

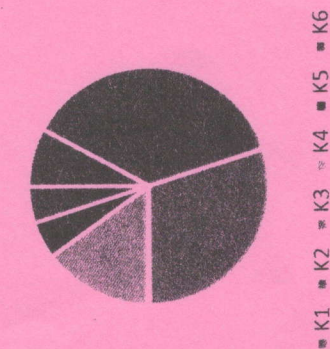
 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		[04-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program	ME / EEE		Branch		B. Tech
Subject Name	Introduction to ML Using Python				Session Even, 2024-2025
Semester	II		Year		June, 2025
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>.			
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)					
Q. N	QUESTIONS		Marks	COs	KL
i	What is Machine Learning? Give a real-world example.		2	CO1	K1
ii	List any two control flow statements used in Python.		2	CO1	K1
iii	What is the difference between a list and a tuple in Python?		2	CO2	K2
iv	Write any two key features of Python dictionaries.		2	CO2	K2
v	Define supervised and unsupervised learning.		2	CO3	K2
vi	Write the names of any two classification algorithms.		2	CO3	K1
vii	What is the purpose of using the fit() and predict() functions in scikit-learn?		2	CO4	K2
viii	What is overfitting in machine learning?		2	CO4	K2
ix	List any two public datasets commonly used in machine learning projects.		2	CO5	K1
x	Mention two important steps involved in preparing a dataset for training a model.		2	CO5	K2

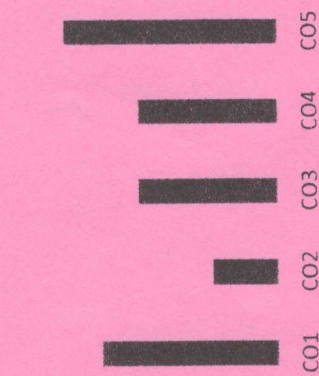
CO1	Understand the basics of Python programming, control flow, looping statements and machine learning.
CO2	Understand Strings, Lists, Tuples, Dictionaries, and Files in Python
CO3	Illustrate supervise and unsupervised machine learning techniques.
CO4	Apply machine learning algorithms to predict the outputs.
CO5	Design machine learning models to analyze public dataset.

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Write a Python script that takes a string input from the user and counts the number of vowels and consonants in the string.	05	CO1	K3
3	Evaluate the given Python code and identify possible errors. Suggest modifications to correct them.	05	CO1	K5
4	Compare and contrast dictionaries and lists in terms of performance, memory usage, and use cases.	05	CO2	K4
5	Differentiate between supervised and unsupervised learning with examples.	05	CO3	K2
6	Given the dataset: [12, 15, 12, 18, 19, 21, 18, 17, 16], calculate the mean, median, mode, variance, and standard deviation.	05	CO4	K3
7	Write a Python program to read from an Excel file and apply a function to a column using Pandas.	05	CO5	K6

Section C (Answer any THREE out of FIVE) – 30 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the differences between built-in and user-defined functions in Python. Why are functions important in programming? Prepare a function to find mean of a number.	10	CO1	K2
9	Differentiate between clustering and classification. Explain the steps involved in the process of Machine Learning	10	CO2	K2
10	Explain the types of Machine Learning with examples. Mention key challenges faced during the implementation of ML models.	10	CO3	K2
11	What is Logistic Regression? Describe its working, assumptions, and where it is typically used.	10	CO4	K3
12	Explain the K-Means clustering algorithm. How does it work? What are its strengths and weaknesses?	10	CO5	K4

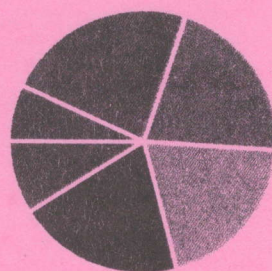
 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY		[24-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	ME, EEE, AI&DS		Branch	B. Tech	
Subject Name	English for Skill Enhancement		Session	Even, 2024-2025	
Semester	II		Year	June, 2025	
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>.			
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N	QUESTIONS	Marks	COs	KL	
1					
i	What is Malapropism?	2	CO1	KL2	
ii	What is the difference between beside and besides explain with example?	2	CO2	KL2	
iii	What do you mean by Redundant Words?	2	CO5	KL3	
iv	Give one example denoting Preposition of Time.	2	CO6	KL1	
v	Make words that ends with age and cracy.	2	CO4	KL1	
vi	Put the following prefix to make new words: neo and pan.	2	CO4	KL4	
vii	Write the opposite of busy and proper.	2	CO2	KL2	
viii	Give meaning of the words grief and joy.	2	CO1	KL6	
ix	Punctuate the sentence - vijay left her cap on the field and now it is missing.	2	CO3	KL2	
x	Explain the word "train" as a Homograph.	2	CO4	KL2	

CO1	Understand the importance of vocabulary and sentence structures.
CO2	Choose appropriate vocabulary and sentence structures for their oral and written communication.
CO3	Demonstrate their understanding of the rules of functional grammar.
CO4	Develop comprehension skills from the known and unknown passages.
CO5	Take an active part in drafting paragraphs, letters, essays, abstracts, précis and reports in various contexts.
CO6	Acquire basic proficiency in reading and writing modules of English.

