C++ supports both built-in and user defined data types	LISP supports both built-in and user defined data types

Answer-6 Describe logic programming? Explain with example. Also differentiate it with concurrent programming in terms of application areas

Logic programming is a programming paradigm which is largely based on formal logic. Any program written in a logic programming language is a set of sentences in logical form, expressing facts and rules about some problem domain. Major logic programming language families include Prolog, answer set programming (ASP) and Datalog. In all of these languages, rules are written in the form of *clauses*:

concurrent programming, computer programming in which, during a period of time, multiple processes are being executed. For example, two processes can be interleaved so that they are executed in turns. Parallel computing is similar but with multiple processes being executed at the same time on multiple processors, where more than one processor is used to execute a program or complex of programs running simultaneously. The term *parallel computing* is also used for programming designed for a multitasking environment, where two or more programs share the same memory while running concurrently.

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Moradabad-244001

Subject Teacher: Mr. Zubair Iqbal

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20 Class Test I / II / III ✓

Date: 28/11/19 Shift: II Room No: A-316

Year: III Semester: V Section/Branch: B/CS

Subject Name: Principles of programming languages Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210063	Lalit Kumar	12	CSE	Lalit
2.	1708210068	Mohd Amaan	14	CSE	Mohd Amaan
3.	1708210076	Mohd - Sadiq	12	CSE	Sadiq
4.	1708210077	Mohd. Asif	04	CSE	Mohd Asif
5.	1708210074	Mohd Fardeen	14	CSE	Fardeen
6.	1708210073	Mohd Ashir	03	CSE	Ashir
7.	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
8.	1708210080	Mohit Agarwal	10	CSE	Mohit
9.	1708210087	Nandita Gauri	13	CSE	Nandita
10.	1708210090	Nikita Singh	16	CSE	Nikita
11.	1708210091	Nirbhay Pal	12	CSE	Nirbhay
12.	1708210064				
13.	65				
14.	66				
15.	67				
16.	69				
17.	71				
18.	72				
19.	75	ABSENT			
20.	78				
21.	79				
22.	81				
23.	82				
24.	83				
25.	84				
26.	85				
27.	86				
28.	92				
29.	93				
30.					

1708210070 DEBARRED

Dr. Somesh Kumar
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Moradabad Institute of Technology
Moradabad-244001

Total No. of Students allotted in Room: 28 Present: 18 Absent: 10

Invigilators: 1) Name: Khilendra Singh Sign:

2) Name: Himanshu Agarwal Sign: HAgg

70

Subject Teacher: Mr. Zubair Iqbal

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20 | Class Test I / II / III ✓

Date: 28/11/2019 | Shift: II nd | Room No: B-302

Year: 3 | Semester: 5th | Section/Branch: B/CS

Subject Name: Principles of Programming Language | Subject Code: RCS-503

S. No	Roll No.	Name of Student		Branch	Signature
1.	1708210098	Nivesh Kumar	9	C.S.E	Nivesh
2.	1708210100	Palak Goel	11	"	Palak
3.	1708210101	Palak Rastogi	07	CSE	Palak
4.	1708210103	Parth Sharma	04	C.S.E	Parth
5.	1708210105	Piyush Sharma	08	CSE	Piyush
6.	1708210106	Pradeep Kumar	08	C.S.E	Pradeep
7.	1708210116	Ranojit Malik	13	C.S.E	Ranojit
8.	1708210094	Absent			
9.	1708210096	Absent			
10.	1708210097	Absent			
11.	1708210099	Absent			
12.	1708210102	Absent			
13.	1708210104	Absent			
14.	1708210108	Absent			
15.	1708210110	Absent			
16.	1708210111	Absent			
17.	1708210112	Absent			
18.	1708210113	Absent			
19.	1708210114	Absent			
20.	1708210115	Absent			
21.	1708210118	Absent			
22.	1708210120	Absent			
23.	1708210121	Absent			
24.	1708210122	Absent			
25.	1708210123	Absent			
26.					
27.					
28.					
29.					
30.					

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Moradabad-244001

Total No. of Students allotted in Room: 25 | Students Absent: 18 | Students Present: 07

Invigilators: 1) Name Dr. Nitin Kumar Agrawal | Sign:

2) Name | Sign:

