CODE: A10201 | R23 | H.T.No:

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

JULY

B.Tech I Year I Semester Regular Examinations ~~February~~ 2024

Subject Name: **Basic CIVIL & MECHNICAL ENGINEERING**

Branch: ~~CSE~~ ECE

Time: 3 Hours | **SET-1** | **Max. Marks: 70**

Note: Part A must be answered from page no 3-18 and Part B must be answered from 19-36 pages

PART-A (CIVIL)					
Answer all 5 questions from Part-A. Each question carries one marks					
1	a	Mention the disciplines of civil engineering?	1M	CO1	BTL1
	b	Describe the modes of transport in civil engineering.	1M	CO3	BTL2
	c	Define surveying.	1M	CO2	BTL1
	d	Describe functions of a dam.	1M	CO3	BTL2
	e	Define bearing of a line.	1M	CO2	BTL1
Answer one full question from each unit. Each full question carries 10 marks					
UNIT-I					
2	a	Explain briefly the role of civil engineers in the development of the nation	10M	CO1	BTL1
OR					
3	a	Explain the prefabricated construction technique.	10M	CO1	BTL2
UNIT-II					
4	a	The following staff readings were observed successively with a level, the instrument have been moved after third, sixth and eighth readings: 3.150, 1.605,0.920,2.600,2.900, 1.125, 0.605, 2.265 m. calculate the R.L of points if the first reading was taken with a staff held on a bench mark of 110.0 m carryout the arithmetic check?	8M	CO2	BTL3
	b	List the objectives of Surveying?	2M	CO2	BTL2
OR					
5	a	Explain the characteristics of Contour Mapping.	5M	CO2	BTL2
	b	Classify the various types of surveying and explain any two in detail?	5M	CO2	BTL3
UNIT-III					
6	a	Define the highway. What is the importance of Transportation in the Nation's economic development	5M	CO3	BTL1
	b	Write short notes on Airport and Railway Engineering.	5M	CO3	BTL2
OR					
7	a	Explain the various sources of water	5M	CO3	BTL2
	b	Explain the water quality parameters.	5M	CO3	BTL2

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		PART-B (MECHANICAL) **Answer all 5 questions from Part-A. Each question carries one marks**			
1	a	Name two marine sectors.	1M	CO1	BL1
	b	What is ferrous materials	1M	CO1	BL1
	c	Write down the working principle of boiler	1M	CO2	BL1
	d	What is power transmission	1M	CO3	BL1
	e	Any four applications of Gas turbine power plant	1M	CO3	BL1
Answer one full question from each unit. Each full question carries 10 marks					
		UNIT-I			
2	a	Write a short note on 1. Extrusion 2. Rolling 3. Drawing	5M	CO1	BL2
	b	What is metal casting. Describe different methods of metal casting	5M	CO1	BL2
		OR			
3	a	What is the role of Mechanical engineer in the role of Automotive industry?	5M	CO1	BL2
	b	Differentiate between ferrous and non-ferrous materials	5M	CO1	BL2
		UNIT-II			
4	a	What is meant by refrigeration system? Describe vapour compression refrigeration system	5M	CO2	BL3
	b	Explain Otto cycle with a neat sketch	5M	CO2	BL3
		OR			
5	a	Discuss different types of Machining process	5M	CO1	BL2
	b	Differentiate between two stroke and four stroke engine	5M	CO2	BL2
		UNIT-III			
6	a	Describe with the neat sketch of different types of belt drive	7M	CO3	BL2
	b	What is gear transmission. Explain different types of gear	3M	CO3	BL3
		OR			
7	a	What are applications of robots	5M	CO4	BL2
	b	Discuss different types of power plants?	5M	CO2	BL2