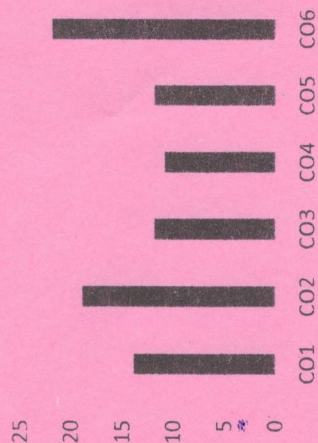
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	Cos	KL
2	Explain in brief the difference between Imperative and Exclamatory Sentences.	05	CO2	KL1
3	Explain the difference between Compounding and Blending.	05	CO2	KL3
4	Explain the difference between a Phrase and a Clause with examples.	05	CO2	KL2
5	Give 2 words borrowed from the languages; Hindi, French, and Arabic.	05	CO1	KL4
6	Write a paragraph on the topic- Discipline makes a life successful and worth living.	05	CO1	KL6
7	Explain in brief all types of Reading.	05	CO4	KL6

Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	Cos	KL
8	Describe what Abdul Kalam's view on Arts and Literature were.	10	CO5	KL1
9	Describe a situation where a havoc was created by a storm.	10	CO5	KL3
10	Write an essay on the topic - Communication Skills leads to the development of one's personality.	10	CO6	KL2
11	Write an application to the Registrar of your University asking for issuance of new identity card stating reasons of its urgency.	10	CO3	KL6
12	Write a letter to your friend congratulating him on scoring a gold certificate in NPTEL Examination.	10	CO6	KL1

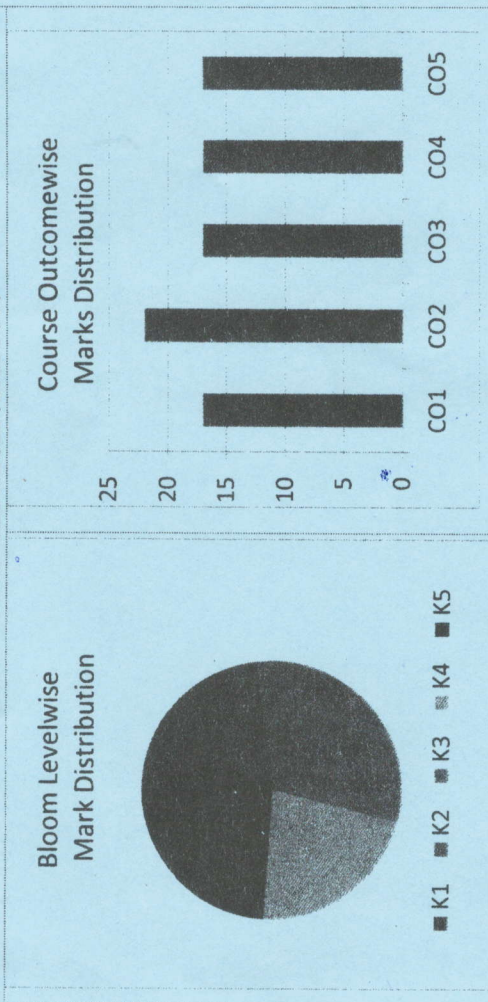
		ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	[30-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	ME, EEE and AI&DS				Branch	B. Tech
Subject Name	Engineering Chemistry				Session	Even, 2024-2025
Semester	II				Year	June, 2025
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any <u>Four</u> out of Six of Section B • Answer Any <u>Three</u> out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student</u> will comes under <u>Unfair Means</u> and will Result in the <u>Cancellation of the Paper(s)</u>.					
	Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating	