Marks CT-3 Sec-B
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	CO-4	CO-5	CO-4	CO-5	CO-4	CO-5	
			Q1	Q2	Q3	Q4	Q5	Q6	TOTAL
1	1708210063	LALIT KUMAR	1	1	1		4	5	**12**
2	1708210064	MANAS ARORA	AB	AB	AB	AB	AB	AB	AB
3	1708210065	MANU PANWAR	AB	AB	AB	AB	AB	AB	AB
4	1708210066	MAYANK BHATNAGAR	AB	AB	AB	AB	AB	AB	AB
5	1708210067	MAYANK UPADHYAY	AB	AB	AB	AB	AB	AB	AB
6	1708210068	MOHHAMMAD AMAAN	2	2	1	3	3	3	**14**
7	1708210069	MOHAMMAD ANAS	AB	AB	AB	AB	AB	AB	AB
8	1708210070	MOHD. AFZAL	2	2	3		3	3	**13**
9	1708210071	MOHD. AKIF	AB	AB	AB	AB	AB	AB	AB
10	1708210072	MOHD. ANAS	AB	AB	AB	AB	AB	AB	AB
11	1708210073	MOHD. ASHIR		1				2	**3**
12	1708210074	MOHD. FARDEEN	1	1.5	1	3	3.5	4	**14**
13	1708210075	MOHD. HARIS	AB	AB	AB	AB	AB	AB	**AB**
14	1708210076	MOHD. SADIQ	1	2			5	3	**11**
15	1708210077	MOHD. ASIF		1		3			**4**
16	1708210078	MOHD. SHOAIB	AB	AB	AB	AB	AB	AB	AB
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	AB	AB	AB	AB	AB	AB	AB
18	1708210080	MOHIT AGARWAL		2		3	1	4	**10**
19	1708210081	MUDIT KUMAR SHARMA	AB	AB	AB	AB	AB	AB	AB
20	1708210082	MUKESH KUMAR	AB	AB	AB	AB	AB	AB	AB
21	1708210083	MUKUL KUMAR	AB	AB	AB	AB	AB	AB	AB
22	1708210084	MUSKAN MEHROTRA	AB	AB	AB	AB	AB	AB	AB
23	1708210085	MUSKAN AGARWAL	AB	AB	AB	AB	AB	AB	AB
24	1708210086	NAMAN AGARWAL	AB	AB	AB	AB	AB	AB	AB
25	1708210087	NANDITA GAURI	1	2	3		4	3	**13**
26	1708210090	NIKITA SINGH	2	2		3	4	5	**16**
27	1708210091	NIRBHAY PAL		2		3	4	3	**12**
28	1708210092	NISHITA AGARWAL	AB	AB	AB	AB	AB	AB	AB
29	1708210093	NITESH SAINI	AB	AB	AB	AB	AB	AB	AB
30	1708210094	NITIKA RASTOGI	AB	AB	AB	AB	AB	AB	AB
31	1708210096	NITIN CHAUHAN	AB	AB	AB	AB	AB	AB	AB
32	1708210097	NITIN VERMA	AB	AB	AB	AB	AB	AB	AB
33	1708210098	NIVESH KUMAR		2	1	3		3	**9**
34	1708210099	NUPUR GUPTA	AB	AB	AB	AB	AB	AB	AB
35	1708210100	PALAK GOEL		2	2	3	1	3	**11**
36	1708210101	PALAK RASTOGI		2	1		2	2	**7**
37	1708210102	PARAS VISHNOI	AB	AB	AB	AB	AB	AB	**AB**
38	1708210103	PARTH SHARMA		2	1		1		**4**
39	1708210104	PIYUSH DHAWAN	AB	AB	AB	AB	AB	AB	AB
40	1708210105	PIYUSH SHARMA	1	1	1		2	3	**8**
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Kumar		1		2	3	2	**8**
42	1708210108	PRANVI JAIN	AB	AB	AB	AB	AB	AB	AB
43	1708210109	PRASHANT KUMAR	D	D	D	D	D	D	**D**
44	1708210110	PRATHAM MAHESHWARI	AB	AB	AB	AB	AB	AB	AB
45	1708210111	PRAYAG VERMA	AB	AB	AB	AB	AB	AB	AB
46	1708210112	PRIYANK RAGHAV	AB	AB	AB	AB	AB	AB	AB
47	1708210113	PUSHKAR SHARMA	AB	AB	AB	AB	AB	AB	AB
48	1708210114	RAGHAV AGARWAL	AB	AB	AB	AB	AB	AB	AB
49	1708210115	RAHUL SUKHIJA	AB	AB	AB	AB	AB	AB	AB
50	1708210116	RANOJIT MALIK	1	2		3	2	5	**13**
51	1708210118	RAVI RANJAN	AB	AB	AB	AB	AB	AB	AB
52	1708210120	RISHABH CHAUDHARY	AB	AB	AB	AB	AB	AB	AB
53	1708210121	RISHABH KUMAR SHARMA	AB	AB	AB	AB	AB	AB	AB
54	1708210122	RISHI RAJ SINGH	AB	AB	AB	AB	AB	AB	AB
55	1708210123	RITIKA SAXENA	AB	AB	AB	AB	AB	AB	AB

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In Pursuit of Excellence	**List of Weak Students** (Action taken for Improvement)	SESSION-2019-2020
		SEM-5th

Marks CT-3 Sec-B
LIST OF WEAK STUDENTS
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Total
1	1708210065	MANU PANWAR	0
2	1708210077	MOHD. ASIF	4
3	1708210103	PARTH SHARMA	4
4	1708210109	PRASHANT KUMAR	0

