



**ARKA JAIN University**  
Jharkhand



[22-01-2026]

END SEM EXAMINATION  
School of Engineering & IT

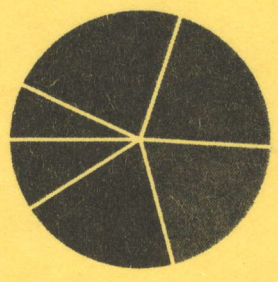
Program	CSE / AIML	Branch	B. Tech
Subject Name	English for Skill Enhancement	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; <b>don't Write on the 1st Page Backside</b></li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of <u>Mobile Phone</u> or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator</u> or <u>Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.</li> </ul>		
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	Give two synonyms for "beautiful." *	2	CO1	K1
ii	Give two antonyms for "brave."	2	CO1	K1
iii	Identify the type of sentence: She is intelligent but she is selfish.	2	CO3	K2
iv	How does this pair call as homophones: <i>Write and right.</i>	2	CO1	K2
v	What is punctuation?	2	CO3	K1
vi	Who is JRD in "Appro JRD"?	2	CO4	K1
vii	What is the main message of "Lesson from Online Learning"?	2	CO4	K2
viii	What are clichés?	2	CO1	K1
ix	What does SQ3R stand for?	2	CO4	K1
x	Define a technical report.	2	CO5	K1

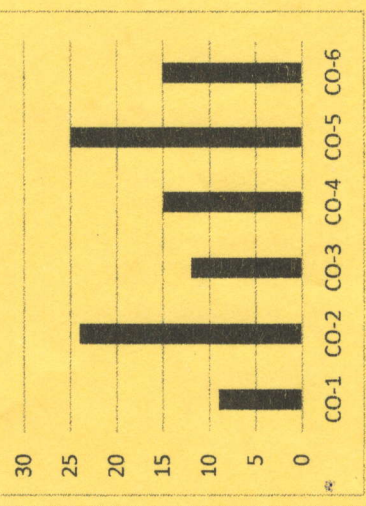
CO1	Understand the importance of vocabulary and sentence structures.
CO2	Choose appropriate vocabulary and sentence structures for their oral and written.
CO3	Demonstrate their understanding of the rules of functional grammar.
CO4	Develop comprehension skills from the known and unknown passages.
CO5	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**



**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 R.K. Narayan's "Bharat Brand of English"	05	CO4	K4
3	Discuss homophones, homonyms, and homographs with examples.	05	CO2	K3
4	Explain skimming and scanning and their uses in reading.	05	CO4	K3
5	Discuss the essential characteristics of a good report.	05	CO5	K4
6	What are the key elements of effective essay writing?	05	CO5	K4
7	Explain the structure and tone of an informal letter.	05	CO5	K3

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

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Summarize the story "Go, Kiss the World" by Subroto Bagchi.	10	CO4	K2
9	Discuss the major learnings from "Art and Literature" by Abdul Kalam.	10	CO4	K5
10	Write a well-structured paragraph on any one topic: o Environment o Discipline	10	CO5	K6
11	Write a job application for a software engineering position.	10	CO5	K6
12	Distinguish between intensive and extensive reading.	10	CO6	K4



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[17-01-2026]

END SEM EXAMINATION  
School of Engineering & IT

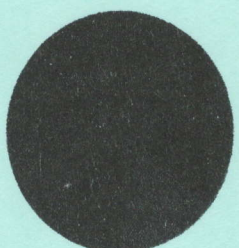
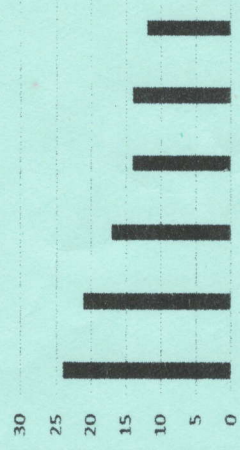
Program	ME / EEE / CSE / AIDS / AIML	Branch	B. Tech
Subject Name	Engineering Mathematics-I	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).</li> </ul>		
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)**

