3	a	Difference of linear and logistic regression?	2	CO1, 2	L2	1.3.1
3	b	Define SVM? Also discuss it working?	5	CO1, 2	L3	1.3.1
3	c	Write the difference between different type of Machine learning Algorithm?	5	CO1, 2	LI	2.1.2
3	d	Estimate conditional probability of each attribute {color,leg,,height,,smelly} the species classes:{M,H} using the data given in table using these probabilit estimate the probability value for new instance (color=green,,legs=2,height=tall and smelly=no) No Color Legs Height Smelly Species 1 white 3 short yes M 2 green 2 tall no M 3 green 3 short yes M 4 white 3 short yes M 5 Green 2 short no H 6 White 2 tall no H 7 White 2 tall no H 8 White 2 short yes H	5	CO1, 2	L2	1.3.1

You are given 15 points in the Cartesian coordinate system as follows.

Point	coordinate
A1	(2,10)
A2	(2,6)
A3	(11,11)
A4	(6,9)
A5	(6,4)
A6	(1,2)
A7	(5,10)
A8	(4,9)
A9	(10,2)
A10	(7,5)
A11	(9,11)
A12	(4,6)
A13	(3,10)
A14	(3,8)
A15	(6,11)

6)5

Input Dataset
We are also given the information that we need to make 3 clusters. It means we are given K=3. solve this numerical on k-means clustering

2	d				6	CO2	L3	2.1.3

	a	Difference between Bagging and Boosting?	2	CO1, 2	L2	1.3.1
3	b	Explain the simple Ensembling Technique?	5	CO1, 2	L3	1.3.1
3	c	Explain the different boosting algorithm?	5	CO1, 2	L1	2.1.2
3	d	Short notes 1)Out of Bag Evaluation 2)Random Patches and Random Subspaces	5	CO1, 2	L2	1.3.1

$36 + 1$

$\dfrac{16 + 25}{41}$

$9 \sqrt{(2-10)^2 + (4-6)^2}$

$\sqrt{64}$

$(4)^2 + 9$

$(2-2)^0 + (6-10)^2$

$4 + 9$

$9 + 16$

$25 + 25$

$\dfrac{(9)^2 - (5)^2}{\sqrt{81} + 25 \cdot 4}$

$4 + 25$

$\dfrac{4 + 16}{16 + 4}$

$4 + 9 \sqrt{(2-4)^2 + (6-9)^2}$

$4 + 9$

$16 + 64$

$\dfrac{4 + 4 \cdot 49 + 25}{25}$

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भिलाई (छत्तीसगढ़)

स्वशासी संस्थान

Class Test 1
Session: EVEN SEM (2022-23)

Subject Code	CS109603
Subject Name	Artificial Intelligence and Machine Learning

Course & Sem: B. Tech. 6th Sem
Sec(C,D)

Branch: CSE

Max Marks: 40   Min Marks: 14   Time: 2Hours

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Q. No.		Questions	M	CO	BL	PI
1	a	Difference between Bias and Variance?	2	CO1	L2	1.3.1
1	b	Explain machine learning Life cycle?	6	CO1	L2	1.3.1
1	c	Explain Bais variance Tradeoff along with different combination of Bais and variance?	6	CO1	L2	1.3.1
1	d	Short Notes: a)Scope of Machine Learning d)Limitation of Machine Learning	6	CO1	L1	2.1.2
2	a	Define Perceptron?	2	CO2	L3	2.1.3
2	b	Explain KNN algorithm and it working with different steps. Find the solution to the given question. We have an objective testing with two attribute (Acid Durability) and (Strength)to classify whether a special paper tissue is good or not. Here are four training sampleX1 (Acid Durability) X2(Strength) y(classification) 7 7 Bad 7 4 Bad 3 4 Bad 1 4 Bad Now the factor produce a new paper tissue that pass laboratory test with X1=3 and X2=7.Without another expensive survey can we guess what classification of this new tissue is? Assume k=3	6	CO2	L2	1.3.1
2	c	Define Perceptron?Explain in brief Perceptron Convergence Theorem?	6	CO2	L2	1.3.1
2	d	Explain different type of Naïve Bayes algorithm?.	6	CO2	L3	2.1.3

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भिलाई (छत्तीसगढ़)

स्वशासी संस्थान

Class Test-II
Session: EVEN SEM (2022-23)

