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S. No.	Description	Yes	No
1	Academic calendar	√	
2	Individual faculty time table	√	
3	Syllabus	√	
4	Hand Outs	√	
5	Question paper CT-I, CT-II & CT-III	√	
6	Internal award list: I, II, & III	√	
7	Rubrics List for Internal Practical Assessment *(Only for Lab Courses)*	√	
8	Identify slow/fast learners	√	
9	Special classes with attendance sheet of slow learners with ATR after each CT	√	
10	Assignments	√	
11	Question bank	√	
12	Attendance Sheet (Month-wise)	√	
13	e-contents (web links)	√	

Director
Faculty of Engineering
Teerthanker Mahaveer University
Moradabad.

1. ACADEMIC CALENDAR

COLLEGE OF COMPUTING SCIENCES & INFORMATION TCHNOLOGY
TEERTHANKER MAHAVEER UNIVERSITY
Academic Calendar for the Session 2018-19

Activity	Odd Semester	Even Semester
Commencement of Semester	August 01, 2018 *(All odd semester programs except 1st Sem.)* August 10, 2018 *(1st semester of all programs)*	January 14, 2019 *(All even Semester Programs)*
Last date of depositing Semester Tuition Fee (without late fee fine)	**August 18, 2018**	**February 12, 2019**
Founders Day	September 14, 2018	-
CT-I	September 27 - 29, 2018	February 26 – 28, 2019
Sports Events	***College teams & trials***: October 04-06, 2018	***TMU Intercollegiate*** : February 11 – 23, 2019
Last day of Submission of Examination Form	October 10, 2018	March 12, 2019
CT-II	November 01 - 03, 2018	April 11 – 13, 2019
Last Teaching Day of Semester	December 07, 2018	May 04, 2019
Preparatory Leave & CT-III	December 08 – 13, 2018	May 06 – 10, 2019
External Examination (Theory & Practical)	December 14 – 29, 2018	May 11 – 31, 2019
Vacation/Education Tour/Training for students/ FDPs	December 30, 2018 – January 12, 2019	June 01 – July 31, 2019

Activity	Odd Semester	Even Semester
College Fest	-	3rd Week of March 2019**(IGNITE)**
Seminar/ Conference	**November 24-25, 2018** **SMART -7 (IEEE International Conference)**	3rd Week of APRIL, 2019 **(International Conference)**
Other Major Events	Second week of September, 2018 **(Orientation program for new Students)** 2nd Week of September, 2018**(Guest Lecture- I)** 3rd Week of September, 2018-NSS activity 4th Week of September, 2018**(Guest Lecture- II)** 2nd Week of October, 2018**(Workshop -I)** 3rd Week of October, 2018**(Mega Quiz Contest)** 3rd Week of October, 2018-NSS activity 4th Week of October, 2018**(Guest Lecture - III)** 1st Week of November, 2018**(Workshop -II)**	4th Week of January, 2019**(Guest Lecture-I)** 4th Week of January, 2019 NSS activity 2nd Week of February, 2019**(Guest Lecture-I)** 1st Week of March, 2019**(Workshop - I)** 2nd Week of March, 2019 Sports Activity 3rd Week of March, 2019**(Guest Lecture-III)** 4th Week of March, 2019 NSS activity 2nd Week of April, 2019**(Workshop - II)**

Note:
1) If the last date falls on a non-working day, the immediate next working day shall be treated as the last date.
2) Dates may change due to unavoidable circumstances

PRINCIPAL/HOD/IN-CHARG

2. TIME TABLE

ARTIFICIAL INTELLIGENCE

3106	09:00 – 09:55	09:55– 10:50	10:50-11:40	11:40-12-30	12:30-01:30	01:30-02:20	02:20-03:10	03:10 – 04:00
MON					LUNCH			
TUE	ECS601							
WED							ECS601	
THU						ECS601		
FRI	ECS651 (LAB)		ECS601					
SAT							ECS651	

VS

3. SYLLABUS

COURSE AIM AND OBJECTIVES:

This course aims to cover a wide range of techniques, which can be applied to a wide variety of application areas. It includes automated reasoning, belief revision, case-based reasoning, computer vision, intelligent agent, knowledge acquisition, knowledge engineering, Natural language processing, neural nets, pattern recognition, Machine learning, temporal reasoning.

OUTCOME:

On the completion of the course, students should be able to:

i. Develop conceptual framework for application specification and design.
ii. Develop advance method for organizing, accessing and exploiting multidisciplinary knowledge within organizations and enterprises.
iii. Deeper understanding of computational intelligence and its application like neural network, fuzzy system, multi-agent system.
iv. Develop technique for knowledge representation and reasoning like logic programming, frames, and semantic network.

ECS601	ARTIFICIAL INTELLIGENCE	L T P	Cr
		3 1 0	4

Objective:
To learn the techniques of artificial intelligence to the computer.

Course Contents
Unit I
Artificial Intelligence: Issues, Techniques, Problems, Importance and areas of AI, Problem solving state space search; DFS, BFS Production: System, Problem characteristics; Heuristic Search Techniques, Generate and Test, Hill Climbing, Best First Search, Problem reduction, Constraint satisfaction, Crypt arithmetic and problems. **(Lecture 08)**

Unit II
Knowledge representation: Mapping, Approaches, Issues, Representing simple facts in logic,

VS

Representing instance and relationships, Resolution and natural deduction, Representing knowledge using rules, Procedural vs. Declarative knowledge, Logic programming, Forward vs. Backward chaining, Matching & control knowledge. **(Lecture 08)**

Unit III

AI programming language: Prolog: Objects, Relationships, Facts, Rules, Variables, Syntax and Data Structures; Representing objects & Relationships by using "trees" and "lists"; Use of cut; I/O of characters and structures; Symbolic reasoning under uncertainty; Monotonic Reasoning: Logics for Non-Monotonic reasoning; Implementation issues; Implementation: DFS & BFS. **(Lecture 08)**

Unit IV

Slot and Filler Structures: Semantic nets, Frames, Conceptual dependency, Scripts, CYC Natural languages and NLP, Syntactic processing parsing techniques, Semantic analysis case grammar, augmented transition net, Discourse & pragmatic processing, Translation. **(Lecture 08)**

Unit V

Expert System: Definition and Characteristics, Representing and using Domain Knowledge, Expert system shells Knowledge Engineering, Knowledge acquisition, Expert system life cycle & Expert system tools, MYCIN & DENDRAL. **(Lecture 08)**

Text Books

1. Rich, E. and Knight, K., *Artificial Intelligence*, Tata McGraw Hill.

Reference Books

1. Cloksin, W.F., Mellish, C.S., *Programming In Prolog*, Narosa Publishing House.
2. Janakiraman, V.S., Sarukesi, K., *Foundation of Artificial Intelligence & Expert System*, Macmillan.

*Latest editions of all the suggested books are recommended.

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4. HANDOUTS

LESSON PLAN

Subject :ARTIFICIAL INTELLIGENCE	Code: ECS-601
Faculty : VAIBHAV SHARMA	Marks : 100
Class :B.Tech. 3rd Year	LTP : 3-0-1

Lect No.	Lecture Topic	UNIT	REF	Schedule date	Covered Date	Mode of Coverage	Sign
1	Introduction to AI, areas and techniques, Importance of AI	UNIT 1	R2			Manual lecture with examples	
2	Problem's, Characteristics and Problem Solving	UNIT 1	R2			PPT	
3	State Space Search and Production System	UNIT 1	R2			Manual lecture with examples	
4	Heuristic search techniques: Hill Climbing	UNIT 1	R2			PPT With examples	
5	Generate and Test, Best Fit Search, Problem Reduction	UNIT 1	R2			Manual lecture with examples On board	
6	Constraint Satisfaction and Crypt Arithmetic problems	UNIT 1	R2			Manual lecture with examples On board	
7	Knowledge Representation, its approaches and issues	UNIT 2	R2			Manual lecture with examples On board	
8	Propositions and FOPL	UNIT 2	R2			PPT With examples	
9	Resolution and Natural Deduction	UNIT 2	R2			Manual lecture with examples On board	
10	Representation of knowledge using rules, procedural and declarative knowledge	UNIT 2	R2			Manual lecture with examples On board	
11	Logic Programming	UNIT 2	R2			PPT With examples	
12	Chaining: Forward and Backward, Matching and Control Knowledge	UNIT 2	R2			Manual lecture with examples	