i	State Lagrange's mean value theorem	2	CO5	K1
ii	If $u = \frac{x^3+y^3}{x^2-y^2}$ , then find the value of $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ .	2	CO4	K5
iii	If $u, v, w$ be three functions of three variables $x, y, z$ . Write down the formula of their Jacobian, $J = \frac{\partial(u,v,w)}{\partial(x,y,z)}$ .	2	CO2	K2
iv	If $f = \sin(x^2 + y^3)$ , find $\frac{\partial^2 f}{\partial y \partial x}$ .	2	CO3	K4
v	Give an example of complex matrix.	2	CO1	K6
vi	State Euler's theorem.	2	CO1	K2
vii	Find the rank of $A = \begin{pmatrix} 1 & 3 & 3 \\ 0 & 0 & 0 \\ 1 & 2 & 0 \end{pmatrix}$	2	CO2	K4
viii	Write the expansion of $\sin x$ .	2	CO5	K3
ix	Find the derivative $\frac{dy}{dx}$ for $y = x^x$	2	CO5	K1
x	Find $\beta$ if non-trivial solution exist for the given system of equation	2	CO4	K5

CO1	Remember the matrix representation of a set of linear equations and solve the solution of the system of equations
CO2	Understand how to find the Eigenvalues and Eigen vectors
CO3	Reduce the quadratic form to canonical form using orthogonal transformations.
CO4	Solve the applications on the mean value theorems.
CO5	Evaluate the improper integrals using Beta and Gamma functions
CO6	Find the extreme values of functions of two variables with/ without constraints.

**GRAPHICAL REPRESENTATION**

<p><b>Bloom's level wise Marks Distribution</b></p>  <p style="text-align: center;">.....</p>	<p><b>Course Outcome wise Marks Distribution</b></p> 
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$x - 3y + 4\beta z = 0$		
$x + 2y - z = 0$		
$x - y + 2z = 0$		

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

2	Find the Eigen Values and the Eigen Vector for the given matrix $\begin{bmatrix} 2 & -1 \\ 5 & -2 \end{bmatrix}$	05	CO2	K1
3	If $u = \sin^{-1}\left(\frac{x^2+y^2}{x-y}\right)$ , find $x \frac{\partial u}{\partial x} + y \frac{\partial u}{\partial y}$ .	05	CO3	K5
4	Verify Lagrange's theorem for $f(x) = x^3 - 3x$ on $[0,4]$ . If possible, find the required point $c$ .	05	CO6	K2
5	Evaluate $I = \int_{x=1}^2 \int_{y=0}^2 (x^2y + yx^3) dx dy$	05	CO4	K1
6	Find the inverse of the matrix by Cayley Hamilton theorem $A = \begin{pmatrix} 3 & 1 \\ -1 & 2 \end{pmatrix}$	05	CO1	K5
7	Apply Maclaurin's Theorem to Obtain the Expansion of $\cos x$ upto 5 terms.	05	CO5	K3

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

8	Reduce the given matrix to normal form and hence find its rank $A = \begin{pmatrix} 1 & 3 & 4 \\ -2 & 1 & -1 \\ 3 & -1 & 2 \end{pmatrix}$	10	CO1	K2
9	If $u_1 = \frac{x_2 x_3}{x_1}$ , $u_2 = \frac{x_3 x_1}{x_2}$ and $u_3 = \frac{x_1 x_2}{x_3}$ , then find Jacobian $\frac{\partial(u_1, u_2, u_3)}{\partial(x_1, x_2, x_3)}$ .	10	CO4	K1
10	The circle $x^2 + y^2 = a^2$ is revolving about $x$ axis, find the volume of the solid formed	10	CO3	K6
11	Expand $\log_e \cos(x+h)$ in powers of $h$ by Taylor's expansion.	10	CO6	K3
12	Find the derivative $\frac{dy}{dx}$ for $y = x^x + x^{\sin x}$ .	10	CO2	K4

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

CO1	The students start exploring themselves: get comfortable with each other and with the teacher; they start appreciating the need and relevance for the course.
CO2	The students are able to see that they can enlist their desires and the desires are not vague. Also they are able to relate their desires to 'I' and 'Body' distinctly.
CO3	The students are able to see that respect is right evaluation, and only right evaluation leads to fulfilment in relationship.
CO4	The students are able to differentiate between the characteristics and activities of different orders and study the mutual fulfilment among them.
CO5	The students are able to present sustainable solutions to the problems in society and nature. They are also able to see that these solutions are practicable and draw roadmaps to achieve them.