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

Q. N	QUESTIONS	Marks	COs	KL
1				
i	Why Ne ₂ molecule does not exist?	2	CO2	K3
ii	Write the composition of CNG.	2	CO4	K2
iii	Define the term auxochrome with example.	2	CO5	K1
iv	"Teflon is called as Wonder Plastic". Justify the statement.	2	CO1	K3
v	Corrosion is more rapid if area of cathode is larger than the anode. Why?	2	CO3	K3
vi	Sketch the structure of Vulcanized Rubber.	2	CO1	K1
vii	Mention the type of electronic transition for the following molecule: a. CH ₃ -CH ₂ -OH b. CH ₃ -CH=O	2	CO5	K4
viii	Calculate the bond order of NO and C ₂ Molecule.	2	CO2	K5
ix	Distinguish between the primary and secondary cells with example.	2	CO3	K2
x	Calculate the gross and net calorific value of a coal sample having the following composition. C=80%, H=7%, O=3%, S=3.5%, N=2%, and ash=5%.	2	CO4	K5

CO1	Students will acquire the basic knowledge of electrochemical procedures related to corrosion and its control.
CO2	To understand the present day up-to-date knowledge of the contemporary energy sources.
CO3	They can learn the fundamentals and general properties of polymers and other engineering materials.
CO4	They can predict potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs.
CO5	Acquire Basic knowledge of Chemistry to appreciate its applications in the field of Medicine, data storage devices and electronics.

GRAPHICAL REPRESENTATION



Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Distinguish between bonding and antibonding molecular orbitals?	05	CO2	K4
3	What is meant by wet corrosion? Explain with help of its mechanism. Explain factor affecting Corrosion.	05	CO3	K1
4	Distinguish between the addition and condensation polymers.	05	CO1	K4
5	Write the electronic configuration, energy level diagram, calculate the bond order and predict the magnetic behavior of : N ₂ and O ₂	05	CO2	K3
6	Describe the fractional distillation of petroleum with proper diagram.	05	CO4	K5
7	Explain the working principle and instrumentation of UV-visible spectroscopy? What are the different types of transition that takes place on absorption of energy in UV-visible region?	05	CO5	K5

Section C (Answer any THREE out of FIVE) – 30 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the construction and working of hydrogen oxygen fuel cell. Give the half-cell reaction and advantages of these cells.	10	CO3	K4
9	Explain the working, principle and instrumentation of NMR spectroscopy. What is meant by term chemical shift? Explain how the NMR spectrum of a compound is recorded with example.	10	CO5	K5
10	Explain how the crystal field theory for octahedral complex. Calculate the CFSE value for d3, d5, and d7 for low spin and high spin and also calculate its magnetic moment.	10	CO2	K3
11	Explain the preparation, properties and uses of the following polymers (a) Teflon (b) Bakelite (c) Nylon6,6	10	CO1	K2
12	How the following constituents in coal are related to its calorific value. (a) Moisture (b) Volatile matter (c) Sulphur content (d) Oxygen content.	10	CO4	K3

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Program	ME, EEE, AI & DS	Branch	B. Tech
Subject Name	Manufacturing Practice	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 1.5 Hour Max. Marks : 35 - Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Five out of Six of Section B - Answer Any Two out of Four of Section C - Possession of <u>Mobile Phones</u> or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator</u> or <u>Discussing with Co-Student</u> will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating

Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks

Q. N1	QUESTIONS	Marks	COs	KL
i	Define Manufacturing Process with example.	01	CO1	K1
ii	What safety precautions should be taken during machining on Lathe?	01	CO3	K2
iii	Make a list of Metal Forming Processes.	01	CO2	K4
iv	What is Sand Casting?	01	CO2	K6
v	What do you understand by pattern allowances?	01	CO3	K4

Section B (Answer any FIVE out of SIX) – 10 Marks (Each question Carry 02 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain any one type of Pattern.	02	CO3	K5
3	Write advantages of metal forming process.	02	CO4	K2
4	Which process is suitable for pipe manufacturing?	02	CO5	K1
5	What is SMAW related to welding?	02	CO1	K2

6	What are the advantages of CNC lathes over conventional lathes?	02	CO3	K6
7	Explain the difference between reaming and drilling.	02	CO5	K5
Section C (Answer any TWO out of FOUR) – 20Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Differentiate between – i) Additive Manufacturing and Subtractive Manufacturing ii) Primary Manufacturing and Secondary manufacturing.	10	CO3	K1
9	Draw schematic diagram of sand mould and explain terms related to casting.	10	CO4	K2
10	Draw a schematic diagram of Arc Welding and explain process of arc formation.	10	CO1	K4
11	Explain any three process that can be performed on lathe machine with diagram.	10	CO2	K5