Subject Code	CS109603
Subject Name	Artificial Intelligence and Machine Learning

Course &Sem: B. Tech. 6th Sem
Sec(C,D)
Max Marks: 40

Branch: CSE

Min Marks: 14

Time: 2Hours

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Q. No.		Questions	M	CO	BL	PI
1	a	Define Spectral Clustering?	2	CO1	L2	1.3.1
1	b	Difference between Markov Model and Hidden Markov Model?	6	CO1	L2	1.3.1
1	c	Explain different type of Distribution?	6	CO1	L2	1.3.1
1	d	(table below) Solve using Id3 algorithm	6	CO1	L1	2.1.2
2	a	Write 4 application of clustering?	2	CO2	L3	2.1.3
2	b	Explain various clustering methods?	6	CO2	L2	1.3.1
2	c	Difference between Agglomerative clustering and Divisive Clustering?	6	CO2	L2	1.3.1

Table for Q1(d):

Sl no	AGE	COMPETITION	TYPE	PROFIT
1	OLD	YES	S/W	DOWN
2	OLD	NO	S/W	DOWN
3	OLD	NO	H/W	DOWN
4	MID	YES	S/W	DOWN
5	MID	YES	H/W	DOWN
6	MID	NO	H/W	UP
7	MID	NO	S/W	UP
8	NEW	YES	S/W	UP
9	NEW	NO	H/W	UP
10	NEW	NO	S/W	UP

u - appl

2,4,2,6

2.

2,4,2,6

2,2,2,2,5

(364)

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Class Test 1
Session: EVEN SEM (2022-23)

Subject Code	CS102644
Subject Name	Cloud Computing

Course : B. Tech.   Branch: CSE
Sem : 6ᵗʰ (A,B,C,D,IoTCS,DS)
Max Marks: 40   Min Marks: 14   Time: 2Hours

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Q. No.		Questions	M	CO	BL	PI
1	a	Define the term "Cloud Computing".	2	CO1	L2	1.3.1
1	b	What are the different characteristics of Cloud Computing?	6	CO1	L2	1.3.1
1	c	What are the cloud adoption and rudiments methods?	6	CO1	L2	1.3.1
1	d	Explain Cloud and Dynamic Infrastructure.	6	CO1	L1	2.1.2
2	a	What do you mean by term "as-a-service"?	2	CO2	L3	2.1.3
2	b	Write short notes on (any 2) : i) DBaaS ii) NaaS iii) BaaS	6	CO2	L2	1.3.1
2	c	Explain briefly Cloud Referencing Model.	6	CO2	L2	1.3.1
2	d	Differentiate between Fog Computing and Edge computing.	6	CO2	L3	2.1.3
3	a	List the companies who offer cloud service development.	2	CO1, 2	L2	1.3.1
3	b	Explain different types of cloud.	5	CO1, 2	L3	1.3.1
3	c	Explain the evolution of cloud computing.	5	CO1, 2	L1	2.1.2
3	d	Explain the most common scenario where a) a private cloud is preferred over a public cloud. b) a public cloud is preferred over a private cloud.	5	CO1, 2	L2	1.3.1

cloud-computing as a service

2)

2,6,2,6,6,5

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Rank N51 UnN (National Level)
An ISO 9001:2015 Certified Institution

Class Test-II
Session: EVEN SEM (2022-23)

Subject Code	CS102644
Subject Name	Cloud Computing

Course : B. Tech.   Branch: CSE
Sem : 6th (A, B, C, D)
Max Marks: 40   Min Marks: 14   Time: 2Hours

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Q. No.		Questions	M	CO	BL	PI
1	a	Define virtualization. Why is virtualization important in cloud computing?	2	CO1	L2	1.3.1
1	b	Discuss and Explain Map Reduce model.	6	CO1	L2	1.3.1
1	c	What do you mean by Virtualization Hypervisor Management Software?	6	CO1	L2	1.3.1
1	d	Write Short notes on(any2) : a)VSAN b)VLAN c) Storage Virtualization	6	CO1	L1	2.1.2
2	a	What do you mean by cloud ecosystem?	2	CO2	L3	2.1.3
2	b	Explain Security Reference Architecture of cloud with neat diagram.	6	CO2	L2	1.3.1
2	c	Explain the following terms (any 2): a)Cloud Analytics b)Testing Under Control c) Cloud BPM	6	CO2	L2	1.3.1
2	d	Write short notes on : a) Security Challenges of cloud OR b) Virtualization Security Management	6	CO2	L3	2.1.3
3	a	Define Inter cloud.	2	CO1, 2	L2	1.3.1
3	b	Discuss the architecture of cloud federation stack.	5	CO1, 2	L3	1.3.1
3	c	What do you mean by Third party cloud services? Give suitable examples.	5	CO1, 2	L1	2.1.2
3	d	Write short notes on (any 2): a) Hadoop b)Aneka c)Google app engine	5	CO1, 2	L2	1.3.1

