CODE: A10004 **R23**

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations December 2025

Subject: **Chemistry**

Time: 3 Hours Branch: ECE **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	What are bonding and anti-bonding molecular orbitals?	2M	CO1	L1
	b	Calculate the bond order and magnetic nature of the O_2 molecule.	2M	CO1	L1
	c	Differentiate between intrinsic and extrinsic semiconductors.	2M	CO2	L2
	d	What are carbon nanotubes? Mention the most important applications of carbon nanotubes.	2M	CO2	L1
	e	Write the applications of H_2-O_2 fuel cell.	2M	CO3	L1
	f	Differentiate between primary cells and secondary cells.	2M	CO3	L1
	g	Write the preparation and one application of Teflon.	2M	CO4	L1
	h	Manifest the general applications of Elastomers.	2M	CO4	L1
	i	What is meant by chromatography? Give an example	2M	CO5	L1
	j	Mention a few advantages of chromatography.	2M	CO5	L1
PART-B					
UNIT-I					
2	a	Illuminate Schrodinger wave equation for particle in one dimensional box.	5M	CO1	L6
	b	Explain why oxygen is paramagnetic on the basis of molecular orbital theory	5M	CO1	L6
OR					
3	a	Draw an MO energy level diagram for CO. Show occupied orbitals, and calculate the bond order and analyze the magnetic properties.	6M	CO1	L2
	b	Explicate the fundamental principal of Quantum mechanics.	4M	CO1	L2
UNIT-II					
4	a	Define Superconductors and explain the basic concept of Super conductors.	6M	CO2	L2
	b	List out the application of Carbon nanotubes and graphene's nanoparticles.	4M	CO2	L2
OR					
5	a	Define doping. Explain n-type semiconductor.	5M	CO2	L2
	b	Distinguish conductors from superconductors and mention their applications in Electronics.	5M	CO2	L2
UNIT-III					
6	a	Explain the working principle of a Lithium ion battery.	5M	CO3	L2
	b	Discuss about the electrochemical sensors	5M	CO3	L2

		OR			
7	a	Describe the origin, principle, and construction of Zinc-Air battery.	5M	CO3	L2
	b	Explain Chain-growth and step-growth polymerization.	5M	CO3	L2
		UNIT-IV			
8	a	Examine the mechanism of conduction in polyaniline. What applications benefit from its conductive properties?	6M	CO4	L4
	b	Explain the mechanism of free-radical/ chain growth polymerization.	4M	CO4	L2
		OR			
9	a	Differentiate between thermoplastics and thermosetting plastics with examples.	5M	CO4	L2
	b	Explain the need for bio-degradable polymers as per your opinion.	5M	CO4	L1
		UNIT-V			
10	a	Explain the principles of UV-visible spectroscopy. What electronic transitions are responsible for absorption in this region?	6M	CO5	L2
	b	Explain about PGA biodegradable polymer.	5M	CO5	L2
		OR			
11	a	Summarize the Beer-Lamberts law and the absorption of radiation.	5M	CO5	L2
	b	Manifest fundamental modes of transitions in IR spectroscopy with examples.	5M	CO5	L2

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CODE: A10001	R23	H.T.No:										

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations December 2025
Subject Name: Communicative English