16/2/24

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16/02/24

CODE: A10004 | **R23** | **H.T.No:** | | | | | | | | | | |

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations JULY 2024

CHEMISTRY

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	What is the significance of the wave function ψ in quantum mechanics?	2M	CO1	BTL2
	b	How is bond order calculated using molecular orbital theory?	2M	CO1	BTL3
	c	What are semiconductors? Give examples.	2M	CO2	BTL1
	d	What are carbon nanotubes? Mention any two of their important applications.	2M	CO2	BTL2
	e	What are Electrochemical sensors?	2M	CO3	BTL1
	f	Explain in brief the working principle of lithium ion battery.	2M	CO3	BTL2
	g	Define conducting polymers and provide two examples.	2M	CO4	BTL1
	h	What are Biodegradable polymers? Give examples	2M	CO4	BTL1
	i	Define electromagnetic spectrum and provide two examples of its applications in daily life.	2M	CO5	BTL2
	j	What are the selection rules of IR Spectroscopy?	2M	CO5	BTL1
PART-B					
UNIT-I					
2	a	Given a one-dimensional box of a certain length, derive an equation to calculate the energy of various energy levels for a particle inside it.	5M	CO1	BTL3
	b	Explain how the energy level diagram for CO helps in visualizing the arrangement of electrons and the bonding characteristics of the molecule	5M	CO1	BTL2
OR					
3	a	Explain the concept of Molecular Orbital theory in understanding the electronic structure of molecules.	5M	CO1	BTL2
	b	Distinguish between Bonding and Antibonding Molecular Orbitals.	5M	CO1	BTL4
UNIT-II					
4	a	Explain the concept of doping in semiconductors and how it leads to the formation of n-type and p-type semiconductors.	5M	CO2	BTL2
	b	Explore the diverse applications of graphene in different industries.	5M	CO2	BTL4
OR					
5	a	Discuss the practical applications of superconductors in various fields of engineering.	5M	CO2	BTL4

	b	Explain the classification of nanomaterials based on their morphology, dimensions and composition, and provide examples for each category.	5M	CO2	BTL2
UNIT-III					
6		Discuss the construction and working principle of Hydrogen-Oxygen fuel cell. Write its advantages and disadvantages.	10M	CO3	BTL3
OR					
7	a	What are Potentiometric sensors? Explain with examples.	5M	CO3	BTL2
	b	Explain in brief the concept of conductivity and conductivity cell.	5M	CO3	BTL2
UNIT-IV					
8	a	Describe the preparation process and practical applications of Buna-S rubber.	5M	CO4	BTL2
	b	Differentiate between Thermoplastics and Thermosetting plastics.	5M	CO4	BTL4
OR					
9		Analyze the mechanisms underlying the conduction in Polyacetylene. Also, list its applications in various fields.	10M	CO4	BTL4
UNIT-V					
10		With the help of a neat diagram, explain the components of an Infrared (IR) spectrometer. Also, list out the applications of IR spectroscopy	10M	CO5	BTL3
OR					
11	a	Discuss the applications of UV-Visible spectroscopy in the quantitative analysis of compounds.	5M	CO5	BTL3
	b	Write short notes on: (i) Retention Time, (ii) Rf value in Chromatography.	5M	CO5	BTL2

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CODE: A10001	R23	H.T.No									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)
B.Tech I Year II Semester Regular Examinations JULY 2024
Subject Name: Communicative English
Branch: ECE

SET-2

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	Select the correct verb. 1. They_____(is/are)going to the park. 2. Each of the students _____(has/have) their book.	2M	CO2	L1
	b	Find and fill in the blanks using cohesive devices. 1. I could not go out last night _____ I was too busy. 2. I could not go with my friend _____ he went without me.	2M	CO2	L1
	c	Insert appropriate punctuations, and capitalize wherever necessary, in the following sentences:- susan B. anthony is one of many women who fought to get women the right to vote in the 1800s. What women take for granted today was an act of civil disobedience in 1872 – Anthony voted in the presidential election and was promptly arrested After she was indicted she gave a famous speech calling for women to be given the right to vote. Instead she was given a fine of $100. determined to make her point that she had done nothing wrong she refuse to pay it	2M	CO3	L1
	d	Find and fill in the blanks with the correct collocation 1. We had to return home because we had _____(run out of, played out of, got out of) money. 2. Are you _____ (fully, hundred percent, mostly) aware of the implications of your action?	2M	CO2	L1
	e	Find and fill in the blank spaces with the correct articles 1. King Arthur was _____ just king. 2. I broke _____ vase my brother bought.	2M	CO2	L1
	f	Change to Active Voice 1. Results will be published in the next journal. 2. The business proposition was challenged by the	2M	CO3	L1