	Questions	Marks	CO	BL	PI
2 C	Calculate FIRST( ) & FOLLOW ( )for given Grammar $E=E*T/T$ $T=T+F/F$ $F=(E)/id$, Modify the following CFG so as to make it suitable for Top-down parsing. Construct LL1 parser for modified CFG show moves made by this LL1 parser on Input id+id * id	6	CO2	L3	1.2.2
2 d	Explain the following terms: a) Specification of Tokens b) Recognition of Tokens	6	CO2	L3	1.2.2

SECTION 3

Question on No.	Questions	Marks	CO	BL	PI

3 a	What is token counting? Count the tokens in given instructions :
	For(i=1;i<=n;i++)
	x=x+y;
	y=y+x;
		2	CO3	L2	1.2.2

3 b	S → a S ← (T) S T → T,S T → S construct the predictive parsing Table For the above grammar and also parse the given string w=(a,a)	5	CO3	L3	1.2.2
3 C	Explain classification of parser with suitable diagram.	5	CO3	L3	1.2.2
3 d	Let G be a Context Free Grammar for which the production Rules are given below: S -> aB|bA A -> a|aS|bAA B -> b|bS|aBB Drive the string aaabbabbba using the above grammar (using Left Most Derivation and Right most Derivation).	5	CO3	L3	1.2.2

1	d)	Write the three address code for expression If A < B and C < D then t = 1 else t = 0.	6	2	1,2	1,2
	a)	Explain Basic block.	2	1	2	1
	b)	Generate the code sequence for the given expression: d= (a-b) + (a-c) + (a-c).	6	3	2	1,2
2	c)	What are the major issues in code generation?	6	3	2	1,2
	d)	Define the term dead code elimination and copy propagation.	6	2	2	1,2
	a)	What is Activation Record & Tree?	2	2	1	1,2
3	b)	What are different storage allocation strategies Explain them. OR Construct CLR Parsing table for the following grammar :- S → CC C→cC|d	5	3	1,3	1,2
	c)	What are different parameter passing mechanism explain them.	5	2	1	1,2
	d)	Explain the dynamic memory allocation.	5	1	2	1,2

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BTech (6th सेम)

Semester – 6th   Session 2022-23

Class Test-I

Subject Code: CS102601   Subject Name: compiler design

Duration: 02 Hrs   Max. Marks: 40

- **CO1** To understanding the fundamental principles in compiler design
- **CO2** To provide the skills needed for building compilers for various situations that one may encounter in a career in ComputerScience.
- **CO3** After the course a student should have an understanding, based on knowledge of the underlying machine architecture, the limitations and efficiency of various design techniques of compilers implementation

Note: *Attempt Ques.1 & Ques.2. Parts (a) of both the questions is compulsory & attempt any two parts from (b), (c) & (d) of both the questions*

SECTION 1

Question No.	Questions	Marks	CO	BL	PI
1 a)	Write differences between compiler and interpreter..	2	CO1	L2	1.2.1
1 b)	What are different phases of compiler? Explain in detail	6	CO2	L3	1.2.1
1 c)	Explain compiler construction tools kit.	6	CO2	L3	1.2.2
1 d)	Convert the given NFA to DFA:	6	CO2	L3	1.2.2

1 d) Convert the given NFA to DFA:

Input/State	0	1
q0 (start state)	{q0, q1}	q0
q1	q2	q1
q2	q3	q3
q3 (final state)	φ (null character)	q2

SECTION 2

Question on No.	Questions	Marks	CO	BL	PI
2 a)	What is Bootstrapping.	2	CO1 ,2	L2	1.2.2
2b	Explain cross compiler with example.	6	CO2	L3	1.2.2

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*NIRF ranking 2020 (250-300) band

Class Test II	PROGRAM & BRANCH B.TECH. (Computer Science Engineering)	Semester VI (A, B, C, D, DS & IOTCS)
Max. Time 02 Hours	COURSE Compiler Design[CS102601]	Max. Marks 40