Actions Taken:

- Improving Self-confidence and interest of student through personal counselling
- Regular discussion on performance, counseling and mentoring,

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MORADABAD INSTITUTE OF TECHNOLOGY

DEPARTMENT OF Computer Science & Engineering

SESSIONAL TEST MAKE-UP

Set-1

Course: B.Tech. | **Semester: 5th**

Session:2019-20 | **Section: A, B & C**

Subject: Principles of Programming Languages | **Subject Code: RCS-503**

Max. Marks: 20 | **Time: 1:15**

Q.No. :	1	2	3	4	5
CO No. :	CO-1	CO-1	CO-1	CO-1	CO-1

1	Explain the attributes of good programming language in detail.	4 Marks
2	Explain Language paradigm in detail with examples of each. Also Define Cost in reference to PL.	4 Marks
3	Distinguish between Information hiding and abstraction	4 Marks
4	What are the reasons for studying concept of programming language?	4 Marks
5	Explain different aspect of the cost of a programming language?	4 Marks

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Moradabad-244001

Subject Teacher: Mr. Zubair Iqbal.

MIT Group of Institutions, Moradabad

ATTENDANCE SHEET

Session: 2019-20

Date: 2/12/19 **Shift:** — **Class Test I / II / III**

Year: 3rd. **Semester:** 5th. **Room No:** B-120

Subject Name: Principle of Programming Languages **Section/Branch:** B/CS

Subject Code: RCS-503

S. No	Roll No.	Name of Student	Branch	Signature
1.	1708210103	Parth Sharma	C.S	Parth
2.	1708210076	Mohd sadiq	C.S.E	M.Sadiq
3.	1708210071	Mohd Akif	C.S.E	Akif
4.	1708210109	Prashant Kumar	C.S.E	Prashant Kumar
5.				
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Total No. of Students allotted in Room: _____ Students Absent: _____ Students Present: _____

Invigilators: 1) Name _____ Sign: _____

2) Name _____ Sign: _____

Marks Makeup CT Sec-B
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	CO-4	CO-5	CO-4	CO-5	CO-4	CO-5	TOTAL
			Q1	Q2	Q3	Q4	Q5	Q6	
1	1708210071	MOHD. AKIF	3	2	2	2	2		11
2	1708210076	MOHD. SADIQ	3		2	2	3		10
3	1708210103	PARTH SHARMA	3	3	3	3		3	15
4	1708210109	PRASHANT KUMAR	3	3	3	3	3		15

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Moradabad-244001

In Pursuit of Excellence	**Previous Year Question Papers**	SESSION-2019-2020
		SEM-5th

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Moradabad Institute of Technology
Moradabad-244001

Printed Pages: 3 | 385 | NCS-503

(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID :110503 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. V) THEORY EXAMINATION, 2015-16

PRINCIPLE OF PROGRAMMING LANGUAGE

[Time:3 hours] [MaximumMarks:100

Section-A

Q.1 Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

(a) What are objectives of principles of programming language?

(b) Compute the weakest precondition of the following assignment a=2*(b-1)-1 (a>0)

(c) What are the different forms of statement-level sequence control?

(d) Mention the components of referencing environment.

(e) What are imperative languages?

(f) Differentiate between compiler and interpreter.

(g) Define methods and objects in C++ language.

(h) What do you mean by primitive data type?

(i) Specify two differences between procedural and object oriented language.

(j) Define lambda calculus.

Section-B

Attempt any five Questions from this section: (10×5-50)

Q.2 Waht are the different mechanisms for storage representation of structured data types? Also explain any two major storage management issues.

Q.3 Explain the evolution of various programming paradigms in detail with suitable examples.

Q.4 What are various fields of an activation record? Explain how activation record will look like for every recursive call in case of factorial (5). Also draw activation tree for the same.

Q.5 Describe sequence control in various statements with suitable examples.

Q.6 Consider the following grammar rule : $E \rightarrow E+E \mid E*E \mid (E) \mid id$. Check for the embiguity for the following sequence of tokens and eliminate the ambiguity if present. (idf + id * id)

Q.7 Compare C, C++ and LISP on the basis of various attributes.

Q.8 By taking a suitable example of your own choice, explain the following :

a) Private, Public, protected access specifiers.

b) Function overloading and operator overloading.

Q.9 Describe different methods of passing parameters with examples.

Section-C

Attempt any two questions from this section : **(2×15=30)**

Q.10 Give the complete translation structure of the following statement :

Result = start * 10 + phase * 20

Q.11 Write a recursive program to find length of a list in LISP.

Q.12 Write a short note on :

a) Denotational semnatics and operational semantics.

b) Real life example of client server model in network programming.

c) Need and syntax lambda calculus.

—×—

Printed Pages: 3

NCS-503

(Following Paper ID and Roll No. to be filled in your Answer Books)

Paper ID : 2012277 Roll No. | | | | | | | | | |

B.TECH.