		board			
	g	Find and fill in the blank spaces with the correct Prepositions 1. Pile this_____ top of the others. 2. File this _____ with the others	2M	CO2	L1
	h	Change the following statements into questions: 1. She is unhappy 2. She is not serious	2M	CO2	L1
	i	Put the following in Indirect Speech:- 1. He says, "we should meet tomorrow". 2. The clerk asked his manager, "Shall I email this letter again, Sir?"	2M	CO3	L1
	j	Put the following in Direct Speech:- 1. The reporter exclaimed sadly that many lives had been lost due to the tsunami. 2. She prayed that God might grant her friend success in her examination.	2M	CO3	L1
PART-B					
UNIT-I					
2	a	Analyse the main message of the story "The Gift of Magi".	5M	CO4	L4
	b	Explain why Della sells her hair in the story "The Gift of Magi"?	5M	CO4	L2
OR					
3	a	Apply suffix:- a)Heavy b)Breathe c)Adjust d)Simple e)Disconnect	5M	CO3	L3
	b	Apply Antonyms:- a)Strange b)Awful c)Delicious d)Happy e) Definite	5M	CO3	L3
UNIT-II					
4	a	Choose the correct word 1. I have never _____(seen/scene) such a messy___ (seen/scene). 2. The birds walked down the _____(aisle/isle) of the lonely desert _____(aisle/isle). 3. He is the _____(soul/sole) owner of the company.	5M	CO2	L1
	b	Compose a short paragraph on the topic **"problems of social media"**.	5M	CO5	L6
OR					
5	a	Analyse the moral of the poem "The Brook".	5M	CO4	L4
	b	Compose a short paragraph on the topic **"higher education".**	5M	CO5	L6
UNIT-III					

6	a	Compose a short note on Elon Musk.	5M	CO4	L6
	b	Paraphrase:- The American Academy Award nomination garnered by the Bollywood film Lagaan in 2001 focused worldwide attention on this parable of the fall of the British Raj that unfolds in the drama of a cricket match between colonizers and colonized. The protagonist, an Indian villager by the name of Bhuvan, embodies simultaneously the iconicity of the Indian cricket captain and star batsman Sachin Tendulkar and the nationalist and inter-communal ideology of Mohandas K. Gandhi. Set in the closing years of the 19th century, the deeper discourse of the film constructs an ideal post-Independence 'India' in which the ideals of Gandhi, far from dying with his assassination and the ethnic cleansing of Partition, have been fully implemented in the imagined new order.	5M	CO5	L2
		OR			
7	a	Summarize the following passage to about one-third of the original length:- For many teenagers, there are numerous negative factors that can lead them to give up on their education and drop out of school. The first cause is that many teenagers lack positive role models in their lives. The lack of an encouraging adult in their lives can cause them to think negatively about themselves and it does not allow them to live up to their full potential. Also, the lack of a positive role model can cause them to get involved with the wrong kind of people and activities. This can lead many impressionable young children to give up on their education. Another factor that causes a student to give up on school is a lack of determination. If they're not determined to graduate, it can be very difficult for them to stay in school. Many students find it difficult to stay focused on school when they feel that getting an education is useless. The third and final factor is peer pressure. Many students give into peer pressure very easily. If the pure pressure is negative, this can lead them into drugs and alcohol.	5M	CO5	L2
	b	Note Making:- In a very short period of time the internet has had a profound impact on the way we live. Since the Internet was made operational in 1983, it has lowered both the costs of communication and the barriers to creative expression. It has challenged old business models and enabled new ones.	5M	CO5	L2