						On board	
13	AI programming Language: PROLOG	UNIT 3	R1			Manual lecture with examples On board	
14	Prolog: Objects, Relationships, Facts, Rules, Variables, Syntax and Data Structures	UNIT 3	R1			PPT With examples	
15	Representing objects & Relationships by using "trees" and "lists"	UNIT 3	R1			PPT With examples	
16	Use of cut; I/O of characters and structures	UNIT 3	R1			PPT With examples	
17	Monotonic and non monotonic reasoning	UNIT 3	R1			Manual lecture with live examples	
18	Logics for reasoning, Implementation of BFS & DFS, Implementation Issues	UNIT 3	R1			Manual lecture with live examples	
19	Slot and Filler Structures and their types	UNIT 4	R2			Manual lecture with live examples	
20	Semantic nets, Frames	UNIT 4	R2			Manual lecture with live examples	
21	Conceptual dependency, Scripts, CYC	UNIT 4	R2			Manual lecture with live examples	
22	Natural languages and NLP, Syntactic processing parsing techniques	UNIT 4	R2			Manual lecture with live examples	
23	Semantic analysis case grammar, augmented transition net	UNIT 4	R2			Manual lecture with live examples	
24	Discourse & pragmatic processing, Translation	UNIT 4	R2			Manual lecture with live examples	
25	**Expert System:** Definition and Characteristics	UNIT 5	R2			Manual lecture with examples	
26	Representing and using Domain Knowledge	UNIT 5	R2			Manual lecture with live examples	
27	Expert system shells Knowledge Engineering, Knowledge acquisition	UNIT 5	R2			Manual lecture with live examples	

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28	Expert system life cycle & Expert system tools	UNIT 5	R2			Manual lecture with live examples	
29	MYCIN & DENDRAL	UNIT 5	R2			Manual Lecture	
30	Discussion		R1,R2				

L1= Remembering, L2= Understanding, L3=Applying, L4=Analyzing, L5=Evaluating, L6=Creating

Evaluation Scheme

Attendance	**20 %**
Assignment	**20%**
CT1 Exam	**20 %**
CT2 Exam	**20 %**
CT3 Exam	**20 %**

Note: There is a consideration of best two CT's.

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5. CLASS TEST QUESTION PAPERS

तीर्थंकर महावीर विश्वविद्यालय
Teerthanker Mahaveer University
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FACULTY OF ENGINEERING

First Internal Class Test
B.Tech. (Computer Science & Engineering)

Year: III	Academic Year: **2018-2019**	Semester: VI
Course Code: **ECS 601**	Course Title: **ARTIFICIAL INTELLIGENCE**	
Duration: **90 minutes**		Max. Marks: **30**

Attempt all questions.

1.		**Answer any five questions**	**Marks**	**Unit**	**CO**	**BTL**
	a.	Discuss the role of AI in today's world.	2	1	CO1	1
	b.	Distinguish between procedural and declarative knowledge with example.	2		CO1	1
	c.	Discuss the state space and its role in solving problems.	2		CO1	1
	d.	Give the application areas and applications of AI.	2		CO1	2
	e.	Distinguish between Heuritsic and non heuristic search techniques.	2		CO1	2
	f.	Discuss the production rules and their importance in solving problems.	2		CO1	2
	g.	List the different programming languages used in AI.	2		CO1	2
	h.	Discuss the importance of knowledge in AI systems.	2		CO1	4
2.		Discuss solution for water jug problem along with the production rules.	10	1	CO2	4
		OR				
		Discuss the variants of Hill Climbing Algorithm and their limitations.		1	CO2	4
3.		Discuss the problem solving and different problem characteristics.	10	1	CO1	2
		OR				
		Discuss the following algorithms – Breadth First Search Depth First Search Best Fit Search		1	CO1	2

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Teerthanker Mahaveer University
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FACULTY OF ENGINEERING

Second Internal Class Test
B.Tech. (Computer Science & Engineering)

Year: III	Academic Year: **2018-2019**	Semester: VI
Course Code: **ECS 601**	Course Title: **ARTIFICIAL INTELLIGENCE**	
Duration: **90 minutes**		Max. Marks: **30**

Attempt all questions.

1.		**Answer any five questions**	**Marks**	**Unit**	**CO**	**BTL**
	a.	Discuss the different types of clauses in PROLOG.	2	3	CO1	1
	b.	Discuss the operator available for preventing backtracking in PROLOG.	2		CO2	1
	c.	Write a PROLOG program to compute factorial of a number.	2		CO1	1
	d.	Give the benefits of developing Expert System.	2		CO2	2
	e.	Discuss about MYCIN.	2	5	CO1	2
	f.	Discuss about the various tools for developing Expert System.	2		CO2	2
	g.	Give the importance of Expert System Shell in development of Expert System.	2		CO5	2
	h.	Discuss the feasibility study phase in development cycle of Expert System.	2		CO1	4
2.		Discuss the features of PROLOG and structure of PROLOG objects. Write a PROLOG program to find even and odd length list.	10	3	CO2	4
		OR				
		Discuss the importance of knowledge base in expert system. Also discuss the procedure used for acquiring and representing knowledge in KB.		5	CO2	4
3.		Define the expert system with example. Draw the architecture of Expert System and also describe its components.	10	5	CO5	2
		OR				
		Discuss the following – i. Non Monotonic Reasoning ii. IO operations in PROLOG with example.		3	CO5	2

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तीर्थंकर महावीर विश्वविद्यालय
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FACULTY OF ENGINEERING

Third Internal Class Test
B.Tech. (Computer Science & Engineering)

Year: III	Academic Year: **2018-2019**	Semester: VI
Course Code: **ECS 601**	Course Title: **ARTIFICIAL INTELLIGENCE**	
Duration: **90 minutes**		Max. Marks: **30**

Attempt all questions.

1.		**Answer any five questions**	**Marks**	**Unit**	**CO**	**BTL**
	a.	Discuss the process of skolemization and its use.	2	2	CO3	1
	b.	Distinguish between Propisitional Logic and FOPL.	2		CO3	1
	c.	Write the FOPL for – "Every dog has bitten a every watchman".	2		CO4	1
	d.	Discuss the instance and isa relationship in Logic.	2		CO3	2
	e.	Discuss the instance and isa relationship in Logic.	2	4	CO4	2
	f.	Write common actions for CD.	2		CO4	2
	g.	Discuss about CYC and its importance in AI.	2		CO4	2
	h.	Discuss partitioned semantic net with example.	2		CO3	4
2.		Discuss the resolution procedure with respect to propositional logic with algorithms and suitable examples.	10	2	CO3	4
		OR				
		Write the FOPL for following statements- (i) None of my friends are perfect (ii) Some real numbers are rational (iii) Mary loves everyone (iv) Every student smiles (v) Everyone loves to everyone		2	CO3	4
3.		Describe the Script as knowledge representation approach with example. How it is better than weak slot and filler structures.	10	4	CO4	2
		OR				
		Create the frame based knowledge representation for CCSIT. Make required assumptions in the domain.		4	CO4	2

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6. AWARD LIST (CLASS TEST)

Sl.	Enrollment No.	Student Name	ECS 601		
			MAX. MARKS		
			30	30	30
			CT1	CT2	CT3
1	TCA1609001	AARADHYA JAIN	21	25	26
2	TCA1609002	AARUSHI JAIN	21	25	ABSENT
3	TCA1609003	AMRITA KUMARI	ABSENT	22	16
4	TCA1609004	AAYUSH JAIN	22	28	28
5	TCA1609005	AAYUSHI JAIN	22	25	19
6	TCA1609006	AAYUSHI JAIN	16	26	23
7	TCA1609007	ABDUL KAFEEL	17	23	ABSENT
8	TCA1609008	ABDUL KAREEM	24	28	ABSENT
9	TCA1609009	ABHISHEK JAIN	17	20	20
10	TCA1609010	ABHISHEK JAIN	24	ABSENT	20
11	TCA1609013	ADHYATMA JAIN	20	25	ABSENT
12	TCA1609016	AKSHAT JAIN	17	25	ABSENT
13	TCA1609017	AKSHITA JAIN	24	26	ABSENT
14	TCA1609018	AMAN JAIN	23	26	22
15	TCA1609021	AMOL JAIN	22	25	ABSENT
16	TCA1609026	ANVITA JAIN	23	28	ABSENT
17	TCA1609029	AYUSH JAIN	18	25	26
18	TCA1609030	AYUSH JAIN	ABSENT	26	29
19	TCA1609034	AYUSHI JAIN	21	25	27
20	TCA1609036	DHEERAJ JAIN	23	26	ABSENT
21	TCA1609043	GOUTAM VOHRA	22	22	25
22	TCA1609045	HARSH JAIN	ABSENT	25	23
23	TCA1609047	HIMANI JAIN	20	26	26
24	TCA1609049	JATIN JAIN	21	28	25
25	TCA1609051	MAHAK ARA	22	26	ABSENT
26	TCA1609058	MD SHAMSHAD	26	26	ABSENT
27	TCA1609060	MITANSHU MEHTA	ABSENT	25	26
28	TCA1609062	MOHD AAMIR	23	28	ABSENT
29	TCA1609065	MOHIT JAIN	ABSENT	28	28
30	TCA1609067	NAMAN JAIN	15	25	23
31	TCA1609069	NAMITA PRADHAN	27	28	ABSENT
32	TCA1609075	PRAGATI JAIN	18	26	26
33	TCA1609076	PRAGATI JAIN	20	25	23
34	TCA1609079	PRANJAL JAIN	21	25	26
35	TCA1609081	PRIYANSHI JAIN	21	ABSENT	24
36	TCA1609082	PRIYANSHU JAIN	ABSENT	25	22
37	TCA1609088	RITIK JAIN	18	23	ABSENT
38	TCA1609089	RITIKA JAIN	23	25	25