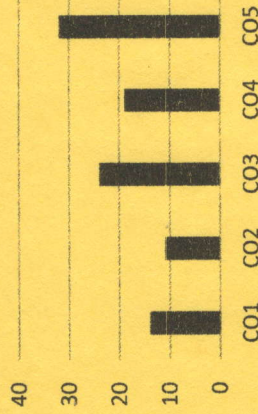
**GRAPHICAL REPRESENTATION**

**Bloom's Level wise Marks Distribution**



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

**Course Outcome Wise Marks Distribution**



**ARKA JAIN University**  
Jharkhand



[04-02-2026]  
**END SEM EXAMINATION**  
School of Engineering

Program	CSE / AIML	Branch	B. Tech
Subject Name	Universal Human Values	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 1.5 Hour Max. Marks : 35	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Five out of Six of Section B</li> <li>Answer Any Two out of Four of Section C</li> <li>Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u></li> </ul>		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

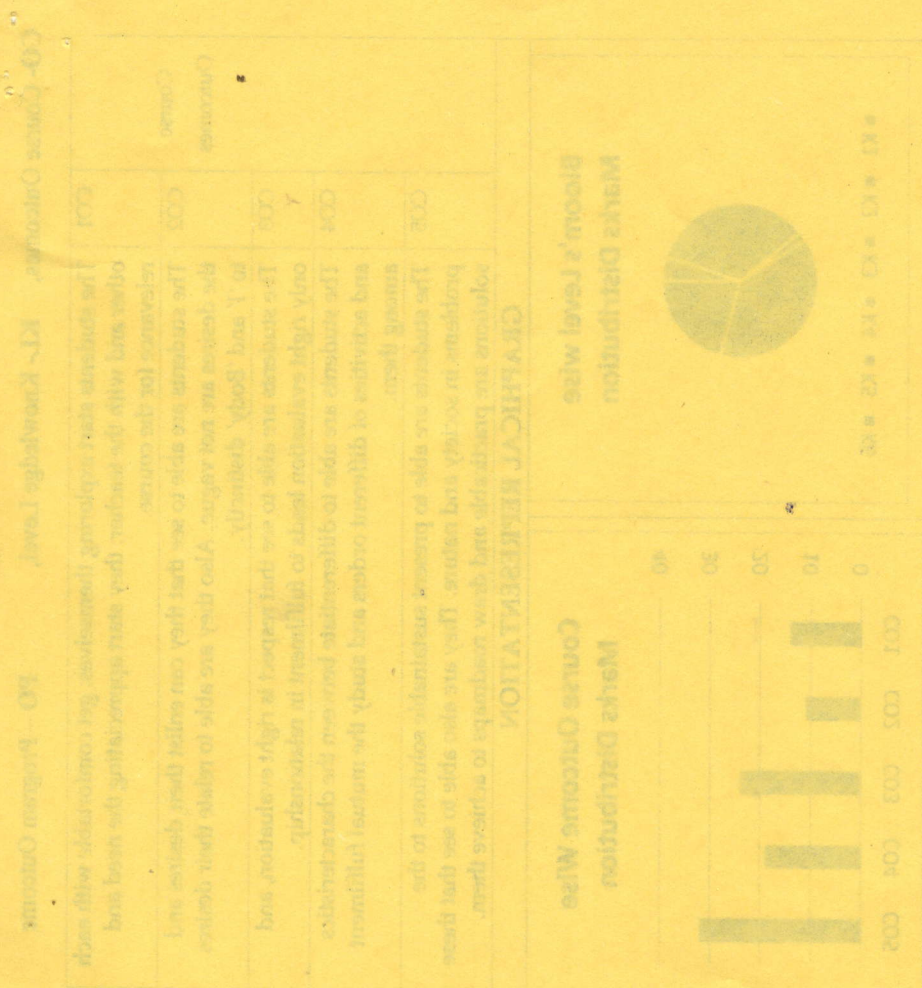
**Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks**

Q. No	QUESTIONS	Marks	COs	KL
i	Define 'Trust' as the foundational value in relationship.	01	CO1	K1
ii	What are the basic human aspirations?	01	CO2	K2
iii	What does 'Respect' mean in the context of human relationships?	01	CO1	K1
iv	Distinguish between the needs of the Self ('I') and the Body.	01	CO3	K4
v	Name the four orders of nature.	01	CO3	K1

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain 'Prosperity' and how it differs from accumulation of physical facilities.	02	CO1	K2
3	What is meant by 'Harmony of the Self with the Body'? Give one example.	02	CO3	K5
4	Differentiate between Happiness and Excitement/Sensation.	02	CO4	K4