Branch: ECE

Time: 3 Hours **Max. Marks: 70**

Instructions:
1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Who is the speaker of the poem "the Brook?" What is the line repeated throughout the poem?	2M	CO1	L1
	b	Write meanings for the following root words: i) dem ii) audi	2M	CO1	L2
	c	Who is referred to as "I" in the poem "The Brook"? What is it describing?	2M	CO2	L1
	d	Write the antonym of i) Disperse (ii)Tidy (iii) Arrest (iv) Conserve	2M	CO2	L3
	e	Fill in the blanks in the following passage with appropriate tense forms of the verbs given in brackets. Levi Strass _____ (set) up his first clothing business in Battery Street, San Francisco in 1853. Then, Levi _____ (receive) a letter from a local tailor called Jacob Davis. Davis _____ (have) a plan for a new design of men's trousers. The two men _____ (go) into partnership and they started their business in 1873.	2M	CO3	L3
	f	Briefly describe two of Musk's early business ventures.	2M	CO3	L1
	g	Rewrite the following sentences in indirect speech. i) Hasan said, "I am returning to Nagpur next Saturday." 'If I see Jai, I shall certainly bring him here,' said Dr Singh.	2M	CO4	L3
	h	What are the different types of Reading Skills?.	2M	CO4	L1
	i	List various types of Essays.	2M	CO5	L4
	j	Write any two suitable expressions for Asking permission to take leave.	2M	CO5	L1
PART-B					
UNIT-I					
2	a	Write short notes on the following: (i) Capitalization, (ii) Punctuation.	10M	CO1	L1
OR					
3	a	Explain prefixes and suffixes with suitable examples.	5M	CO1	L2
	b	Do you think the title of the story "The Gift of the Magi" is appropriate? Justify.	5M	CO1	L1
UNIT-II					
4	a	Write A paragraphs about electronic media and its impact on society.	5M	CO2	L3
	b	Rewrite the following sentences using correct prepositions: i) Sudha sits among Sravani and Umar. ii) They fetched water of the river. iii) We will take a survey on the participants. iv) Many foods beside milk contain calcium. v) We played a joke of him.	5M	CO2	L3
OR					
5		State the difference in meaning for the following Homonyms and use them in your own sentences: i) Play/Play ii) Fair/Fair iii) Lead/Lead iv) Pen/Pen v) week/weak	10M	CO2	L2
UNIT-III					

6	a	Complete the following sentences using the most suitable tense for the verb in brackets. i) Home ownership_____ (rise) steadily since 1970. ii) Last year they _____ (sell) nearly five million books. iii) At the moment the class____ (work) on an engineering project. iv) In ten years most people in the world___ (have) a mobile phone. v) In the last six years inflation_____ (fall) sharply in Europe.	5M	CO3	L3
	b	How have Tesla and the Hyperloop radically revolutionized transportation?	5M	CO3	L1
		OR			
7	a	Describe Elon Musk's early years and how it inspired his interest in business and technology.	5M	CO3	L1
	b	Choose the correct verb that agrees with the subject: i) The MD and CEO _____ (is/are) coming to the meeting. ii) Either the president or the secretary _____ (has/have) signed the document. iii) Aditi is one of the girls who ____ (was/were) selected to the Republic Day Parade. iv) Mr Ram, accompanied by his daughter and son, _____ (has/have) banished to the forest. v) Everyone _____ (want/wants) to succeed.	5M	CO3	L3
		UNIT-IV			
8		Write the meanings of the following words and use them in sentences. i) affect, effect ii) adapt, adept iii) lose, loose iv) social, sociable v) principal, principle	10M	CO4	L2
		OR			
9	a	Compose a resume for the position of Flight Attendant.	5M	CO6	L6
	b	Compose a letter to your college administration requesting them to issue an identity card. Provide all the necessary details for securing the identity card.	5M	CO6	L6
		UNIT-V			
10		Compose an essay on "Technology promotes disorder in society".	10M	CO5	L4
		OR			
11	a	Money is important but not a necessity. Evaluate the statement by either agreeing or disagreeing.	5M	CO5	L5
	b	Read the following sentences. Identify and correct the errors. 1. Two-man drowned in the sea. 2. All book in this bag are written by me. 3. Your work is better than mine work. 4. This is yours book. 5. She will come for meeting you.	5M	CO3	L3

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CODE: A10009	R23	H.T.No									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Exams December – 2025