VS

39	TCA1609090	RIYA JAIN	18	23	28
40	TCA1609092	SAHIL JAIN	20	25	27
41	TCA1609095	SAJAL GUPTA	20	25	ABSENT
42	TCA1609096	SAMBHAV JAIN	24	26	25
43	TCA1609097	SAMBHAV KUMAR JAIN	25	22	ABSENT
44	TCA1609100	SANKALP JAIN	20	22	13
45	TCA1609101	SARTHAK JAIN	24	28	ABSENT
46	TCA1609102	SAUMYA JAIN	25	28	ABSENT
47	TCA1609111	SHUBHAM KUMAR JAIN	28	25	28
48	TCA1609113	SIDDHARTH JAIN	16	26	20
49	TCA1609115	SINJANEE JAIN	18	23	20
50	TCA1609117	SMRATI JAIN	26	28	ABSENT
51	TCA1609118	SOMYA JAIN	25	29	ABSENT
52	TCA1609119	SONALI JAIN	ABSENT	28	28
53	TCA1609121	SUBHAM JAIN	23	22	ABSENT
54	TCA1609125	UPVAN JAIN	23	ABSENT	23
55	TCA1609126	URVASHI TYAGI	ABSENT	23	22
56	TCA1609127	VAIBHAV JAIN	15	23	19
57	TCA1609129	VIKASH JAIN	22	26	25
58	TCA1609133	YASHI SHARMA	25	26	ABSENT
59	TCA1609135	ABHISHEK JAIN	20	23	26
60	TCA1609136	VIBHOR JAIN	21	23	25

VS

7. Identification of Slow Learners

Slow Learners After First CT1				Criteria
1	TCA1609006	AAYUSHI JAIN	16	CT1_Marks<60%
2	TCA1609007	ABDUL KAFEEL	17	
3	TCA1609009	ABHISHEK JAIN	17	
4	TCA1609016	AKSHAT JAIN	17	
5	TCA1609067	NAMAN JAIN	15	
6	TCA1609113	SIDDHARTH JAIN	16	
7	TCA1609127	VAIBHAV JAIN	15	

Slow Learners After Second CT	Criteria
NIL	CT2_Marks<60%

8. Special classes with attendance sheet of slow learners with ATR after each CT

- Topics have been identified for slow learners after CT-1 as given below
  - Hill Climbing Algorithms
  - Problem reduction and Constraint Satisfaction
  - Crypt arithmetic problems
- After special/remedial classes circular , classes had been taken as per below attendance sheet

Classes for Slow Learners After First CT			Date/Month			
S.NO.	Enrollment No.	Name	2/3/2019	5/3/2019	10/3/2019	11/3/2019
1	TCA1609006	AAYUSHI JAIN		P	P	P
2	TCA1609007	ABDUL KAFEEL	P	P	P	
3	TCA1609009	ABHISHEK JAIN	p	p	p	P
4	TCA1609016	AKSHAT JAIN	p		p	P
5	TCA1609067	NAMAN JAIN		p	p	P
6	TCA1609113	SIDDHARTH JAIN	p		p	P
7	TCA1609127	VAIBHAV JAIN	p	p	p	p

- After Second CT-2 no students was below criteria

VS

9. Assignments

TUTORIAL SHEET NO. - 1

1. Understand and discuss the evolution of Artificial Intelligence
2. Discuss the features of Artificial Intelligence and issues in its implementation
3. Evaluate the role of BFS and DFS algorithms as non heuristic based search
4. Discuss the various variants of hill climbing algorithms
5. Discuss about knowledge representation, approaches available and issues faced in their implementation
6. Discuss about various AI programming languages with their features
7. Evaluate the role of monotonic reasoning and non monotonic reasoning in justification of facts

TUTORIAL SHEET NO. – 2

1. Define the term Expert System. Discuss the architecture and various components of the expert systems
2. Discuss about the weak slot and filler structures and their role in knowledge representation
3. Discuss the expert system life cycle and tools used in developing them
4. Discuss about various syntactic processing and parsing techniques used in NLP
5. Evaluate the conceptual dependency as an important knowledge representation approach with the help of suitable example.
6. Elaborate about the augmented transition net and its role
7. Discuss about MYCIN and DENDRAL

QUIZ 1/ASSIGMENT FOR CLASS PERFORMANCE

Q1: _____ is often used when a good heuristic function is available for evaluating states but when no useful knowledge is available.
(a) Generate and Test
(b) Steepest-Ascent Hill Climbing
(c) Simple Hill Climbing
(d) Simulated Annealing

Q2: _____ is the computational system that implements the control strategy and applies the rule
(a) Set of rules
(b) One or more knowledge rules
(c) Control Strategy
(d) Rule Applier

Q3: _____ specifies the order in which the rules will be compared to the database.
(a) Set of rules
(b) One or more knowledge rules
(c) Control Strategy
(d) Rule Applier

Q4: Which of the following are the benefits of production system?
(a) Excellent tools for structuring AI programs
(b) Individual rules can be added, removed or modified independently
(c) Expressed in a natural form
(d) All of the above

Q5: Heuristic search techniques are used to
(a) Limit the search process
(b) Exploit domain specific knowledge
(c) Reduces memory usage
(d) All of the above

Q6: _____ algorithm considers all the moves from the current state and selects the best one as the next state.
(a) Generate and Test
(b) Steepest-Ascent Hill Climbing
(c) Simple Hill Climbing
(d) Simulated Annealing

Q7: How many successors are generated in backtracking search?
a) 1
b) 2
c) 4
d) 8

Q8: The process of removing detail from a given state representation is called

55

a) Extraction
b) Abstraction
c) Mining of Data
d) Information Retrieval

Q9: A search algorithm takes _____ as an input and returns _____ as an output.

a) Input, Output

b) Solution, Problem

c) Problem, Solution

d) Parameters, Sequence of Actions

Q10: We can implement the Best First Search algorithm with the help of data structure.

a) Stack

b) Queue

c) Vector

d) Priority Queue

VS

QUIZ 2/ASSIGMENT FOR CLASS PERFORMANCE

Q1: Prolog programs could trap the run time errors and recover from them by using the predicate
a) Exception
b) Trace
c) Recover
d) Catch

Q2: Which of the following is used to represent new line in Prolog?
a) nl
b) /n
c) /new
d) None of the above

Q3: _____ is a programming paradigm based on mathematical logic.
a) Procedural Programming
b) Logic Programming
c) Object Oriented Programming
d) Unstructured Programming

Q4. The query in Prolog which generates yes or no answer and consists of value identifiers as parameters to the predicate is called
a) Simple Query
b) Base Query
c) Ground Query
d) None of the above

Q5: In Prolog list, a variable occurring in the head of list is treated as _____ and while a variable that occurs in the body is handled _____.
a) Universally and Existentially
b) Existentially and Universally
c) Dynamic and Static
d) Global and Local

Q6: The _____ predicate takes a file designator and unifies by closing the referenced file.
a) get
b) open
c) close
d) catch

Q7: _____ is the process of finding a unifier for two items.
a) Resolution
b) Conjunction

VS

c) Disjunction
d) Unification

Q8: Which one of the following is an invalid variable in Prolog?
a) _X
b) _input
c) X_5
d) 5_X

Q9: Represent the following in Prolog: Mia and Marcellus are married.
a) mia(marry)Marcellus
b) Marry(Mia, Marcellus)
c) marry(Mia, Marcellus)
d) marry(mia), marry(Marcellus)

Q10: What is extension of Prolog file in SWI-PROLOG?
a) .pl
b) .pro
c) .prolog
d) .py

VS

10. Question Bank

Unit 1

Artificial Intelligence: Issues, Techniques, Problems, Importance and areas of AI, Problem solving state space search; DFS, BFS Production: System, Problem characteristics; Heuristic Search Techniques, Generate and Test, Hill Climbing, Best First Search, Problem reduction, Constraint satisfaction, Crypt arithmetic and problems.

Questions (1 marks each)

1. The term Artificial Intelligence was coined by
2. Define the term data.
3. Is Artificial Intelligence is subset of Machine Learning
4. _____ is to recognize the artificial intelligence of a machine.
5. Define the term intelligence.
6. AI uses the electrical and electronics engineering in the domain of
7. Is your computer is intelligent or not.
8. Define the term heuristics.
9. Commonly used search algorithm
10. Name of first AI based system

Questions (5 marks each)

1. Distinguish between BFS and DFS search algorithms.
2. State at least five important areas of Artificial Intelligence.
3. What are the features of Artificial Intelligence?
4. Discuss about the AND-OR Graphs.
5. Discuss the characteristics that must be possessed by the problem.
6. Distinguish between heuristic and non heuristic based search algorithms.
7. Discuss about production system and its role in solving problems in AI.
8. Evaluate the generate and test algorithm.
9. Discuss about the various issues faced during the development of AI based systems.
10. Find the limitations of Hill Climbing Algorithm.