Q. No.	QUESTIONS	Marks	COs	KL
5	What is Self-exploration? Why is it important for Value Education?	02	CO2	K2
6	What is meant by 'Mutual Fulfilment' among the four orders of nature?	02	CO4	K4
7	Explain the current scenario regarding Happiness and Prosperity in society.	02	CO4	K3
<b>Section C (Answer any TWO out of FOUR) – 20 Marks</b> (Each question Carry 10 Marks)				
8	Discuss 'Trust' and 'Respect' as the foundational values in relationships. How do they lead to harmony in the family, the basic unit of human interaction? Illustrate with examples.	10	CO5	K3
9	Explain Harmony in the Society and the Vision for Universal Human Order. How can understanding values in relationships contribute to an undivided society?	10	CO3	K2
10	Discuss the holistic perception of harmony in existence. How does realizing existence as co-existence lead to natural acceptance of universal human values?	10	CO4	K4
11	Discuss competence in Professional Ethics based on holistic understanding of harmony. Provide examples of how this can lead to value-based life and profession.	10	CO2	K2





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[20-01-2026]

END SEM EXAMINATION  
School of Engineering & IT

Program	CSE/AIML	Branch	B. Tech
Subject Name	Introduction to ML using Python	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 3 Hour	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; <b>don't Write on the 1st Page Backside</b></li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of Mobile Phone or any kind of <u>Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).</u></li> </ul>		
Max. Marks : 70	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating
Knowledge Level (KL)			

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)				
Q. N	QUESTIONS	Marks	COs	KL
i	Create a python program to calculate sum and multiplication of two numbers	2	CO1	K6
ii	What is over fitting and how can you avoid it?	2	CO2	K1
iii	What do understand by python library? Why it is important justify.	2	CO2	K2
iv	What is variable in python programming? Explain the use of variable with an example.	2	CO1	K2
v	What is the role of print () in python? Explain with an example.	2	CO2	K1
vi	What are operators in python programming? Mention some arithmetic operators used with an example.	2	CO1	K1
vii	What is supervised Learning and why it is important in machine learning justify	2	CO3	K2
viii	How loops are incorporated in python? Mention the loops used with an example.	2	CO2	K4
ix	What is training set and test set in machine learning models? What are the three step model to create a model?	2	CO4	K2
x	What do you understand by regression in machine learning?	2	CO5	K5

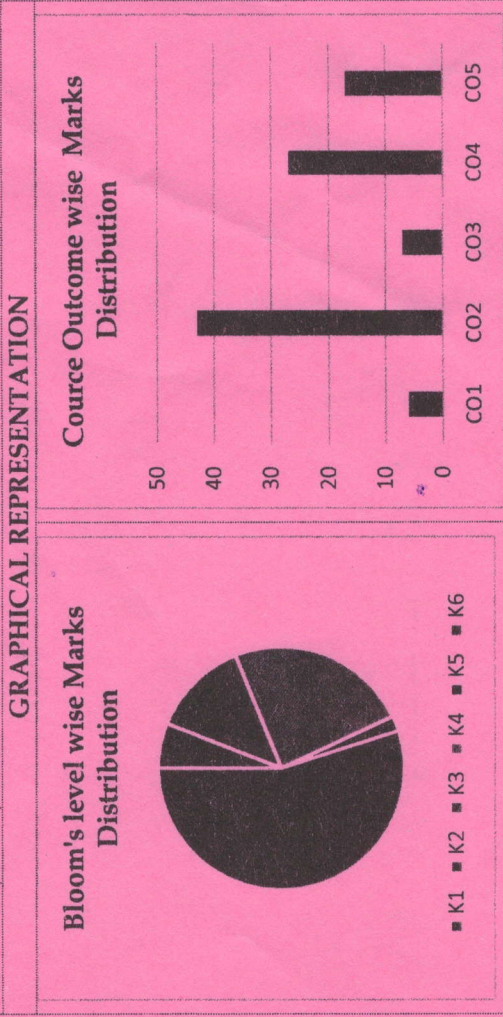
**Section B (Answer any FOUR out of SIX) – 20 Marks**  
(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Differentiate between unsupervised learning and reinforcement learning with example.	05	CO3	K4
3	Mention the applications of reinforcement learning in machine learning concepts	05	CO4	K4
4	Explain call by value and call by reference in python programming	05	CO2	K6
5	What are functions in python programming? Mention types of function and its types.	05	CO2	K6
6	What do you understand by conditional statements in python programming? Explain each with an example of your own.	05	CO2	K6
7	Mention what is Accuracy and F1-Score in Machine Learning with its formula using confusion matrix	05	CO2	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Create a program in python to print the calendar of a given month and year also gives today's date.	10	CO2	K6
9	Explain what Machine Learning is. Mention the applications of Machine Learning and types of Machine Learning.	10	CO4	K4
10	Explain the difference between a histogram and a boxplot. When would you use each?	10	CO5	K6
11	Mention the challenges in machine learning algorithms and ways to overcome it.	10	CO4	K6
12	Create a Python program to create a copy of the existing image file with explanation of each step.	10	CO2	K6