CO1 To understanding the fundamental principles in compiler design
CO2 To provide the skills needed for building compilers for various situations that one may encounter in a career in Computer Science.
CO3 After the course a student should have an understanding, based on knowledge of the underlying machine architecture, the limitations and efficiency of various design techniques of compilers implementation

INSTRUCTIONS: *Attempt all the questions. Part (a) of each question is compulsory. Attempt any two parts from remaining parts (b), (c) and (d).*

Q. No.		Questions	Marks	BL	CO	PO
1	a)	What is a Synthesized attribute?	2	1	1, 2	PO
	b)	Translate the following statement: $A= - B * (C+D)$ to Three Address Statements, Quadruple, Direct and Indirect Triple Representation.	6	3	1, 3	1,2
	c)	Explain the translation schema for the switch case statement.	6	2	1, 3	1,2
		OR				
		Construct an **LALR(1)** parsing table for the following given grammar : $S \rightarrow Ba/bBc/dc/bda$ $B \rightarrow d$				

3	a	Write about complex objects in R.	2	CO3	L2	1.
3	b	Explain various data structures involved in R programming with example.	5	CO1	L3	1.
3	c	Write short notes on: 1. library() 2. require()	5	CO5	L1	2.1
3	d	Illustrate the creation of an empty vector and insert the values in the vector using for loop.	5	CO6	L2	1.3

various data structure involw
in R programi on :-
like (), quadesle ,, auailable ir
a pot of language than r
orsuni-' by

2,5,5, 6

2	b	Write about apply, lapply, sapply with suitable examples	8	CO4	L2	1.3.1
2	c	Create a data frame with the following structure. Write programs for the following: a. Extract two column names using column name. b. Extract the first two rows and then all columns. c. Extract 3rd and 5th row with 2nd and 4th column.	8	CO5	L2	1.3.1
2	d	The students taught by 3 different methods gave the following performance(marks): A 19,9,12,16,7,14,11 B 8,13,3,17,15 C 14,11,10,9,15,16 Calculate the analysis of variance.	8	CO2	L3	2.1.3

Create a data frame with the following structure.

EMPID	EMPNAME	SALARY	START DATE
1	Satish	50000	01-11-2013
2	Rani	75000	05-06-2011
3	Praveen	130000	09-03-2010
4	Pallavi	90000	27-04-2004
5	Ramesh	80000	29-05-2000

15)

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Session: EVEN SEM (2022-23)

Class Test - I	Course Name: B Tech (CSE)	Semester: 6th (C, D)
Time: 2 Hours	Subject Name: Data analytics using R Programming Subject Code: CS102626	Min Marks: 14 Max Marks: 40

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Course Outcome:

CO1	Learn Fundamentals of R.
CO2	Covers how to use different functions in R, how to read data into R, accessing R packages.
CO3	Writing R functions, debugging, and organizing data using R functions.
CO4	Cover the Basics of statistical data analysis with examples.
CO5	The whole syllabus will give an idea to collect, compile and visualize data using statistical functions.

Q. No.		Questions	Marks	CO	BL	PI
1	a	Explain commands : 1. installed.packages() 2. packageDescription()	2	CO1	L2	1.3.1
1	b	Explain Input and Output functions usage: a. scan() b. readLine()	6	CO2	L2	1.3.1
1	c	What are vectors? Explain different ways to create vectors. Give example.	6	CO3	L2	1.3.1
1	d	R has five "atomic" classes of object. What are they? Quote examples.	6	CO3	L1	2.1.2
2	a	What would be the output of the following code? > x <- 1:4 > x > 2	2	CO2	L3	2.1.3
2	b	How to import packages in R? Give examples.	6	CO4	L2	1.3.1
2	c	Demonstrate the following using R programming : 1. For loop 2. Repeat loop	6	CO5	L2	1.3.1
2	d	Explain Special Values functions : NA, Inf and −inf.	6	CO2	L3	2.1.3

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Session: EVEN SEM (2022-23)

Class Test - 2 Time: 2 Hours	Course Name: B Tech (CSE – B + C) Subject Name: Data analytics using R Programming Subject Code: CS102626	Sem: 6th Min Marks: 14 Max Marks: 40

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts (b), (c) and (d)

Course Outcome:

O1	Learn Fundamentals of R.
O2	Covers how to use different functions in R, how to read data into R, accessing R packages.
O3	Writing R functions, debugging, and organizing data using R functions.
CO4	Cover the Basics of statistical data analysis with examples.
CO5	The whole syllabus will give an idea to collect, compile and visualize data using statistical functions.