Questions (10 marks each)

1. State the rules developed for solving water jug problem.
2. Discuss about the various variants of hill climbing algorithm.
3. Solve the following crypt-arithmetic problem: SEND + MORE = MONEY
4. Discuss the problem reduction algorithm with suitable example.
5. List the limitation of hill climbing algorithms and specify the solutions for overcoming them.
6. Discuss the constraint satisfaction algorithm with suitable examples.
7. Discuss the evolution of Artificial Intelligence and how it impacts the life of human beings.

VS

8. Elaborate the water jug problem and provide its solution in terms of state space and production system.
9. Discuss about the Best Fit Search algorithm and how it is different from BFS algorithm.
10. Discuss the monkey banana problem in AI.

Unit 2

Knowledge representation: Mapping, Approaches, Issues, Representing simple facts in logic, Representing instance and relationships, Resolution and natural deduction, Representing knowledge using rules, Procedural vs. Declarative knowledge, Logic programming, Forward vs. Backward chaining, Matching & control knowledge.

Questions (1 marks each)

1. Define the term knowledge
2. Define the procedural knowledge with example
3. Define the declarative knowledge with example
4. Define the term hypothesis.
5. Discuss about logic programming
6. Represent: "All Students are intelligent" in logic programming
7. Represent: "Spot is a dog" in logic programming
8. Inheritable knowledge in representation mechanism is represent by the relation
9. _____ is used to represent universal quantifier
10. _____ is used to represent existential quantifier

Questions (5 marks each)

1. Describe about the FOPL (First Order Predicate Language)
2. Discuss the characteristics that a good knowledge representation should possess.
3. What are quantifiers and their types in FOPL?
4. Discuss the common issues in knowledge representation.
5. How the skolemization is used in conversion to clause form?
6. Discuss the forward chaining approach with the help of example.
7. Discuss the role of backward chaining in Artificial Intelligence.
8. Discuss the features of resolution.
9. Discuss the features of natural deduction.
10. Discuss the unification process and its role in Artificial Intelligence.

Questions (10 marks each)

1. Describe the algorithm to convert FOPL statements to clause form.
2. Prove the statement "Marcus is dead" by using resolution.
3. Discuss about computable functions and predicates in FOPL
4. Discuss the importance of controlling and matching in finding efficient solution for problems in Artificial Intelligence.
5. Discuss the role of chaining approaches in finding the solution for a problem.

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6. What are the basic steps in unification process? Explain with the help of an example.
7. Trace the operation of unification algorithm in: f(marcus) and f(Caesar)
8. Discuss the process of representing knowledge with the help of rules. Also list the limitation.
9. Explain various kind of knowledge with examples. Also approaches for representing them.
10. Describe the natural deduction approach in solving a problem.

.Unit 3

AI programming language: Prolog: Objects, Relationships, Facts, Rules, Variables, Syntax and Data Structures; Representing objects & Relationships by using "trees" and "lists"; Use of cut; I/O of characters and structures; Symbolic reasoning under uncertainty; Monotonic Reasoning: Logics for Non-Monotonic reasoning; Implementation issues; Implementation: DFS & BFS

Questions (1 marks each)

1. Who is the developer of PROLOG?
2. Give name of Current Version and commonly used compiler of PROLOG.
3. PROLOG belongs to _____ generation of programming language.
4. How facts are represented in PROLOG?
5. How relations are represented between various facts in PROLOG?
6. What is object in PROLOG?
7. Discuss about variables in PROLOG.
8. Conjunction operation in PROLOG is represented by _____
9. _____ represents disjunction operation in PROLOG.
10. Define the term reasoning.

Questions (5 marks each)

1. List the various data structures in PROLOG.
2. Discuss about the 'List' in PROLOG.
3. Discuss about the various I/O characters used in PROLOG.
4. Distinguish between monotonic and non monotonic reasoning approaches.
5. List at least three important features of tree?
6. What is a cut operation and for which purpose it is used for?
7. Discuss the syntax of a cut operation with suitable examples.
8. Discuss the symbolic reasoning approach.
9. Discuss the various operators used in PROLOG.
10. Discuss the logics for non monotonic reasoning.

Questions (10 marks each)

1. Implement the BFS (Breadth First Search) using PROLOG.
2. Discuss about the importance of reasoning in Artificial Intelligence.
3. Implement the DFS (Depth First Search) using PROLOG
4. What are various implementation issues of BFS & DFS and how they can be resolved?
5. Implement the monkey banana problem using PROLOG
6. Distinguish between facts and relationships. How they can be represented in PROLOG?

VS

...OLOG program showing the use of cut operator and what will happen when it is ...here.

8. Write a PROLOG program for to compute the sum of digits of a given number.
9. Give at least two examples of list declaration, definition, instantiation and invocation.
10. Discuss the PROLOG as an efficient programming language for solving AI based problems.

Unit 4

Slot and Filler Structures: Semantic nets, Frames, Conceptual dependency, Scripts, CYC Natural languages and NLP, Syntactic processing parsing techniques, Semantic analysis case grammar, augmented transition net, Discourse & pragmatic processing, Translation.

Questions (1 marks each)

1. Semantic nets were developed by _____.
2. Give the full form of CYC.
3. Give the full form of NLP.
4. _____ is weak slot and filler structure.
5. Give two applications of NLP
6. Artificial Intelligence and NLP are used together in developing _____
7. Define the term intersection search in semantic net.
8. Give the example of non binary predicate.
9. isa relation in semantic nets are used for _____
10. Define the term translation.

Questions (5 marks each)

1. Distinguish between weak and strong slot and filler structures.
2. Distinguish between semantic nets and frames.
3. Discuss the features of CYC project.
4. Give the four primitive conceptual categories in Conceptual Dependency.
5. Describe about partitioned semantic nets.
6. Discuss the role of Metaclass in frames for representing knowledge.
7. Discuss about the pragmatic processing in NLP.
8. Discuss the rules for representing relationship between objects in Conceptual Dependency.
9. Discuss the importance of roles and scenes in Scripts for representing knowledge.
10. Give an example of Augmented Transition Networks.

Questions (10 marks each)

1. Discuss the knowledge representation approach using Slot and Filler Structures.
2. Describe about scripts with the help of an example.
3. Describe how actions are used in CD to represent the relationship. Also describe the set of actions specified by Schank and Abelson.
4. Discuss the role of NLP in AI devices. Also give its advantages and disadvantages.
5. Discuss the basic components of the natural language understanding process.
6. Discuss about the syntactic processing and the different approaches used by the parsers.
7. Augmented Transition Networks uses top down parsing approach in NLP, elaborate the entire procedure followed by ATN.
8. Discuss the different components of Semantic Analysis in NLP.
9. Discuss about analysis, processing and translation in reference to NLP.
10. Discuss frames as Sets and Instances that could be used for knowledge representation with proper examples.

UNIT 5

Expert System: Definition and Characteristics, Representing and using Domain Knowledge, Expert system shells Knowledge Engineering, Knowledge acquisition, Expert system life cycle & Expert system tools, MYCIN & DENDRAL.

Questions (1 marks each)

1. MYCIN were developed by _____.
2. _____ is an expert system for identifying structure of molecule or compound.
3. First Expert System was developed in the year _____.
4. _____ is an expert system that defeats world chess champion.
5. DENDRAL was developed by _____
6. Brain of the expert system is _____
7. _____ is the main language in MYCIN.
8. _____ is the main language in DENDRAL.
9. Define the term metadata.
10. Give the name of expert system shells.

Questions (5 marks each)

1. Distinguish between MYCIN and DENDRAL.
2. Discuss about expert system shells.
3. Discuss about the knowledge base and its role in expert system.
4. Discuss about the various expert system tools.
5. Distinguish between knowledge acquisition and knowledge implementation.
6. What is Domain Knowledge? Give its features also.
7. Define Expert System. Also give examples.
8. Discuss the knowledge representation approaches used in expert system.
9. Discuss the limitations of an expert system.
10. Draw the life cycle of an expert system.

Questions (10 marks each)

1. Discuss the knowledge engineering and the various phases of it.
2. Describe the architecture and components of an Expert System.
3. Discuss the features of an expert system and the area where the expert systems could be used. Also give suitable examples.
4. Discuss the software development life cycle of an expert system.
5. Discuss the architecture of MYCIN (Expert System) and its usage.
6. Discuss about DENDRAL and its architecture.
7. Discuss about the expert system shell and its tool used for the implementation of expert system.
8. Discuss the different components of Semantic Analysis in NLP.
9. Give the different approaches used for representing domain knowledge in expert system.
10. Knowledge Base is the power house for an Expert System – justify the statement.