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





**ARKA JAIN University**  
Jharkhand



[02-02-2026]

**END SEM EXAMINATION**  
School of Engineering & IT

Program	CSE/ AIML	Branch	B. Tech
Subject Name	Constitution of India	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 1.5 Hour Max. Marks : 35	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u></li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Five out of Six of Section B</li> <li>Answer Any Two out of Four of Section C</li> <li>Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will come under Unfair Means and will Result in the Cancellation of the Papers.</li> </ul>		
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. N	QUESTIONS	Marks	COs	KL
1				
i	When did the Constitution become effective?	01	CO1	K2
ii	Who was elected permanent President of Constituent Assembly?	01	CO2	K1
iii	Who were the members of Drafting committee?	01	CO4	K1
iv	Write down the key powers and functions of the Parliament.	01	CO5	K3
v	Why is Grassroots Democracy Important?	01	CO4	K1

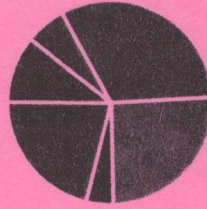
**Section B (Answer any FIVE out of SIX) – 10 Marks**  
(Each question Carry 02 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Give definition of Constituent Assembly	02	CO1	K2
3	Name the major committees and their chairmen of the Constituent Assembly?	02	CO2	K3
4	How are Directive Principles different from Fundamental Rights?	02	CO3	K1

Course Outcomes	CO1	Understand the emergence and evolution of Indian Constitution. Understand and analyse federalism in the Indian context
	CO2	Understand and explain the significance of Indian Constitution as the fundamental law of the land
	CO3	Exercise his fundamental rights in proper sense at the same time identifies his responsibilities in national building.
	CO4	Analyse the Indian political system, the powers and functions of the Union, State and Local Governments in detail
	CO5	Understand Electoral Process, Emergency provisions and Amendment procedure

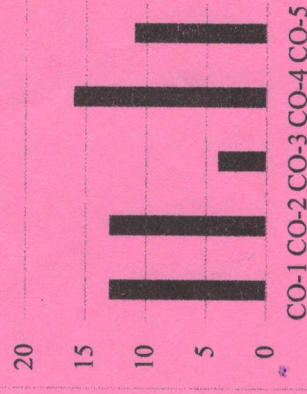
**GRAPHICAL REPRESENTATION**

Bloom's level wise Marks Distribution



■ K1.1 ■ K1.2 ■ K1.3 ■ K1.4 ■ K1.5 ■ K1.6

Course Outcome wise Marks Distribution



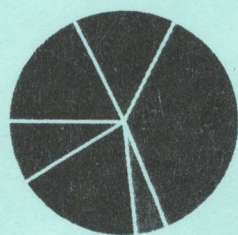
Q. No.	QUESTIONS	Marks	COs	KL
5	Discuss the Roles of Elected and Appointed officials for Village level administrations	02	CO4	K4
6	Discuss about the Organs of Governance	02	CO3	K3
7	Discriminate between the roles of the Supreme Court and the High Courts	02	CO4	K5
<b>Section C (Answer any TWO out of FOUR) - 20 Marks</b> (Each question Carry 10 Marks)				
8	Discuss about the Salient Features of Indian Constitution	10	CO2	K4
9	Discuss on the Importance of Fundamental Duties & Categories of Fundamental Rights	10	CO1	K3
10	How does grassroots democracy play a role in the administration at the village level? Discuss its importance with examples.	10	CO5	K4
11	Explain how the Indian Parliament is structured and discuss the roles of the Lok Sabha and the Rajya Sabha in law-making.	10	CO4	K6

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

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.