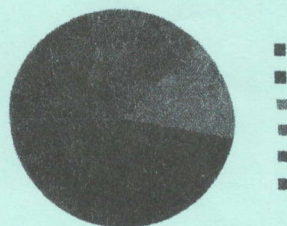
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	CO2	CO3	CO4	CO5
Understand the basic manufacturing processes for manufacturing different components.					
Apply the specific manufacturing process for getting the desired type of output.					
Understand the basic metal forming process for manufacturing different components.					
Analyze the process of casting, forging and welding required for specific condition.					
Evaluate the entire manufacturing process involved in manufacturing components.					
GRAPHICAL REPRESENTATION					
Bloom's Level wise Marks Distribution ■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6			Course Outcome Wise Marks Distribution CO1 CO2 CO3 CO4 CO5		

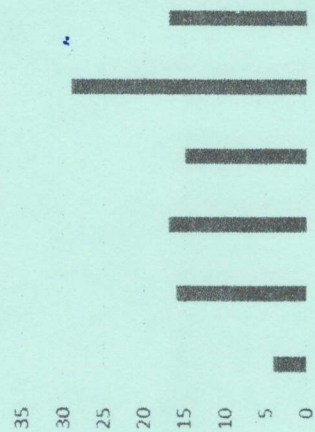
CO1	Understand basics of Ordinary Differential equation
CO2	Identify whether the given differential equation of first order is exact or not Problems.
CO3	Solve higher differential equation and apply the concept of differential equation to real world
CO4	Use the Laplace transforms techniques for solving ODE's
CO5	Evaluate the line, surface and volume integrals and converting them from one to another.
CO6	basic properties of vector valued functions and their applications to line, surface and volume integrals

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



Program	ME / EEE / CSE / AI -DS, AIML	Branch	B. Tech
Subject Name	Engineering Mathematics-II	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q.N	QUESTIONS	Marks	COs	KL
i	Condition for the ODE $M dx + N dy = 0$ to be exact is ?	2	CO1	KL1
ii	Find the Orthogonal Trajectories of $y = mx$.	2	CO2	KL2
iii	Solve the following first-order differential equation $\frac{dy}{dx} = \frac{3x}{y}$.	2	CO2	KL2
iv	State the Well-Ordering Principle	2	CO1	KL1
v	Find the order and degree of the ODE : $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + 4y = 2x$	2	CO3	KL3
vi	Solve the differential equation $y dx - x dy = y^2 dy$	2	CO5	KL5
vii	What is the condition for a vector function to be Solenoid.	2	CO2	KL2
viii	Write the Statement of Green's theorem	2	CO6	KL6
ix	What is the Laplace Transform of the function a) $\sin 7t$ and b) $\cos 3t$	2	CO5	KL5

x	Write the CF for the ODE: $(D - 2)^2 y = 0$	2	CO3	KL3
Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Solve the initial value problem: $\frac{dy}{dx} = 2x + 3, y(0) = 5.$	05	CO4	KL4
3	If S is a surface of volume enclosed by Cube of sides = 3 and $\vec{F} = ax\hat{i} + by\hat{j} + cz\hat{k}$ is a vector function then find $\int_V \vec{F} \cdot \vec{n} \, ds = ?$	05	CO6	KL6
4	Find the Particular Integral : $(D^2 - 4D + 3) y = \cos 3x$	05	CO3	KL3
5	Compute the gradient of $f(x, y, z) = x^2 + y^2 + z^2.$	05	CO5	KL5
6	Solve the linear first-order differential equation: $\frac{dy}{dx} + 2y = e^x$	05	CO4	KL4
7	If $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$ find a) $\text{div } \vec{r}.$ b) $\text{Curl } \vec{r}.$	05	CO4	KL
Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	If $f = (x^3 - y^3 + xy^2)$ then find the equation of Normal Line and Tangent plane at $(1, -1, 3).$	10	CO2	KL2
9	Solve the second order ODE using the method of variation of parameters. $(D^2 + n^2) y = \sec nx$	10	CO3	KL5
10	Find the directional derivatives of the function $f = xy + yz + zx$ in the direction of the vector $2\hat{i} + 3\hat{j} + 6\hat{k}$ at the point $(3, 1, 2)$. Also find the maximum value of the directional derivative.	10	CO5	KL5
11	Evaluate $\int_C (e^{-x} \sin y \, dx + e^{-x} \cos y \, dy)$ where C is a rectangle with vertices $(0, 0), (\pi, 0), (\pi, \frac{\pi}{2})$ and $(0, \frac{\pi}{2})$. (Using Greens Theorem).	10	CO5	KL5

12	Find the solution of the linear homogeneous differential equation $x^2 \frac{d^2 y}{dx^2} - 4x \frac{dy}{dx} + 6y = x$	10	CO6	KL6
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