Regular Theory Examination (Odd Sem - V), 2016-17

PRINCIPLES OF PROGRAMMING LANGUAGE

Time : 3 Hours *Max. Marks : 100*

SECTION - A

1. Attempt all parts. All parts carry equal marks. Write answer of each part in short. (10×2=20)

a) Write any four important uses of programming languages.

b) Compare the weakest precondition of the following assignment a = 2 * (b – 1) – 1 (a > 0).

c) What are the advantages of inheritance?

d) Mention the component of referencing environment.

e) What is an imperative language?

f) Define encapsulation. With suitable example.

g) Differentiate between compiler and interpreter.

h) What do you mean by primitive data type?

i) What is a simple list?

j) Define lambda calculus.

SECTION - B

Note : Attempt any five questions from this section.

(5×10=50)

2. What are the various mechanism for storage representation of structured data types? Also explain any two major storage management issues.

3. Describe implementation of simple sub programs.

4. What are the key features supported by object oriented programming languages? Explain with example.

5. Describe sequence control with various examples.

6. Write a recursive program to find the length of a list in LISP.

7. What is Lambda? Discuss briefly. Use β-reductions to simplify the following expression as much as possible ((lambda (x) (x(yx)))z).

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SECTION - C

Note: Attempt any 2 questions from this section. (2×15=30)

8. Give the complete translation structure of the following statement :

Result = start * 10 + phase * 20.

OR

Mention some multi-paradigm languages. How they are different from other languages? Explain the features and structures of multi-paradigm language.

9. Discuss about the fundamentals of functional programming languages.

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Printed pages:2
Paper ID:1038

Sub Code: NCS-503
Roll No. | | | | | | | | | | |

B.TECH.
(SEM-V) THEORY EXAMINATION 2017-18
PRINCIPLES OF PROGRAMMING LANGUAGES

TIME: 3 Hours **TOTAL MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION- A

1. Attempt *all* questions in brief: **2X10=20**

(a) How does the programming environment influence the language design?
(b) Explain the term language semantics.
(c) Explain the public, private and protected access specifiers.
(d) Define bootstrapping.
(e) Discuss the need of language translators.
(f) Differentiate between compiler and interpreter.
(g) What is an inline function?
(h) Write down the different properties of a constructor.
(i) Define a procedure in LISP to calculate cube of a number.
(j) What is an abstract data type?

SECTION-B

2. Note: Attempt any *three* of the following: **10X3=30**

(a) Explain the structure or phases of a compiler.
(b) Explain the facts and rules in Prolog with suitable example.
(c) Explain different ways of storage representation of data structure.
(d) What are the general syntactic criteria of a programming language?
(e) What are the various fields of an activation record? Explain how activation record looks like for every recursive call in case of factorial. Also draw activation tree for the same.

SECTION-C

3. Attempt any *one* part of the following: **10X1=10**
(a) What is lambda calculus? Write a note on free and bound variables in lambda calculus.
(b) Explain the concept of inheritance and its types with suitable example of each of them.

4. Attempt any *one* part of the following: **10X1=10**
(a) Describe subprogram control and its types in detail with the help of an example of each of them.
(b) Explain the various programming language paradigms.

5. Attempt any *one* part of the following: **10X1=10**
(a) Differentiate between call by value and call by reference parameter passing mechanism with the

help of suitable example.
(b) Explain the structure of List used in LISP. Also discuss the commonly used list manipulation functions.

6. Attempt any *one* part of the following: **10X1=10**
(a) Describe sequence control in various statements with suitable examples.
(b) Write a Recursive Lisp function to find largest number from a given list.

7. Attempt any *one* part of the following: **10X1=10**
(a) Explain the concept of subtyping with suitable example. Also explain the properties of subtyping.
(b) Write short note on-
(i) Variables, constants and literals for a language.
(ii) Compare C, C++ and LISP on the basis of various attributes.

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Paper Id: 110519 | Roll No: | | | | | | | | | | |

B TECH
(SEM V) THEORY EXAMINATION 2018-19
PRINCIPLES OF PROGRAMMING LANGUAGES

Time: 3 Hours | *Total Marks: 100*

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.
2. Any special paper specific instruction.

SECTION A

1. Attempt *all* questions in brief. **2 x10 = 20**

a. Give an example of prime program.
b. What are the Abstract data types?
c. List the problems that arise in the evaluation of tree representation of expression.
d. Write about the concept of Enumerations with examples.
e. Compare and contrast widening and narrowing?
f. Write a short note on Halting Problem.
g. Discuss the concept of sub typing.
h. State the concept of Bootstrapping?
i. List various characteristics of a good programming language.
j. Illustrate the concept of dangling else?