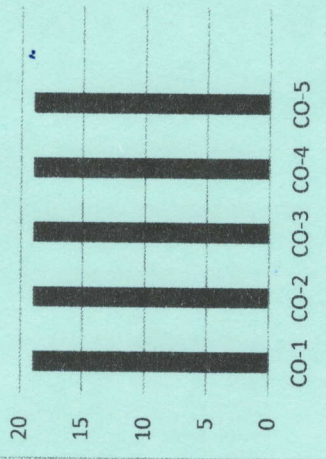
**GRAPHICAL REPRESENTATION**

**Bloom's level wise Marks Distribution**



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

**Course Outcome wise Marks Distribution**



<b>JGI</b>	<b>ARKA JAIN University</b> Jharkhand	<b>NAAC GRADE A</b> ACCREDITED UNIVERSITY	<b>[30-01-2026]</b> END SEM EXAMINATION School of Engineering & IT
Program	CSE / AIML	Branch	B. Tech
Subject Name	Engineering Chemistry	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 3 Hour Max. Marks : 70	<ul style="list-style-type: none"> <li>Start writing from 2nd page onwards; don't Write on the 1st Page Backside</li> <li>Answer all Questions of Section A (Compulsory)</li> <li>Answer Any Four out of Six of Section B</li> <li>Answer Any Three out of Five of Section C</li> <li>Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will come under Unfair Means and will Result in the Cancellation of the Paper(s).</li> </ul>		
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	Why vinyl chloride undergoes addition polymerization and not undergoes condensation polymerization?	2	CO1	K1
ii	With the help of molecular orbital diagram, explain why hydrogen forms diatomic molecule while helium remains monoatomic	2	CO2	K1
iii	What is knocking? What are its adverse effects? How can it be prevented?	2	CO4	K2
iv	Mention the type of electronic transition for the following molecule. a. CH <sub>3</sub> -CH <sub>2</sub> -OH b. CH <sub>3</sub> -CH=O	2	CO5	K3
v	Discuss any three important characteristics of a battery.	2	CO3	K1
vi	Calculate CFSE for [Fe(CN) <sub>6</sub> ] <sup>4-</sup> .	2	CO2	K2
vii	What is meant by calorific value of fuel? Define calorie and kilocalorie.	2	CO4	K1
viii	State Beer's and Lambert's law of absorbance.	2	CO5	K2
ix	List two advantages and three disadvantages of polymers as compared to traditional materials.	2	CO1	K1

Q. No.	QUESTIONS	Marks	COs	KL
x	Iron does not rust if the zinc coating is broken in galvanized iron pipe but rusting occurs if tin coating covering iron is broken. Explain.	2	CO3	K3
<b>Section B (Answer any FOUR out of SIX) - 20 Marks</b> (Each question Carry 05 Marks)				
2	What are the possible electronic transitions when energy is absorbed by a molecule in the UV region?	05	CO5	K5
3	What is meant by proximate analysis of coal? What are the quantities estimated in this analysis and their significance?	05	CO4	K4
4	What are biodegradable polymers? Explain any one biodegradable polymers synthesis, application and properties?	05	CO1	K3
5	What is oxidation corrosion and how does it take place? Describe the mechanism of oxidation corrosion.	05	CO3	K6
6	Explain the formation of following on basis of molecular orbital theory: (a) $Li_2$ and (b) NO.	05	CO2	K5
7	Distinguish between the thermosetting and thermoplastic polymers.	05	CO1	K3
<b>Section C (Answer any THREE out of FIVE) - 30 Marks</b> (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	What is meant by cracking of heavy oil? How gasoline is obtained from thermal and catalytic cracking	10	CO4	K2
9	Explain the principle of NMR spectroscopy. Explain how the NMR spectrum of a compound is recorded? Explain the NMR spectrum of $CH_3CH_2OH$ molecule giving the significance of number of signals.	10	CO5	K3
10	How strong and weak ligand field are explain in crystal field theory in octahedral complex. Calculate the CFSE Value and magnetic moment for strong field and weak field ligands for central atom having d8 and d4 electrons.	10	CO2	K3
11	a. State the differences between addition and condensation polymerizations? b. What is bakelite? How is it manufactured and mention its properties and uses.	10	CO1	K5

12	Explain the construction and working of hydrogen-oxygen fuel cells. Give the half-cell reaction and advantages of these cells.	10	CO3	K1
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