		It has provided access to information on a scale never before achievable. It succeeded because we designed it to be flexible and open. These two features have allowed it to accommodate innovation without massive changes to its infrastructure. An open, borderless and standardized platform means that barriers to entry are low, competition is high, interoperability is assured and innovation is rapid. The beauty of an open platform is that there are no gatekeepers. For centuries, access to and creation of information was controlled by the few. The internet has changed that and it is rapidly becoming the platform for everyone, by everyone.			
UNIT-IV					
8	a	Compose a resume for the position of English teacher in a school.	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
OR					
9	a	Compose a resume for the position of Flight Attendant.	5M	CO6	L6
	b	Compose a letter to Newspaper editor complaining about improper garbage disposal in your neighborhood.	5M	CO6	L6
UNIT-V					
10	a	Good things happen to those who put in the effort. Evaluate the statement by either agreeing or disagreeing.	5M	CO5	L5
	b	Read the following sentences. Identify and correct the errors 1. Either she or I is in charge. 2. She wrote three poetries. 3. The wisdom is unique gift. 4. She has written the letter last night. 5. Luna is the taller of the three.	5M	CO3	L3
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 Regular Examinations July/ Aug 2024

Subject Name: Differential Equations & Vector Calculus

Time: 3 Hours Branch: 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	Find the integral factor of $x(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$.	2M	CO	BTL3
	b	Solve $xdx + ydy = \frac{xdx - ydy}{x^2 + y^2}$	2M	CO1	BTL3
	c	Find the Complementary Function $(D^3+2D^2+D)y = e^{2x}+x^2$	2M	CO1	BTL3
	d	Find the Particular Integral of $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$	2M	CO1	BTL2
	e	Eliminate arbitrary constants a and b from $z = ax + by + a^2 + b^2$.	2M	CO2	BTL2
	f	Form Partial differential equation by eliminating arbitrary function f from $z = f(x^2 + y^2)$.	2M	CO2	BTL3
	g	Find the directional derivative of the function $2xy+ z^2$ at the point (1,-1,3) in the direction of $\bar{i} + 2\bar{j} + 3\bar{k}$	2M	CO3	BTL1
	h	If $\bar{f} = xy^2\,\bar{i} + 2x^2yz\bar{j} - 3yz^2\,\bar{k}$ find div$\bar{f}$ and Curl f at the point (1,-1,1)	2M	CO3	BTL4
	i	If $\bar{F} = (5xy - 6x^2)\bar{i} + (2y - 4x)\bar{j}$, evaluate $\int_C \bar{F}.d\bar{r}$ along the curve C in the xy – plane $y = x^2$ from the point (1,1) to (2,8).	2M	CO4	BTL5
	j	Define Stoke's theorem.	2M	CO4	BTL1
PART-B					
UNIT-I					
2	a	Solve $2xydy - (x^2 + y^2 + 1)dx = 0$	5M	CO1	BTL3
	b	A body is originally at 80^0C and cools down to 60^0C in 20 minutes. If the temperature of the air is 40^0C, find the temperature of the body after 40 minutes.	5M	CO1	BTL5
OR					
3	a	Solve $\frac{dy}{dx} + x\sin 2y = x^3\cos^2 y$	5M	CO1	BTL3
	b	If the temperature of a body is changing from 100^0c to 70^0c in 15 minutes, find when the temperature will be 40^0c , if the temperature of air is 30^0c.	5M	CO1	BTL4
UNIT-II					
4	a	Solve the differential equation $\frac{d^2y}{dx^2} - 2\frac{dy}{dx} + y = xe^x \sin x$.	5M	CO1	BTL3
	b	Suppose that the mass in a mass-spring-dashpot system $m\frac{d^2x}{dt^2} + c\frac{dy}{dx} + kx = 0$ with m = 15, c = 10, and is set in motion with and k = 125, with initial conditions x(0) = 10, x′(0) = 31. Find the position function x(t).	5M	CO1	BTL5