11. Attendance Sheet (Month-wise)

Attendance for the month of January 2019

Sl. No.	Enrollment No.	Date	30	31
		Month	Jan	Jan
		Student Name		
1	TCA1609001	AARADHYA JAIN	P	P
2	TCA1609002	AARUSHI JAIN	P	P
3	TCA1609003	AMRITA KUMARI	P	P
4	TCA1609004	AAYUSH JAIN	P	P
5	TCA1609005	AAYUSHI JAIN	P	P
6	TCA1609006	AAYUSHI JAIN	P	P
7	TCA1609007	ABDUL KAFEEL	P	P
8	TCA1609008	ABDUL KAREEM	P	P
9	TCA1609009	ABHISHEK JAIN	P	
10	TCA1609010	ABHISHEK JAIN	P	P
11	TCA1609013	ADHYATMA JAIN	P	P
12	TCA1609016	AKSHAT JAIN	P	P
13	TCA1609017	AKSHITA JAIN	P	P
14	TCA1609018	AMAN JAIN	P	P
15	TCA1609021	AMOL JAIN	P	P
16	TCA1609026	ANVITA JAIN	P	P
17	TCA1609029	AYUSH JAIN		
18	TCA1609030	AYUSH JAIN	P	P
19	TCA1609034	AYUSHI JAIN	P	P
20	TCA1609036	DHEERAJ JAIN		
21	TCA1609043	GOUTAM VOHRA	P	P
22	TCA1609045	HARSH JAIN		P
23	TCA1609047	HIMANI JAIN	P	P
24	TCA1609049	JATIN JAIN	P	P
25	TCA1609051	MAHAK ARA	P	
26	TCA1609058	MD SHAMSHAD		P
27	TCA1609060	MITANSHU MEHTA	P	P
28	TCA1609062	MOHD AAMIR	P	P
29	TCA1609065	MOHIT JAIN	P	P
30	TCA1609067	NAMAN JAIN	P	P
31	TCA1609069	NAMITA PRADHAN	P	P
32	TCA1609075	PRAGATI JAIN	P	P
33	TCA1609076	PRAGATI JAIN	P	P
34	TCA1609079	PRANJAL JAIN	P	P
35	TCA1609081	PRIYANSHI JAIN	P	P
36	TCA1609082	PRIYANSHU JAIN	P	P

37	TCA1609088	RITIK JAIN	P	
38	TCA1609089	RITIKA JAIN	P	P
39	TCA1609090	RIYA JAIN	P	P
40	TCA1609092	SAHIL JAIN	P	P
41	TCA1609095	SAJAL GUPTA	P	P
42	TCA1609096	SAMBHAV JAIN	P	P
43	TCA1609097	SAMBHAV KUMAR JAIN	P	P
44	TCA1609100	SANKALP JAIN	P	P
45	TCA1609101	SARTHAK JAIN		
46	TCA1609102	SAUMYA JAIN	P	P
47	TCA1609111	SHUBHAM KUMAR JAIN	P	P
48	TCA1609113	SIDDHARTH JAIN		
49	TCA1609115	SINJANEE JAIN	P	P
50	TCA1609117	SMRATI JAIN		P
51	TCA1609118	SOMYA JAIN	P	P
52	TCA1609119	SONALI JAIN	P	P
53	TCA1609121	SUBHAM JAIN	P	
54	TCA1609125	UPVAN JAIN		P
55	TCA1609126	URVASHI TYAGI	P	P
56	TCA1609127	VAIBHAV JAIN	P	P
57	TCA1609129	VIKASH JAIN		P
58	TCA1609133	YASHI SHARMA	p	P
59	TCA1609135	ABHISHEK JAIN		P
60	TCA1609136	VIBHOR JAIN		p

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Attendance for the month of February 2019

Sl. No.	Enrollment No.	Date	1	5	6	8	12	13	19	22	26
		Month	Feb	Feb	Feb	Feb	Feb	Feb	Feb	Feb	Feb
		Student Name									
1	TCA1609001	AARADHYA JAIN		P	P		P	P		P	P
2	TCA1609002	AARUSHI JAIN	P	P	P	P	P	P		P	P
3	TCA1609003	AMRITA KUMARI	P	P	P	P			P	P	P
4	TCA1609004	AAYUSH JAIN	P	P	P	P	P	P			
5	TCA1609005	AAYUSHI JAIN	P	P	P	P	P	P	P	P	
6	TCA1609006	AAYUSHI JAIN	P	P	P	P	P	P	P	P	
7	TCA1609007	ABDUL KAFEEL	P	P	P	P	P	P	P	P	P
8	TCA1609008	ABDUL KAREEM		P			P	P	P		P
9	TCA1609009	ABHISHEK JAIN	P	P	P	P			P	P	P
10	TCA1609010	ABHISHEK JAIN	P	P	P	P	P	P			
11	TCA1609013	ADHYATMA JAIN	P	P	P	P	P	P	P	P	P
12	TCA1609016	AKSHAT JAIN	P		P		P	P	P	P	
13	TCA1609017	AKSHITA JAIN	P	P	P	P	P	P	P	P	P
14	TCA1609018	AMAN JAIN	P	P		P	P	P		P	P
15	TCA1609021	AMOL JAIN	P	P	P	P	P	P	P	P	P
16	TCA1609026	ANVITA JAIN	P	P	P	P	P	P	P	P	
17	TCA1609029	AYUSH JAIN	P	P	P	P	P	P	P	P	P
18	TCA1609030	AYUSH JAIN	P	P	P	P	P	P	P	P	P
19	TCA1609034	AYUSHI JAIN	P	P	P	P	P	P	P	P	P
20	TCA1609036	DHEERAJ JAIN	P		P	P	P	P	P	P	P
21	TCA1609043	GOUTAM VOHRA	P	P	P	P	P		P	P	P
22	TCA1609045	HARSH JAIN	P	P	P	P	P	P	P	P	P
23	TCA1609047	HIMANI JAIN	P	P			P	P	P		
24	TCA1609049	JATIN JAIN	P	P	P		P		P		
25	TCA1609051	MAHAK ARA	P	P				P		P	
26	TCA1609058	MD SHAMSHAD	P	P		P	P	P	P	P	P
27	TCA1609060	MITANSHU MEHTA	P	P	P	P	P	P	P	P	P
28	TCA1609062	MOHD AAMIR	P	P	P	P	P	P	P		P
29	TCA1609065	MOHIT JAIN		P	P		P	P		P	P
30	TCA1609067	NAMAN JAIN	P	P	P	P	P	P		P	P
31	TCA1609069	NAMITA PRADHAN	P	P	P	P			P	P	P
32	TCA1609075	PRAGATI JAIN	P	P	P	P	P	P			
33	TCA1609076	PRAGATI JAIN	P	P	P	P	P	P	P	P	
34	TCA1609079	PRANJAL JAIN	P	P	P	P	P	P	P	P	
35	TCA1609081	PRIYANSHI JAIN	P	P	P	P	P	P	P	P	P
36	TCA1609082	PRIYANSHU JAIN		P			P	P	P		P
37	TCA1609088	RITIK JAIN	P	P	P	P			P	P	P

38	TCA1609089	RITIKA JAIN	P	P	P	P	P	P			
39	TCA1609090	RIYA JAIN	P	P	P	P	P	P	P	P	P
40	TCA1609092	SAHIL JAIN	P		P		P	P	P	P	
41	TCA1609095	SAJAL GUPTA	P	P	P	P	P	P	P	P	P
42	TCA1609096	SAMBHAV JAIN	P	P		P	P	P		P	P
43	TCA1609097	SAMBHAV KUMAR JAIN	P	P	P	P	P	P	P	P	P
44	TCA1609100	SANKALP JAIN	P	P	P	P	P	P	P	P	
45	TCA1609101	SARTHAK JAIN	P	P	P	P	P	P	P	P	P
46	TCA1609102	SAUMYA JAIN	P	P	P	P	P	P	P	P	P
47	TCA1609111	SHUBHAM KUMAR JAIN	P	P	P	P	P	P	P	P	P
48	TCA1609113	SIDDHARTH JAIN	P		P	P	P	P	P	P	P
49	TCA1609115	SINJANEE JAIN	P	P	P	P	P		P	P	P
50	TCA1609117	SMRATI JAIN	P	P	P	P	P	P	P	P	P
51	TCA1609118	SOMYA JAIN	P	P			P	P	P		
52	TCA1609119	SONALI JAIN	P	P	P		P		P		
53	TCA1609121	SUBHAM JAIN	P	P				P		P	
54	TCA1609125	UPVAN JAIN	P	P		P	P	P	P	P	P
55	TCA1609126	URVASHI TYAGI	P	P	P	P	P	P	P	P	P
56	TCA1609127	VAIBHAV JAIN	P	P	P	P	P	P	P		P
57	TCA1609129	VIKASH JAIN	P	P	P	P	P	P	P	P	
58	TCA1609133	YASHI SHARMA	P	P	P	P	P	P	P	P	P
59	TCA1609135	ABHISHEK JAIN	P	P	P	P	P	P	P	P	P
60	TCA1609136	VIBHOR JAIN	P	P	P	P	P	P	P	P	P

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Attendance for the month of March 2019