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a. What do you mean by typed lambda calculus? Explain the concept of currying.
b. Discuss the difference between records and variant records.
c. What is the difference between type checking and type conversion with examples.
d. List concurrent programming. What is deadlock? What are the necessary conditions for deadlock to occur?
e. Enlist different syntactic elements and explain any three with suitable example.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

(a) The "91-function", attributed to John McCarthy, is defined by

Fun f(x) =

If x>100 then x-10 else f(f(x+11)

In this context discuss various approaches to expression evaluation and evaluate the above function using innermost and outermost evaluation of f (100).

(b) What is logic programming? Explain with example. Discuss the normal forms in propositional logic and the conversion procedure to normal form.

4. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Differentiate between scope and lifetime of a variable with suitable example.

(b) Language paradigm is based on four basic computational models namely imperative or procedural languages, applicative languages, rule based languages and object oriented languages. Briefly discuss about all these four computational models.

5. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain attribute grammar. Discuss its significance. What do you understand by denotational semantics?

(b) Explain network programming. How communication is established with remote system using UDP? Write steps for both server and client.

6. Attempt any *one* part of the following: **10 x 1 = 10**

(a) Explain the various methods of Parameter transmission with examples.
(b) What is lambda calculus? Write down its uses. Discuss the various reduction operations performed on Lambda expression.

7. Attempt any *one* part of the following: **10 x 1 = 10**

(a) **i)** Derive & discuss the generalized formula to calculate the location of an element in 2-D array.
ii) An array VAL [-2…10] [-4…12] is stored in the memory with each element requiring 4 bytes of storage. If the base address of the array VAL is 1500, determine the location of VAL [4] [6] when the array VAL is stored
(i) Row wise **(ii)** Column wise.

(b) Give the complete translation structure of the following statement (**show all steps**):

Result=start*10 + phase *20.

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In Pursuit of Excellence	**QUESTION BANK**	SESSION-2019-2020 SEM-5th

UNIT 1

SHORT ANSWER QUESTIONS:

1. Why is it useful for a programmer to have some background in language design, even though he or she may never actually design a programming language
2. How can knowledge of programming language characteristics benefit the whole computing community?
3. What language was the first to support the three fundamental features of object-oriented programming
4. What are the three fundamental features of an object-oriented programming language
5. Define Syntax and Semantics.
6. Who are language descriptions for?
7. Describe the operation of a general language generator.
8. Describe the operation of a general language recognizer.
9. What is the difference between a sentence and a sentential form?
10. What the primary use of attribute grammars?
11. Describe the two levels of uses of operational semantics.
12. On what branch of math is axiomatic semantics based?
13. What is the use of the WP function? Why it is called a predicate transformer?
14. Give the difference between total correctness and partial correctness.
15. What are the design issues for names?

LONG ANSWER QUESTIONS:

1. What are the formal methods of describing the syntax? Explain the Grammar.
2. What are the rules of EBNF. Explain in detail the advantage and disadvantage of EBNF .Compare the BNF with EBNF
3. Explain Dynamic semantics
4. What is Parsing problem? What are the two parsing algorithms what are the complexities of Parsing process
5. What is Lexical Analyzer .What are the approaches for building a lexical analyser. Implement using an example using state diagram
6. Explain Attribute Grammar
7. Explain life time .What is Referencing environment
8. Explain Semantics .What are the various methods
9. What is recursive Parsing
10. What is bottom Parsing

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In Pursuit of Excellence	**QUESTION BANK**	SESSION-2019-2020 SEM-5th

UNIT - 2

SHORT ANSWER QUESTIONS:

1. What are the advantages and disadvantages of decimal data types?
2. What are the design issues for character string types?
3. Describe the three string length option.
4. Describe ordinal, enumeration, and subrange types.
5. What are the advantages of user-defined enumeration types?
6. What are the design issues for arrays?
7. Define row major order and column major order.
8. Define fully qualified and elliptical references to fields in records.
9. Define union, free union and discriminated union.
10. What are the design issues for unions?
11. What is a compatible type?
12. Define type error.
13. Define strongly typed.
14. What is a ternary operator?
15. What is a prefix operator?
16. What operator usually has right associatively?
17. What is no associative operator?
18. What is a conditional expression?
19. What is short-circuiting evaluation?
20. What is cast?

LONG ANSWER QUESTIONS:

1. Explain briefly about scope and its lifetime
2. What is binding .How the variables are binded. What are the various methods of binding?
3. Explain in detail the Pointers and References
4. Explain in detail the attribute grammar
5. Explain Arithmetic expression? Explain with example Relational and Boolean Expressions.
6. What is meant by data type?What are the various Primitive Data type .Evaluate the various data types
7. Explain briefly about control Structures
8. Explain Overloaded Operators
9. What is Selection? Explain various branching Statements
10. What are the various assignments statements

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In Pursuit of Excellence	**QUESTION BANK**	SESSION-2019-2020 SEM-5th

UNIT- 3

SHORT ANSWER QUESTIONS:

1. What are the three general characteristics of subprograms?
2. What are formal parameters? What are actual parameters?
3. What are the differences between a function and a procedure?
4. What are the design issues for subprograms? What is an overloaded subprogram?
5. What is ad hoc binding?
6. What is multicast delegate?
7. What exactly is a delegate?
8. What is a closure?
9. Which of the caller or callee saves execution status information?
10. What is the task of a linker?
11. What is the difference between an activation record and an activation record instance?
12. What kind of machines often use registers to pass parameters?
13. What is an EP, and what is its purpose?
14. What are the issues of Subprogram
15. What is Local referencing
16. What is Global referencing
17. What are design issues of functions
18. What is Dynamic scoping
19. Write an example of call and return statements
20. What is Stack and dynamic local variables

LONG ANSWER QUESTIONS:

1. What is subprogram Explain with an example
2. What are the design issues of subprogram
3. What are the various parameter Passing methods Explain with an example
4. What is overloaded methods .Explain the generic methods
5. Explain the design issues of functions
6. What is Semantic call .Explain?
7. Implant the various subprogram
8. Explain stack and dynamic variables
9. Explain the nested subprograms
10. What is dynamic scoping

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In Pursuit of Excellence	QUESTION BANK	SESSION-2019-2020 SEM-5th

UNIT-4

SHORT ANSWER QUESTIONS:

1. What are the two kinds of abstractions in programming language?
2. Define abstract data type.
3. What is the difference between private and limited private types in Ada?
4. What is the use of the Ada with clause?
5. What is the use of the Ada use clause?
6. What is the fundamental difference between a C++ class and an Ada package?
7. What is the purpose of a C++ destructor?
8. What are the legal return types of a destructor?
9. What are initializes in Objective-C?
10. What is the use of @private and @public directives?
11. Where are all Java methods defined?
12. What is a friend function? What is a friend class?
13. What is a C++ namespace, what is its purpose?
14. What is the advantage of inheritance?
15. What is message protocol?
16. What is an overriding method?
17. What is dynamic dispatch?
18. From where are Smalltalk objects allocated?
19. What kind of inheritance, single or multiple, does Smalltalk support?
20. How are C++ heap-allocated objects de allocated?

LONG ANSWER QUESTIONS:

1. What are the design issues of OOP languages
2. Implement the oops constructor
3. Explain with an example Concurrency
4. Explain with an example about semaphores
5. Explain with an example monitors
6. Explain with an example about message passing
7. What is Thread explain
8. What are the various methods of Exception handling
9. What is State level concurrency
10. What is Event handling

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In Pursuit of Excellence	**QUESTION BANK**	SESSION-2019-2020 SEM-5th

Unit-5

SHORT ANSWER QUESTIONS:

1. What data types were parts of the original LISP?
2. Explain why QUOTE is needed for a parameter that is a data list.
3. What is a simple list?
4. -What does the abbreviation REPL stand for?
5. What are the two forms of DEFINE?
6. Why are CAR and CDR so named?
7. What is tail recursion? Why is it important to define functions that use recursion to specify repetition to be tail recursive?
8. Why were imperative features added to most dialects of LISP?
9. What is type inferencing, as used in ML?
10. What is a curried function?
11. What does partial evaluation mean?
12. -. What is the use of the evaluation environment table?
13. - . Explain the process of currying.
15. What is exception propagation in Ada?
16. What is the scope of exception handlers in Ada
17. What are the four exceptions defined in the Standard package of Ada?
18. What is the use of Suppress pragma in Ada?-
19. What is the name of all C++ exception handlers?
20. What is the use of the assert statement?

LONG ANSWER QUESTIONS:

1. What is lamda? Describe briefly
2. Write the fundamentals of FP languages
3. Write a Program with scheme
4. Explain in brief about programming with ML
5. Describe Logic and Logic Programming
6. Explain Prolog
7. What are the Multi paradigm languages
8. Explain the various programming languages
9. Write a program in scheme
10. Write a program using prolog.

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In Pursuit of Excellence	**Final Internal Marks**	SESSION-2019-2020
		SEM-5th

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Moradabad Institute of Technology, Moradabad
Department of Computer Science & Engineering
Theory Subject Marks
Principles of Programming Languages (RCS-503)