		OR			
5	a	Solve the differential equation $\frac{d^2y}{dx^2}+4y=tan2x$ by using method of variation of parameters	5M	CO1	BTL3
	b	A condenser of capacity C discharged through an inductance and resistance R in series and the charge q at time t satisfies the equation $L\frac{d^2q}{dt^2}+R\frac{dq}{dt}+\frac{q}{c}=E$. Given that L= 0.25H, R=12.5 ohms, C= 10^{-2} farads, E= 3sin2t, and that when t=0 , charge in the capacitor and current in the circuit are zero. Find the charge q in terms of t.	5M	CO1	BTL4
		UNIT-III			
6	a	Solve the partial differential equation $x^2(y-z)p+y^2(z-x)q=z^2(x-y)$	5M	CO2	BTL3
	b	Find the general solution of $\frac{\partial^2z}{\partial x^2}+2\frac{\partial^2z}{\partial x\partial y}+\frac{\partial^2z}{\partial y^2}=sin(2x+3y)$	5M	CO2	BTL4
		OR			
7	a	Solve the partial differential equation $(mz-ny)\frac{\partial z}{\partial x}+(nx-lz)\frac{\partial z}{\partial y}=ly-mx$	5M	CO2	BTL3
	b	Find the general solution of $r-4s+4t=e^{2x+y}$	5M	CO2	BTL4
		UNIT-IV			
8	a	Find the directional derivative of the function f = x^2-y^2+$2z^2$ at the point P=(1,2,3) in the direction of the line PQ, where Q=(5,0,4).	5M	CO3	BTL4
	b	Prove that (i)$\nabla(r^n)=nr^{n-2}\bar{r}$,(ii) $\nabla(f(r))=\frac{f'(r)}{r}\bar{r}$,where $\bar{r}=x\bar{i}+y\bar{j}+z\bar{k}$.	5M	CO3	BTL5
		OR			
9	a	Find the directional derivative of ϕ = x^2 yz + 4xz^2 at the point (1,-2,1) in the direction of the vector $2\bar{i}-\bar{j}-2\bar{k}$	5M	CO3	BTL4
	b	Prove that $\nabla^2f(r)=f''(r)+\frac{2}{r}f'(r)$.	5M	CO3	BTL5
		UNIT-V			
10	a	Evaluate $\iint_S\bar{F}.\bar{n}dS$where $\bar{F}=6z\bar{i}-4\bar{j}+y\bar{k}$ and S is the surface of the plane $2x+3y+6z=12$ in the first octant.	5M	CO4	BTL4
	b	Apply Green's theorem to evaluate $\int_C(3x^2-8y^2)dx+(4y-6xy)dy$ where C is the region bounded by $y=\sqrt{x}$ and $y=x^2$.	5M	CO4	BTL3
		OR			
11	a	Find the work done by the force $\bar{F}=z\bar{i}+x\bar{j}+y\bar{k}$ when it moves a particle along the arc $\bar{r}=cost\,\bar{i}+sint\,\bar{j}-t\,\bar{k}$ from t = 0 to t = π.	5M	CO4	BTL4
	b	Use gauss divergence theorem evaluate $\iint_S\bar{F}.\bar{n}dS$ where $\bar{F}=4x\bar{i}-2y^2\bar{j}+z^2\bar{k}$ and S is the surface bounded by the region $x^2+y^2=0, z=0$ and $z=3$.	5M	CO4	BTL3

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CODE: A10205	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

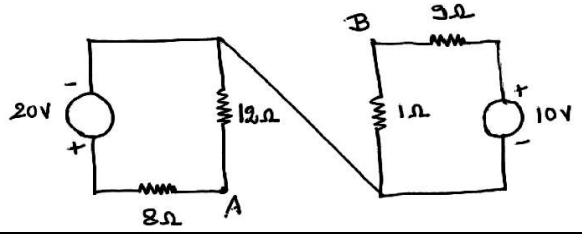
(AUTONOMOUS)