Sl. No.	Enrollment No.	Date	1	5	6	7	19	20	21	22	26	28
		Month	Mar	Mar	Mar	Mar	Mar	Mar	Mar	Mar	Mar	Mar
		Student Name										
1	TCA1609001	AARADHYA JAIN	P	P	P	P	P	P	P	P	P	P
2	TCA1609002	AARUSHI JAIN	P		P	P		P	P	P	P	P
3	TCA1609003	AMRITA KUMARI	P	P	P				P	P	P	P
4	TCA1609004	AAYUSH JAIN	P		P	P		P	P	P	P	P
5	TCA1609005	AAYUSHI JAIN	P	P	P		P			P	P	P
6	TCA1609006	AAYUSHI JAIN	P		P		P	P	P		P	P
7	TCA1609007	ABDUL KAFEEL	P	P	P	P		P	P	P	P	P
8	TCA1609008	ABDUL KAREEM	P	P	P	P	P		P	P	P	P
9	TCA1609009	ABHISHEK JAIN		P	P	P	P		P	P	P	P
10	TCA1609010	ABHISHEK JAIN						P	P	P	P	P
11	TCA1609013	ADHYATMA JAIN	P		P	P	P	P	P			
12	TCA1609016	AKSHAT JAIN	P	P	P	P	P			P	P	P
13	TCA1609017	AKSHITA JAIN	P	P		P		P	P	P		P
14	TCA1609018	AMAN JAIN	P	P	P		P	P		P	P	P
15	TCA1609021	AMOL JAIN	P		P	P	P	P	P	P		P
16	TCA1609026	ANVITA JAIN	P	P	P	P	P	P	P			P
17	TCA1609029	AYUSH JAIN	P	P	P		P	P	P	P	P	P
18	TCA1609030	AYUSH JAIN	P	P	P	P	P	P	P	P		
19	TCA1609034	AYUSHI JAIN	P			P	P			P	P	P
20	TCA1609036	DHEERAJ JAIN		P		P	P		P	P	P	P
21	TCA1609043	GOUTAM VOHRA	P	P	P	P	P	P				
22	TCA1609045	HARSH JAIN	P					P		P	P	P
23	TCA1609047	HIMANI JAIN				P	P	P	P	P	P	P
24	TCA1609049	JATIN JAIN		P	P	P	P	P	P	P	P	P
25	TCA1609051	MAHAK ARA	P	P	P	P		P	P	P	P	P
26	TCA1609058	MD SHAMSHAD	P	P	P	P	P	P	P	P		P
27	TCA1609060	MITANSHU MEHTA		P	P					P	P	P
28	TCA1609062	MOHD AAMIR	P	P		P	P	P	P		P	P
29	TCA1609065	MOHIT JAIN	P	P	P	P	P	P	P	P	P	P
30	TCA1609067	NAMAN JAIN	P		P	P		P	P	P	P	P
31	TCA1609069	NAMITA PRADHAN	P	P	P				P	P	P	P
32	TCA1609075	PRAGATI JAIN	P		P	P		P	P	P	P	P
33	TCA1609076	PRAGATI JAIN	P	P	P		P			P	P	P
34	TCA1609079	PRANJAL JAIN	P		P		P	P	P		P	P
35	TCA1609081	PRIYANSHI JAIN	P	P	P	P		P	P	P	P	P

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36	TCA1609082	PRIYANSHU JAIN	P	P	P	P	P		P	P	P	P
37	TCA1609088	RITIK JAIN		P	P	P	P		P	P	P	P
38	TCA1609089	RITIKA JAIN						P	P	P	P	P
39	TCA1609090	RIYA JAIN	P		P	P	P	P	P			
40	TCA1609092	SAHIL JAIN	P	P	P	P	P			P	P	P
41	TCA1609095	SAJAL GUPTA	P	P		P		P	P	P		P
42	TCA1609096	SAMBHAV JAIN	P	P	P		P	P		P	P	P
43	TCA1609097	SAMBHAV KUMAR JAIN	P		P	P	P	P	P	P		P
44	TCA1609100	SANKALP JAIN	P	P	P	P	P	P	P			P
45	TCA1609101	SARTHAK JAIN	P	P	P		P	P	P	P	P	P
46	TCA1609102	SAUMYA JAIN	P	P	P	P	P	P	P	P		
47	TCA1609111	SHUBHAM KUMAR JAIN	P			P	P			P	P	P
48	TCA1609113	SIDDHARTH JAIN		P		P	P		P	P	P	P
49	TCA1609115	SINJANEE JAIN	P	P	P	P	P	P				
50	TCA1609117	SMRATI JAIN	P					P		P	P	P
51	TCA1609118	SOMYA JAIN				P	P	P	P	P	P	P
52	TCA1609119	SONALI JAIN		P	P	P	P	P	P	P	P	P
53	TCA1609121	SUBHAM JAIN	P	P	P	P		P	P	P	P	P
54	TCA1609125	UPVAN JAIN	P	P	P	P	P	P	P	P		P
55	TCA1609126	URVASHI TYAGI		P	P					P	P	P
56	TCA1609127	VAIBHAV JAIN	P	P		P	P	P	P		P	P
57	TCA1609129	VIKASH JAIN	P	P	P	P	P	P	P	P		
58	TCA1609133	YASHI SHARMA	P			P	P			P	P	P
59	TCA1609135	ABHISHEK JAIN		P		P	P		P	P	P	P
60	TCA1609136	VIBHOR JAIN	P	P	P	P	P	P				

Attendance for the month of April 2019

Sl. No.	Enrollment No.	Date	2	3	4	5	16	17	18	19	23	24	25
		Month	Apr	Apr	Apr	Apr	Apr	Apr	Apr	Apr	Apr	Apr	Apr
		Student Name											
1	TCA1609001	AARADHYA JAIN		P	P			P	P	P	P	P	P
2	TCA1609002	AARUSHI JAIN	P	P	P	P	P	P	P	P	P	P	P
3	TCA1609003	AMRITA KUMARI	P		P	P		P	P	P	P	P	P
4	TCA1609004	AAYUSH JAIN	P	P		P		P	P	P	P	P	P
5	TCA1609005	AAYUSHI JAIN	P	P		P	P	P	P	P	P	P	P
6	TCA1609006	AAYUSHI JAIN	P			P		P	P	P		P	P
7	TCA1609007	ABDUL KAFEEL	P		P	P	P	P		P		P	P
8	TCA1609008	ABDUL KAREEM		P	P	P	P	P	P	P	P	P	P
9	TCA1609009	ABHISHEK JAIN	P	P	P	P	P	P	P	P	P	P	P
10	TCA1609010	ABHISHEK JAIN	P	P	P	P	P	P	P	P	P	P	P
11	TCA1609013	ADHYATMA JAIN		P	P	P	P	P	P	P	P	P	P
12	TCA1609016	AKSHAT JAIN	P	P			P	P	P	P	P	P	P
13	TCA1609017	AKSHITA JAIN	P	P	P	P	P		P		P	P	P
14	TCA1609018	AMAN JAIN			P		P	P	P	P	P	P	P
15	TCA1609021	AMOL JAIN	P	P	P	P	P	P	P	P	P	P	P
16	TCA1609026	ANVITA JAIN	P	P	P			P	P	P	P	P	P
17	TCA1609029	AYUSH JAIN		P		P		P	P	P	P	P	P
18	TCA1609030	AYUSH JAIN		P	P	P	P				P	P	P
19	TCA1609034	AYUSHI JAIN	P	P	P	P	P	P	P		P	P	P
20	TCA1609036	DHEERAJ JAIN	P	P	P		P		P	P	P	P	P
21	TCA1609043	GOUTAM VOHRA	P	P	P	P			P		P	P	P
22	TCA1609045	HARSH JAIN	P	P	P	P	P	P	P	P	P	P	P
23	TCA1609047	HIMANI JAIN	P	P	P	P	P	P	P	P	P	P	P
24	TCA1609049	JATIN JAIN	P	P	P	P	P	P	P	P	P	P	P
25	TCA1609051	MAHAK ARA	P	P	P	P	P	P	P	P	P	P	P
26	TCA1609058	MD SHAMSHAD	P		P		P		P	P		P	P
27	TCA1609060	MITANSHU MEHTA		P	P	P		P	P	P	P	P	P
28	TCA1609062	MOHD AAMIR	P	P	P	P	P		P	P	P	P	P
29	TCA1609065	MOHIT JAIN		P	P			P	P	P	P	P	P
30	TCA1609067	NAMAN JAIN	P	P	P	P	P	P	P	P	P	P	P
31	TCA1609069	NAMITA PRADHAN	P		P	P		P	P	P	P	P	P
32	TCA1609075	PRAGATI JAIN	P	P		P		P	P	P	P	P	P
33	TCA1609076	PRAGATI JAIN	P	P		P	P	P	P	P	P	P	P
34	TCA1609079	PRANJAL JAIN	P			P		P	P	P		P	P
35	TCA1609081	PRIYANSHI JAIN	P		P	P	P	P		P		P	P
36	TCA1609082	PRIYANSHU JAIN		P	P	P	P	P	P	P	P	P	P