Sno.	Roll No.	Name of Students	Class Test Marks				CT Best(20)	Attendance AT(5)	Tutorial and assignment TA(5)	Original TOTAL MM: 30
			CT-1(20)	CT-2(20)	CT-3(20)	MakeUp CT				
1	1708210063	LALIT KUMAR	9	14	12		13	5	5	23
2	1708210064	MANAS ARORA	8	12.5	0		11	5	5	21
3	1708210065	MANU PANWAR	11	7.5	0		10	5	4	19
4	1708210066	MAYANK BHATNAGAR	12	12	0		12	5	5	22
5	1708210067	MAYANK UPADHYAY	14	13	0		14	4	5	23
6	1708210068	MOHHAMMAD AMAAN	15	16	14		16	5	5	26
7	1708210069	MOHAMMAD ANAS	12	8	0		10	5	4	19
8	1708210070	MOHD. AFZAL	0	7.5	13		11	4	4	19
9	1708210071	MOHD. AKIF	0	10	0	11	11	5	4	20
10	1708210072	MOHD. ANAS	9	10	0		10	5	4	19
11	1708210073	MOHD. ASHIR	12	7	3		10	5	4	19
12	1708210074	MOHD. FARDEEN	0	16	14		15	5	5	25
13	1708210075	MOHD. HARIS	14	17	0		16	5	5	26
14	1708210076	MOHD. SADIQ	0	0	11	10	11	5	4	20
15	1708210077	MOHD. ASIF	0	13	4		9	5	5	19
16	1708210078	MOHD. SHOAIB	12	9.5	0		11	5	5	21
17	1708210079	MOHD. SUHAIL S/O Sri Zahid Ali	10	11	0		11	5	5	21
18	1708210080	MOHIT AGARWAL	10	0	10		10	5	5	20
19	1708210081	MUDIT KUMAR SHARMA	12	12	0		12	5	5	22
20	1708210082	MUKESH KUMAR	14	9	0		12	5	5	22
21	1708210083	MUKUL KUMAR	14	11	0		13	5	5	23
22	1708210084	MUSKAN MEHROTRA	15	15	0		15	5	5	25
23	1708210085	MUSKAN AGARWAL	10	11.5	0		11	5	5	21
24	1708210086	NAMAN AGARWAL	16	19	0		18	5	5	28
25	1708210087	NANDITA GAURI	10	11	13		12	5	5	22
26	1708210090	NIKITA SINGH	12	9	16		14	5	5	24
27	1708210091	NIRBHAY PAL.	11	0	12		12	5	5	22
28	1708210092	NISHITA AGARWAL	17	15	0		16	5	5	26
29	1708210093	NITESH SAINI	11	12	0		12	5	5	22
30	1708210094	NITIKA RASTOGI	20	18	0		19	5	5	29
31	1708210096	NITIN CHAUHAN	9	15	0		12	5	5	22
32	1708210097	NITIN VERMA	13	15	0		14	5	5	24
33	1708210098	NIVESH KUMAR	10	12	9		11	5	5	21
34	1708210099	NUPUR GUPTA	18	15	0		17	5	5	27
35	1708210100	PALAK GOEL	0	16	11		14	5	5	24
36	1708210101	PALAK RASTOGI	12	0	7		10	5	5	20
37	1708210102	PARAS VISHNOI	9	9	0		9	5	5	19
38	1708210103	PARTH SHARMA	3	0	4	15	10	5	4	19
39	1708210104	PIYUSH DHAWAN	10	10.5	0		11	5	5	21
40	1708210105	PIYUSH SHARMA	11	0	8		10	5	4	19
41	1708210106	PRADEEP KUMAR S/O Sri Naresh Kumar	0	12	8		10	5	4	19
42	1708210108	PRANVI JAIN	20	18	0		19	5	5	29
43	1708210109	PRASHANT KUMAR	0	6	0	15	11	4	4	19
44	1708210110	PRATHAM MAHESHWARI	8	12	0		10	5	4	19
45	1708210111	PRAYAG VERMA	0	19	0		10	5	5	20
46	1708210112	PRIYANK RAGHAV	10	11	0		11	4	4	19
47	1708210113	PUSHKAR SHARMA	14	10	0		12	4	5	21
48	1708210114	RAGHAV AGARWAL	10	10	0		10	5	4	19
49	1708210115	RAHUL SUKHIJA	18	17	0		18	5	5	28
50	1708210116	RANOJIT MALIK	12	0	13		13	5	5	23
51	1708210118	RAVI RANJAN	20	18	0		19	5	5	29
52	1708210120	RISHABH CHAUDHARY	16	16	0		16	5	5	26
53	1708210121	RISHABH KUMAR SHARMA	19	18	0		19	5	5	29
54	1708210122	RISHI RAJ SINGH	16	10.5	0		14	5	5	24
55	1708210123	RITIKA SAXENA	18	17	0		18	5	5	28

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In Pursuit of Excellence	**Course outcome Attainment**	SESSION-2019-2020
		SEM-5th

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In Pursuit of Excellence	Course outcome Attainment	SESSION-2019-2020
		SEM-5th

CO Attainment and Analysis

Direct CO Attainment using Continuous Internal Evaluation (CIE)

Course Code	CO	CO Attained (% of students getting ≥ 60% marks)	CO Attained (On Scale of 3)
RCS503	CO1	94.55	2.84
	CO2	90.91	2.73
	CO3	87.27	2.62
	CO4	89.09	2.67
	CO5	94.55	2.84

Direct CO Attainment using Semester End Examination (SEE)