Q. No.		Questions	Marks	CO	BL	PI
1	a	Explain cbind() and rbind() with example.	4	CO1	L2	1.3.1
1	b	Explain melting and casting in detail with example.	8	CO2	L2	1.3.1
1	c	Explain various R-String Manipulating Text Data as mentioned below: 1. substr(), 2. strsplit() 3. paste() 4. grep() 5. toupper() 6. tolower()	8	CO3	L2	1.3.1
1	d	Create a 5X4 matrix and perform the following operations on them: 1. Check if the element exist in matrix or not. 2. Arrange the matrix row wise and access the element at [, 3]. 3. Update the matrix by adding 1 row and 1 column. 4. Convert the given matrix to dataframe.	8	CO3	L1	2.1.2
2	a	Write a brief note on factors.	4	CO2	L3	2.1.3

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Session: EVEN SEM (2022-23)

Class Test -II	Course Name: B Tech (CSE – A, B, C, D)	Semester: 6th
Time: 2Hours	Subject Name: Software Engineering and Agile	Min Marks: 14
	Subject Code: CS102602	Max Marks: 40

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Course Outcome:

CO1	Developing some basic level of software architecture/design
CO2	Extracting and analysing software requirements specifications for different projects
CO3	Select and implement different software development process models
CO4	Defining the concepts of software quality and reliability on the basis of International quality standards
CO5	Analysing software risks and risk management strategies

Q. No.		Questions	Marks	CO	BL	PI
1	a	What is Feasibility Study?	2	CO1	L2	1.3.1
1	b	What is DFD? Develop a DFD for creating software for ATM machine	6	CO2	L2	1.3.1
1	c	Explain the concept of top down and bottom up design in software engineering.	6	CO3	L2	1.3.1
1	d	What are coding standards and coding guidelines recommended by many software development organizations? Explain.	6	CO3	L1	2.1.2
2	a	What is Debugging?	2	CO2	L3	2.1.3
2	b	Explain the levels of testing.	6	CO4	L2	1.3.1
2	c	Distinguish between verification and validation.	6	CO5	L2	1.3.1
2	d	What is SRS? Explain characteristics & needs of SRS.	6	CO2	L3	2.1.3
3	a	When to use agile model.	2	CO3	L2	1.3.1
3	b	Explain Scrum.	5	CO1	L3	1.3.1
3	c	Explain the phases of extreme Programming.	5	CO5	L1	2.1.2
3	d	Write short notes on i)KANBAN ii)Crystal	5	CO6	L2	1.3.1

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निराली संस्थान

Session: EVEN SEM (2022-23)

Class Test -1	Course Name: B Tech (CSE) A, B, C, D.	Semester: 6th
Time: 2 Hours	Subject Name: Software Engineering and Agile	Min Marks: 14
	Subject Code: CS102602	Max Marks: 40

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Course Outcome:

CO1	Developing some basic level of software architecture/design
CO2	Extracting and analysing software requirements specifications for different projects
CO3	Select and implement different software development process models
CO4	Defining the concepts of software quality and reliability on the basis of International quality standards
CO5	Analysing software risks and risk management strategies

Q. No.		Questions	Marks	CO	B t.	PI
1	a	What is the unified process?	2	CO1	L2	1.3.1
1	b	Write down major characteristics of a software. Illustrate with a diagram that the software does not wear out.	6	CO2	L2	1.3.1
1	c	Explain software engineering as a layered technology.	6	CO3	L2	1.3.1
1	d	Write short notes: 1)Evolution process model 2)Waterfall Model	6	CO3	L1	2.1.2
2	a	Explain Reverse Engineering	2	CO2	L3	2.1.3
2	b	Explain about the incremental model. List out its merits and demerits.	6	CO4	L2	1.3.1
2	c	With suitable illustrations explain spiral model evolutionary software development.	6	CO5	L2	1.3.1
2	d	A project size of 200KLOC is to be Developed ,Software Development team has average experience on similar type of project. The project size is not very tight. Calculate the effort, development time, average staff size and productivity of the project.	6	CO2	L3	2.1.3
3	a	Define requirement engineering.	2	CO3	L2	1.3.1