VS

37	TCA1609088	RITIK JAIN	P	P	P	P	P	P	P	P	P	P	P
38	TCA1609089	RITIKA JAIN	P	P	P	P	P	P	P	P	P	P	P
39	TCA1609090	RIYA JAIN		P	P	P	P	P	P	P	P	P	P
40	TCA1609092	SAHIL JAIN	P	P			P	P	P	P	P	P	P
41	TCA1609095	SAJAL GUPTA	P	P	P	P	P		P		P	P	P
42	TCA1609096	SAMBHAV JAIN			P		P	P	P	P	P	P	P
43	TCA1609097	SAMBHAV KUMAR JAIN	P	P	P	P	P	P	P	P	P	P	P
44	TCA1609100	SANKALP JAIN	P	P	P			P	P	P	P	P	P
45	TCA1609101	SARTHAK JAIN		P		P		P	P	P	P	P	P
46	TCA1609102	SAUMYA JAIN		P	P	P	P				P	P	P
47	TCA1609111	SHUBHAM KUMAR JAIN	P	P	P	P	P	P	P		P	P	P
48	TCA1609113	SIDDHARTH JAIN	P	P	P		P		P	P	P	P	P
49	TCA1609115	SINJANEE JAIN	P	P	P	P			P		P	P	P
50	TCA1609117	SMRATI JAIN	P	P	P	P	P	P	P	P	P	P	P
51	TCA1609118	SOMYA JAIN	P	P	P	P	P	P	P	P	P	P	P
52	TCA1609119	SONALI JAIN	P	P	P	P	P	P	P	P	P	P	P
53	TCA1609121	SUBHAM JAIN	P	P	P	P	P	P	P	P	P	P	P
54	TCA1609125	UPVAN JAIN	P		P		P		P	P		P	P
55	TCA1609126	URVASHI TYAGI		P	P	P		P	P	P	P	P	P
56	TCA1609127	VAIBHAV JAIN	P	P	P	P	P		P	P	P	P	P
57	TCA1609129	VIKASH JAIN		P		P		P	P	P	P	P	P
58	TCA1609133	YASHI SHARMA		P	P	P	P				P	P	P
59	TCA1609135	ABHISHEK JAIN	P	P	P	P	P	P	P		P	P	P
60	TCA1609136	VIBHOR JAIN	P	P	P		P		P	P	P	P	P

12. E-contents (web links)

E-contents links including:

- University website subject notes link
- Personal google website link
- External Notes (public) link

Sl.No.	Enrollment No.	Name	ECS601																				
			Max. Marks															Total					
			10	10	10	10	40	6	8	6	8	12	60	12	12	12	12	12	18	20	18	20	24
			CT1	CT2	CT3	Asn	I	CO1	CO2	CO3	CO4	CO5	E	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
1	TCA1609001	AARADHYA JAIN	7.0	8.3	8.7	10	35	4.8	6.2	5.3	7.0	10.7	45	9	9	9	9	9	14	15	14	16	20
2	TCA1609002	AARUSHI JAIN	7.0	8.3	A	10	33	4.8	6.2	5.3	7.0	2.0	44	8.8	8.8	8.8	8.8	8.8	14	15	14	16	11
3	TCA1609003	AMRITA KUMARI	A	7.3	5.3	10	31	2.0	2.0	4.9	6.4	7.3	26	5.2	5.2	5.2	5.2	5.2	7	7	10	12	13
4	TCA1609004	AAYUSH JAIN	7.3	9.3	9.3	10	38	4.9	6.4	5.7	7.6	11.3	47	9.4	9.4	9.4	9.4	9.4	14	16	15	17	21
5	TCA1609005	AAYUSHI JAIN	7.3	8.3	6.3	10	34	4.9	6.4	5.3	7.0	8.3	38	7.6	7.6	7.6	7.6	7.6	13	14	13	15	16
6	TCA1609006	AAYUSHI JAIN	5.3	8.7	7.7	10	34	4.1	5.2	5.5	7.2	9.7	42	8.4	8.4	8.4	8.4	8.4	13	14	14	16	18
7	TCA1609007	ABDUL KAFEEL	5.7	7.7	A	10	31	4.3	5.4	5.1	6.6	2.0	31	6.2	6.2	6.2	6.2	6.2	10	12	11	13	8
8	TCA1609008	ABDUL KAREEM	8.0	9.3	A	10	36	5.2	6.8	5.7	7.6	2.0	37	7.4	7.4	7.4	7.4	7.4	13	14	13	15	9
9	TCA1609009	ABHISHEK JAIN	5.7	6.7	6.7	10	31	4.3	5.4	4.7	6.0	8.7	32	6.4	6.4	6.4	6.4	6.4	11	12	11	12	15
10	TCA1609010	ABHISHEK JAIN	8.0	A	6.7	10	32	5.2	6.8	2.0	2.0	8.7	43	8.6	8.6	8.6	8.6	8.6	14	15	11	11	17
11	TCA1609013	ADHYATMA JAIN	6.7	8.3	A	10	35	4.7	6.0	5.3	7.0	2.0	37	7.4	7.4	7.4	7.4	7.4	12	13	13	14	9
12	TCA1609016	AKSHAT JAIN	5.7	8.3	A	10	33	4.3	5.4	5.3	7.0	2.0	40	8	8	8	8	8	12	13	13	15	10
13	TCA1609017	AKSHITA JAIN	8.0	8.7	A	10	36	5.2	6.8	5.5	7.2	2.0	44	8.8	8.8	8.8	8.8	8.8	14	16	14	16	11
14	TCA1609018	AMAN JAIN	7.7	8.7	7.3	10	34	5.1	6.6	5.5	7.2	9.3	42	8.4	8.4	8.4	8.4	8.4	13	15	14	16	18
15	TCA1609021	AMOL JAIN	7.3	8.3	A	10	34	4.9	6.4	5.3	7.0	2.0	41	8.2	8.2	8.2	8.2	8.2	13	15	14	15	10
16	TCA1609026	ANVITA JAIN	7.7	9.3	A	10	36	5.1	6.6	5.7	7.6	2.0	42	8.4	8.4	8.4	8.4	8.4	13	15	14	16	10
17	TCA1609029	AYUSH JAIN	6.0	8.3	8.7	10	37	4.4	5.6	5.3	7.0	10.7	39	7.8	7.8	7.8	7.8	7.8	12	13	13	15	18
18	TCA1609030	AYUSH JAIN	A	8.7	9.7	10	36	2.0	2.0	5.5	7.2	11.7	44	8.8	8.8	8.8	8.8	8.8	11	11	14	16	20
19	TCA1609034	AYUSHI JAIN	7.0	8.3	9.0	10	37	4.8	6.2	5.3	7.0	11.0	47	9.4	9.4	9.4	9.4	9.4	14	16	15	16	20
20	TCA1609036	DHEERAJ JAIN	7.7	8.7	A	10	34	5.1	6.6	5.5	7.2	2.0	37	7.4	7.4	7.4	7.4	7.4	12	14	13	15	9
21	TCA1609043	GOUTAM VOHRA	7.3	7.3	8.3	10	34	4.9	6.4	4.9	6.4	10.3	38	7.6	7.6	7.6	7.6	7.6	13	14	13	14	18
22	TCA1609045	HARSH JAIN	A	8.3	7.7	10	34	2.0	2.0	5.3	7.0	9.7	44	8.8	8.8	8.8	8.8	8.8	11	11	14	16	18
23	TCA1609047	HIMANI JAIN	6.7	8.7	8.7	10	36	4.7	6.0	5.5	7.2	10.7	43	8.6	8.6	8.6	8.6	8.6	13	15	14	16	19
24	TCA1609049	JATIN JAIN	7.0	9.3	8.3	10	37	4.8	6.2	5.7	7.6	10.3	40	8	8	8	8	8	13	14	14	16	18
25	TCA1609051	MAHAK ARA	7.3	8.7	A	10	36	4.9	6.4	5.5	7.2	2.0	44	8.8	8.8	8.8	8.8	8.8	14	15	14	16	11
26	TCA1609058	MD SHAMSHAD	8.7	8.7	A	10	35	5.5	7.2	5.5	7.2	2.0	43	8.6	8.6	8.6	8.6	8.6	14	16	14	16	11
27	TCA1609060	MITANSHU MEHTA	A	8.3	8.7	10	35	2.0	2.0	5.3	7.0	10.7	36	7.2	7.2	7.2	7.2	7.2	9	9	13	14	18
28	TCA1609062	MOHD AAMIR	7.7	9.3	A	10	36	5.1	6.6	5.7	7.6	2.0	43	8.6	8.6	8.6	8.6	8.6	14	15	14	16	11
29	TCA1609065	MOHIT JAIN	A	9.3	9.3	10	38	2.0	2.0	5.7	7.6	11.3	48	9.6	9.6	9.6	9.6	9.6	12	12	15	17	21