Subject Name: **Differential Equations & Vector Calculus**

Time: 3 Hours Branch: **Common for CSE and ECE** **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Define Bernoulli's differential Equation?	2M	CO1	L1
	b	State Newton's Law of cooling	2M	CO1	L1
	c	Obtain the particular integral of $(D^2+4D+9)y=e^{3x}$	2M	CO2	L2
	d	Solve particular of $(D^2+4)y = sin\,2\,x$	2M	CO2	L2
	e	Define order and degree of PDE	2M	CO3	L2
	f	Form the PDE by eliminating a&b from $z=ax+by+ab$	2M	CO3	L2
	g	Define solenoidal vector.	2M	CO4	L1
	h	Find div $\vec{f}$ for $\vec{f} = z\vec{\imath} + x\vec{\jmath} + y\vec{k}$.	2M	CO4	L1
	i	State Stoke's theorem.	2M	CO5	L1
	j	State Green's theorem of vector calculus.	2M	CO5	L1
PART-B					
UNIT-I					
2	a	Solve $\left(1+e^{\frac{x}{y}}\right)dx + e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)dy = 0$	5M	CO1	L3
	b	Solve $(1+y^2)dx = (Tan^{-1}y - x)dy$	5M	CO1	L3
OR					
3	a	Solve $y^2dx + (x^2 - xy - y^2)dy = 0$	5M	CO1	L4
	b	Solve $x\frac{dy}{dx} + y = x^3y^6$	5M	CO1	L4
UNIT-II					
4	a	Solve $(D^3 + 2D^2 + D)y = e^{2x}$	5M	CO2	L3
	b	Solve $(D^2 - 4D + 3)y = Sin3x$	5M	CO2	L3
OR					
5		Solve the D.E $(D^2-4D+4)y=8x^2e^{2x}Sin2x$.	10 M	CO2	L3
UNIT-III					
6	a	Form the differential equation by elimination of arbitrary function from $\phi(x^2+y^2+z^2,xyz)=0$.	5M	CO3	L3
	b	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$	5M	CO3	L3
OR					
7	A	Form PDE by eliminating arbitrary constants from $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$	5M	CO3	L3
	B	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$	5M	CO3	L3
UNIT-IV					
8	a	Determine the directional derivative of the function $f = xy + yz + zx$ in the direction of a vector $\vec{\imath} + 2\vec{\jmath} + 2\vec{k}$ at the point (1, 2 , 0)	5M	CO4	L3
	b	Determine curl $\bar{f}$, where $\bar{f} = grad\,(x^3 + y^3 + z^3 - 3xyz)$.	5M	CO4	L3
OR					
9		Show that $\nabla.(r^n\bar{r}) = (n+3)r^n$	10M	CO4	L3
UNIT-V					
10		Verify stokes theorem for $f = (x^2+y^2)i - 2xyj$ taken round the rectangle bounded by the lines $x = \pm a, y = 0, y = b$.	10M	CO5	L4
OR					
11		Apply Green's Theorem in the plane for $\int(2x^2 - y^2)dx + (x^2+y^2)dy$, where C is the boundary of the area enclosed by the X-axis and upper half of the circle $x^2 + y^2 = a^2$	10M	CO5	L4

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CODE: A10205 **R23**

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

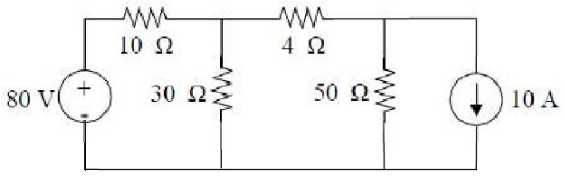
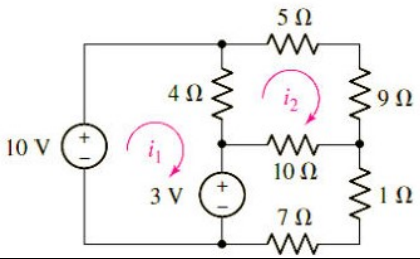
(AUTONOMOUS)