Course Code	CO	CO Attained (% of students getting ≥ 60% marks)	CO Attained (On Scale of 3)
RCS503	CO1	16.36	0.49
	CO2	16.36	0.49
	CO3	16.36	0.49
	CO4	16.36	0.49
	CO5	16.36	0.49

Direct CO Attainment (CO_Direct)

Course Code	CO	CO Attained Using CIE (CO_CIE)	CO Attained using SEE (CO_SEE)	Direct CO Attainment (CO_Direct = 0.30*CO_CIE + 0.70*CO_SEE)	Direct CO Attainment (On Scale of 3)
RCS503	CO1	94.55	16.36	39.82	1.19
	CO2	90.91	16.36	38.73	1.16
	CO3	87.27	16.36	37.63	1.13
	CO4	89.09	16.36	38.18	1.15
	CO5	94.55	16.36	39.82	1.19

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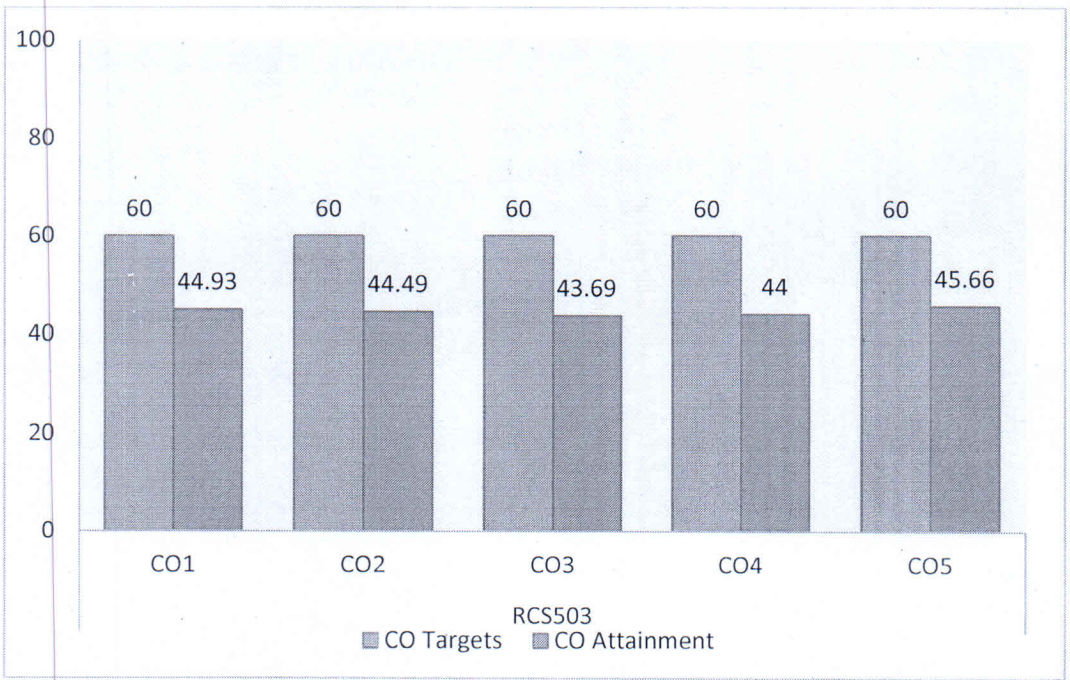
Indirect CO Attainment (CO_Indirect)

Course Code	CO	Indirect CO Attainment (CO_Indirect)	Indirect CO Attainment (On scale of 3)
RCS503	CO1	90.91	2.73
	CO2	96.36	2.89
	CO3	98.18	2.95
	CO4	96.36	2.89
	CO5	98.18	2.95

CO Attainment

Course Code	CO	Direct CO Attainment (CO_Direct)	Indirect CO Attainment (CO_Indirect)	CO Attainment (CO = 0.9*CO_Direct + 0.1*CO_Indirect)	CO Attainment (On scale of 3)	Y/N
RCS503	CO1	39.82	90.91	44.93	1.35	N
	CO2	38.73	96.36	44.49	1.33	N
	CO3	37.63	98.18	43.69	1.31	N
	CO4	38.18	96.36	44	1.32	N
	CO5	39.82	98.18	45.66	1.37	N

Course Code	CO	CO Targets	CO Attainment	Y/N
RCS503	CO1	60	44.93	N
	CO2	60	44.49	N
	CO3	60	43.69	N
	CO4	60	44	N
	CO5	60	45.66	N



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Closure of Quality Loop

Course Code	CO	CO Targets	CO Attainment Gap	Action proposed to bridge the gap where targets are not achieved	Modification of targets where Achieved
RCS503	CO1	60	15.07	More examples on language description will be given	
	CO2	60	15.51	subprogram control will be elaborated in more detail	
	CO3	60	16.31	more focus will be given on programming paradigm by giving live examples	
	CO4	60	16.00	network programming will be taught in more detail	
	CO5	60	14.34	more examples on lambda calculus will be given	

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