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Sl.No.	Enrollment No.	Name	ECS601																				
			Max. Marks															Total					
			10	10	10	10	40	6	8	6	8	12	60	12	12	12	12	12	18	20	18	20	24
			CT1	CT2	CT3	Asn	I	CO1	CO2	CO3	CO4	CO5	E	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
30	TCA1609067	NAMAN JAIN	5.0	8.3	7.7	10	35	4.0	5.0	5.3	7.0	9.7	41	8.2	8.2	8.2	8.2	8.2	12	13	14	15	18
31	TCA1609069	NAMITA PRADHAN	9.0	9.3	A	10	37	5.6	7.4	5.7	7.6	2.0	49	9.8	9.8	9.8	9.8	9.8	15	17	16	17	12
32	TCA1609075	PRAGATI JAIN	6.0	8.7	8.7	10	35	4.4	5.6	5.5	7.2	10.7	40	8	8	8	8	8	12	14	13	15	19
33	TCA1609076	PRAGATI JAIN	6.7	8.3	7.7	10	34	4.7	6.0	5.3	7.0	9.7	39	7.8	7.8	7.8	7.8	7.8	12	14	13	15	17
34	TCA1609079	PRANJAL JAIN	7.0	8.3	8.7	10	35	4.8	6.2	5.3	7.0	10.7	47	9.4	9.4	9.4	9.4	9.4	14	16	15	16	20
35	TCA1609081	PRIYANSHI JAIN	7.0	A	8.0	10	33	4.8	6.2	2.0	2.0	10.0	45	9	9	9	9	9	14	15	11	11	19
36	TCA1609082	PRIYANSHU JAIN	A	8.3	7.3	10	33	2.0	2.0	5.3	7.0	9.3	38	7.6	7.6	7.6	7.6	7.6	10	10	13	15	17
37	TCA1609088	RITIK JAIN	6.0	7.7	A	10	32	4.4	5.6	5.1	6.6	2.0	39	7.8	7.8	7.8	7.8	7.8	12	13	13	14	10
38	TCA1609089	RITIKA JAIN	7.7	8.3	8.3	10	36	5.1	6.6	5.3	7.0	10.3	38	7.6	7.6	7.6	7.6	7.6	13	14	13	15	18
39	TCA1609090	RIYA JAIN	6.0	7.7	9.3	10	35	4.4	5.6	5.1	6.6	11.3	44	8.8	8.8	8.8	8.8	8.8	13	14	14	15	20
40	TCA1609092	SAHIL JAIN	6.7	8.3	9.0	10	37	4.7	6.0	5.3	7.0	11.0	45	9	9	9	9	9	14	15	14	16	20
41	TCA1609095	SAJAL GUPTA	6.7	8.3	A	10	33	4.7	6.0	5.3	7.0	2.0	39	7.8	7.8	7.8	7.8	7.8	12	14	13	15	10
42	TCA1609096	SAMBHAV JAIN	8.0	8.7	8.3	10	35	5.2	6.8	5.5	7.2	10.3	41	8.2	8.2	8.2	8.2	8.2	13	15	14	15	19
43	TCA1609097	SAMBHAV KUMAR JAIN	8.3	7.3	A	10	35	5.3	7.0	4.9	6.4	2.0	47	9.4	9.4	9.4	9.4	9.4	15	16	14	16	11
44	TCA1609100	SANKALP JAIN	6.7	7.3	4.3	10	32	4.7	6.0	4.9	6.4	6.3	34	6.8	6.8	6.8	6.8	6.8	11	13	12	13	13
45	TCA1609101	SARTHAK JAIN	8.0	9.3	A	10	36	5.2	6.8	5.7	7.6	2.0	40	8	8	8	8	8	13	15	14	16	10
46	TCA1609102	SAUMYA JAIN	8.3	9.3	A	10	36	5.3	7.0	5.7	7.6	2.0	48	9.6	9.6	9.6	9.6	9.6	15	17	15	17	12
47	TCA1609111	SHUBHAM KUMAR JAIN	9.3	8.3	9.3	10	39	5.7	7.6	5.3	7.0	11.3	48	9.6	9.6	9.6	9.6	9.6	15	17	15	17	21
48	TCA1609113	SIDDHARTH JAIN	5.3	8.7	6.7	10	33	4.1	5.2	5.5	7.2	8.7	40	8	8	8	8	8	12	13	13	15	17
49	TCA1609115	SINJANEE JAIN	6.0	7.7	6.7	10	32	4.4	5.6	5.1	6.6	8.7	41	8.2	8.2	8.2	8.2	8.2	13	14	13	15	17
50	TCA1609117	SMRATI JAIN	8.7	9.3	A	10	36	5.5	7.2	5.7	7.6	2.0	40	8	8	8	8	8	13	15	14	16	10
51	TCA1609118	SOMYA JAIN	8.3	9.7	A	10	37	5.3	7.0	5.9	7.8	2.0	46	9.2	9.2	9.2	9.2	9.2	15	16	15	17	11
52	TCA1609119	SONALI JAIN	A	9.3	9.3	10	39	2.0	2.0	5.7	7.6	11.3	48	9.6	9.6	9.6	9.6	9.6	12	12	15	17	21
53	TCA1609121	SUBHAM JAIN	7.7	7.3	A	10	33	5.1	6.6	4.9	6.4	2.0	44	8.8	8.8	8.8	8.8	8.8	14	15	14	15	11
54	TCA1609125	UPVAN JAIN	7.7	A	7.7	10	34	5.1	6.6	2.0	2.0	9.7	45	9	9	9	9	9	14	16	11	11	19
55	TCA1609126	URVASHI TYAGI	A	7.7	7.3	10	34	2.0	2.0	5.1	6.6	9.3	46	9.2	9.2	9.2	9.2	9.2	11	11	14	16	19
56	TCA1609127	VAIBHAV JAIN	5.0	7.7	6.3	10	32	4.0	5.0	5.1	6.6	8.3	33	6.6	6.6	6.6	6.6	6.6	11	12	12	13	15
57	TCA1609129	VIKASH JAIN	7.3	8.7	8.3	10	35	4.9	6.4	5.5	7.2	10.3	43	8.6	8.6	8.6	8.6	8.6	14	15	14	16	19
58	TCA1609133	YASHI SHARMA	8.3	8.7	A	10	36	5.3	7.0	5.5	7.2	2.0	47	9.4	9.4	9.4	9.4	9.4	15	16	15	17	11

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Sl.No.	Enrollment No.	Name	ECS601																			
			Max. Marks															Total				
			10	10	10	10	40	6	8	6	8	12	60	12	12	12	12	12	18	20	18	20	24
			CT1	CT2	CT3	Asn	I	CO1	CO2	CO3	CO4	CO5	E	CO1	CO2	CO3	CO4	CO5	CO1	CO2	CO3	CO4	CO5
59	TCA1609135	ABHISHEK JAIN	6.7	7.7	8.7	10	36	4.7	6.0	5.1	6.6	10.7	49	9.8	9.8	9.8	9.8	9.8	14	16	15	16	20
60	TCA1609136	VIBHOR JAIN	7.0	7.7	8.3	10	35	4.8	6.2	5.1	6.6	10.3	45	9	9	9	9	9	14	15	14	16	19
61	TCA1711001	SANSKRITI JAIN	A	7.67	2.67	10	28	2.0	2.0	5.1	6.6	4.7	32	6.4	6.4	6.4	6.4	6.4	8	8	11	13	11
62	TCA1711002	VIJAY KUMAR TOMAR	A	6.33	7.33	10	32	2.0	2.0	4.5	5.8	9.3	30	6	6	6	6	6	8	8	11	12	15
63	TCA1711003	VAIBHAV JAIN	6	7.33	A	10	31	4.4	5.6	4.9	6.4	2.0	35	7	7	7	7	7	11	13	12	13	9
64	TCA1711005	MOHFEEZ AHMAD	5	7.33	A	10	30	4.0	5.0	4.9	6.4	2.0	31	6.2	6.2	6.2	6.2	6.2	10	11	11	13	8
65	TCA1711006	SHRUTIKA KHANAK	6.67	6.33	A	10	31	4.7	6.0	4.5	5.8	2.0	40	8	8	8	8	8	13	14	13	14	10
66	TCA1711010	VAISHALI	7.33	8.67	A	10	34	4.9	6.4	5.5	7.2	2.0	40	8	8	8	8	8	13	14	13	15	10
																			18	20	18	20	24
																			CO1	CO2	CO3	CO4	CO5
														Target >50					9	10	9	10	12
														No of Students have >Target					63	61	66	66	39

Benchmark and Attainment	
60% of Students get more than target	1
70% of Students get more than target	2
80% of Students get more than target	3

Students Above Threshold

	Cos	Students	%	Att.
	CO1	63	95.455	3
	CO2	61	92.424	3
	CO3	66	100	3
	CO4	66	100	3
	CO5	39	59.091	0
				2.4

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CO		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
ECS601CO1	Apply artificial intelligence techniques, including search heuristics, knowledge representation, planning and reasoning	1	2			3							1	1	2	1
ECS601CO2	**Describe the key components of the artificial intelligence**	1	2	2		2							1	2	2	1
ECS601CO3	**Understanding awareness and fundamental understanding thevarious concepts of Prolog and Symbolic, Monotonic and nonmonotonic** reasoning	1	1	2	3	1							1	1	2	3
ECS601CO4	**Understanding the concept of knowledge representation techniques called slot, filler and Natural Language processing**			3	2	3							1	2	3	2
ECS601CO5	**Understanding the concept of Expert System and its Components and demonstrate the working of MYCIN AND DENDRAL expert**			2		2							1	3	2	2
Average		1	1.67	2.25	2.5	2.2							1	1.8	2.2	1.8
	Attainment	0.8	1.33	1.8	2	1.76							0.8	1.44	1.76	1.44

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