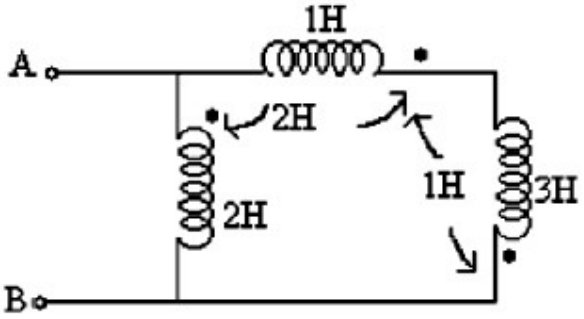
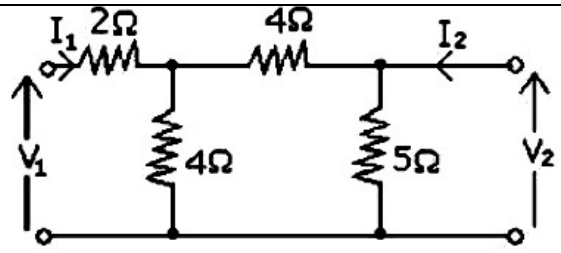
B.Tech I Year II Semester Supplementary Examinations December – 2025

Subject Name: NETWORK ANALYSIS

Branch: ECE

Time: 3 Hours **Max. Marks: 70**

PART-A Answer all questions, each question carries two marks					
1	a	Draw the Norton's equivalent circuit	2M	CO1	BTL1
	b	State KVL & KCL	2M	CO1	BTL1
	c	Define the time constant of R-L circuit. Give its importance	2M	CO2	BTL2
	d	LT{ cos ωt } =	2M	CO2	BTL2
	e	Define Form factor and Peak factor fine sine wave	2M	CO3	BTL2
	f	What is the condition for resonance?	2M	CO3	BTL1
	g	Define Quality factor.	2M	CO4	BTL2
	h	Define Mutual inductance	2M	CO4	BTL2
	i	What is a two port network? Explain	2M	CO5	BTL1
	j	Define h impedance	2M	CO5	BTL2
Answer all three units, 05 X 10 = 50 Marks					
UNIT-I					
2	a	State and explain Norton's theorem with a Suitable example?	5M	CO1	BTL2
	b	Draw the Thevenin's equivalent circuit for the circuit shown in fig? (Take 50ohms resister as load 	5M	CO1	BTL2
OR					
3	a	State and explain Reciprocity theorem with an example?	5M	CO1	BTL1
	b	Determine the loop currents i_1 and i_2 in the for the circuit shown below? 	5M	CO1	BTL2
UNIT-II					
4	a	Derive the transient response of a series RL circuit for AC Excitation and draw the response of the curve?	10M	CO2	BTL3
OR					
5	a	In a series RLC circuit, R = 10Ω, L=2.5H, and c=2F. A dc voltage of 40 V is applied at t=0. Obtain i(t) and voltage across R and L?	10M	CO2	BTL2

		UNIT-III			
6	a	Derive an expression for the current response in RLC series circuit with a sinusoidal Source?	10M	CO3	BTL2
		OR			
7	a	Explain about star to delta conversion	5M	CO3	BTL2
	b	A series RC circuit has R=10Ω, C=200μF, applied with 200 sin314t. volts. Find the i(t) at steady state.	5M	CO3	BTL3
		UNIT-IV			
8	a	Explain the dot rule of Coupled Circuits.	5M	CO4	BTL2
	b	Calculate the effective inductance of the circuit shown in the figure  below	5M	CO4	BTL3
		OR			
9	a	Draw the parallel resonant circuit and derive the expression for resonant frequency.	5M	CO4	BTL1
	b	A series RLC circuit with R = 25 Ω, L = 0.6 H, results in leading phase angle 60^o at frequency of 40 Hz. Find the value of the C and at what frequency the circuit will be resonant.	5M	CO4	BTL2
		UNIT-V			
10	a	Explain about Y-parameters of a two port network	5M	CO5	BTL2
	B	A two port network has the following parameters: Z_{11} = 4 Ω, Z_{12} = 1 Ω, Z_{21} = 3 Ω and Z_{22} = 3 Ω. calculate short circuit parameters.	5M	CO5	BTL2
		OR			
11	a	 Determine h parameters	5M	CO5	BTL2
	b	Explain the cascading of two Two port network parameters?	5M	CO5	BTL2

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