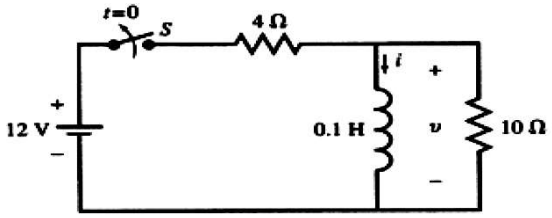
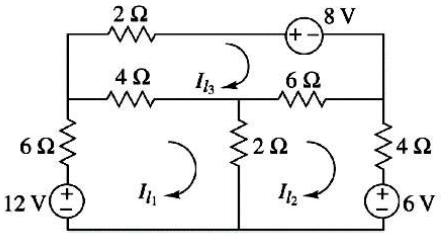
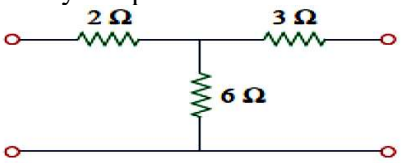
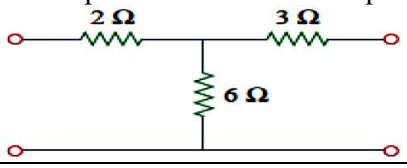
B.Tech I Year II Semester Regular Examinations July/ Aug 2024

Subject Name: NETWORK ANALYSIS

Branch: ECE

Time: 3 Hours **SET-1** **Max. Marks: 70**

PART-A Answer all questions, each question carries two marks					
1	a	State Reciprocity Theorem	2M	CO1	L1
	b	How to convert a voltage source into current source	2M	CO1	L2
	c	What are natural and forced responses	2M	CO2	L1
	d	Define Transfer function	2M	CO2	L1
	e	Define Bandwidth	2M	CO3	L1
	f	Define Resonance	2M	CO3	L1
	g	Define Q-factor	2M	CO3	L1
	h	Express Transmission parameters in terms of open and short circuit impedances	2M	CO5	L2
	i	Expression for coefficient of Coupling	2M	CO4	L2
	j	Define Attenuators	2M	CO5	L1
Answer all three units, 05 X 10 = 50 Marks					
UNIT-I					
2	a	Determine Thevenin's Theorem across AB terminals 	10M	CO1	L2
OR					
3	a	Explain Superposition Theorem with one Example	10M	CO1	L1
UNIT-II					
4	a	A series R-C circuit with R=1Ω and C=1F is connected to a 5V DC source at t=0. Determine the voltage across the capacitor as a function of time.	5M	CO2	L2
	b	Use the Laplace transform to solve for the current in an R-L circuit where R=2Ω, L=1H, and the applied voltage is V(t)=10u(t) (step input). Assume zero initial conditions.	5M	CO2	L2
OR					

5	a	The 12-V battery in figure below is disconnected at t = 0. Find the inductor current and voltage v for all times. 	10M	CO2	L3
		UNIT-III			
6	a	Explain Star Delta Conversion with one Example	10M	CO3	L2
		OR			
7	a	Determine Mesh Currents using Mesh Analysis 	10M	CO3	L3
		UNIT-IV			
8	a	Show that $Q0$ = f0 / BW for a series resonance circuit	5M	CO4	L3
	b	Explain the concept of mutual inductance. Where is this concept useful?	5M	CO4	L2
		OR			
9	a	A Series R-L-C circuit with R = 500Ω, L = 0.6H and C = 50μF has an applied voltage of 60 V with variable frequency. Calculate: (i) Resonance frequency. (ii) Current at resonance. (iii) Voltage across R. (iv) Band width. (v) Q-factor of the circuit.	10M	CO4	L3
		UNIT-V			
10	a	Find the hybrid parameters for the two-port network of figure given 	5M	CO5	L3
	b	Find the Z- parameters for the two-port network of figure given below 	5M	CO5	L3
		OR			
11	a	Derive the relation between Transmission Parameters and Admittance Parameters	10M	CO5	L3

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