R23

I BTECH I SEM

END EXAMINATION QUESTION PAPERS

REG & SUPPLEMENTARY

DEC./JAN. 2025/2026

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025 | **R23**

Sub Code: R23CC1101 **LINEAR ALGEBRA & CALCULUS**

Time: 3 hours (Common to All Branches) Max. Marks: 70

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answering all the questions from Part-A is compulsory (10 x 2M = 20M)

Q.No		Questions	KL	CO	M
1	a	Find 2A – 3B from $A=\begin{bmatrix}2 & 5 & -1\\ 3 & 0 & 4\end{bmatrix}$ *and* $B=\begin{bmatrix}1 & -6 & 2\\ -2 & 5 & 7\end{bmatrix}$.	1	1	2M
	b	Find the values of x, y and z which satisfy the matrix equation $\begin{bmatrix}x+3 & 2y+x\\ z-1 & 4a-6\end{bmatrix}=\begin{bmatrix}0 & -7\\ 3 & 2a\end{bmatrix}$.	1	1	2M
	c	Apply Cayley-Hamilton theorem to $A=\begin{bmatrix}1 & 2\\ 2 & -1\end{bmatrix}$ and deduce that $A^4 = 25I$.	2	2	2M
	d	Write the matrix of the quadratic form $8x^2 + 7y^2 + 3z^2 - 12xy + 4xz - 8yz$.	2	2	2M
	e	Geometrically interpret the Rolle's theorem.	2	3	2M
	f	Show that the Rolle's theorem is not valid for the function $f(x) = \|x\|$ in the interval $[-1, 1]$.	3	3	2M
	g	Find the value of $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}$ where $u=\frac{x^2+y^2}{x+y}$.	3	4	2M
	h	Find the Jacobian for the following functions $x = r\cos\theta$ and $y = r\sin\theta$.	2	4	2M
	i	Change the order of the integration from $\int_0^a \int_y^a f(x,y)\,dx\,dy$	2	5	2M
	j	Draw the region of integration in $\int_0^1 \int_{\sqrt{y}}^{2-y} f(x,y)\,dx\,dy$	2	5	2M

PART-B

Answer either 'a' or 'b' from each question of **PART-B** (5 x 10M = 50M)

Q.No		Questions	KL	CO	M
		Unit-I			
2	a	i) For what value(s) of x, will the matrix $A=\begin{bmatrix}3-x & 2 & 2\\ 1 & 4-x & 0\\ -2 & -4 & 1-x\end{bmatrix}$ be of rank equal to 3.	3	1	5M
		ii) Solve the following system of equations $3x-y-z=0;\quad x+y+2z=0;\quad 5x+y+3z=0$	3	1	5M
		OR			
	b	i) Find the rank of the following matrix by reducing to normal form $\begin{bmatrix}-1 & 2 & -1 & -2\\ -2 & 5 & 3 & 0\\ 1 & 0 & 1 & 10\end{bmatrix}$	3	1	5M

		ii) Solve the system by Gaussian elimination method $2a+5b+2c-3d=3;\quad 3a+6b+5c+2d=2$ $4a+5b+14c+14d=11;\ 5a+10b+8c+4d=4$	3	1	5M
3		Unit-II			
	a	i) Find the eigen values and eigen vectors of the following matrix $\begin{bmatrix} 1 & 0 & -1 \\ 1 & 2 & 1 \\ 2 & 2 & 3 \end{bmatrix}$.	3	2	5M
		ii) Verify Cayley-Hamilton theorem for the matrix $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$.	3	2	5M
		OR			
	b	Reduce the following quadratic form to canonical form and find the rank, index, signature and nature (value class) of the quadratic form $x_1^2+2x_2^2+3x_3^2+2x_1x_2-2x_1x_3+2x_2x_3$	3	2	10 M
4		Unit-III			
	a	i) If $x > 0$, Expand $\log(1+x)$	3	3	5M
		ii) Expand the following function in Maclaurin series $\log(1+e^x)$.	3	3	5M
		OR			
	b	i) Verify the Taylor's theorem with $n=2$ for the function $f(x)=x(x-1)(x-2)$ in the interval $[0, 1/2]$	3	3	5M
		ii) Verify the Cauchy's mean value theorem for the following functions: $f(x)=\sin x$, $g(x)=\cos x$ in $[a, b]$, $0 \le a < b \le \pi/2$.	3	3	5M
5		Unit-IV			
	a	i) if $u=e^{(ax+by)}f(ax-by)$, prove that $b\frac{\partial u}{\partial x}+a\frac{\partial u}{\partial y}=2abu$	3	4	5M
		ii) Find the maximum value of $f=x^2y^3z^4$ subject to the condition $x+y+z=5$.	3	4	5M
		OR			
	b	i) If $u=\sin^{-1}\left(\frac{x^2+y^2}{x+y}\right)$, prove that $x\frac{\partial u}{\partial x}+y\frac{\partial u}{\partial y}=\tan u$	3	4	5M
		ii) Show that the minimum value of $f(x, y)=xy+\frac{a^3}{x}+\frac{a^3}{y}$ is $3a^2$.	3	4	5M
6		Unit-V			
	a	i) If A is the area of the rectangular region bounded by the lines $x=0$, $x=1$, $y=0$ and $y=2$, evaluate $\iint (x^2+y^2)dx\,dy$.	3	5	5M
		ii) Evaluate $\iiint_R (x+y+z)dx\,dy\,dz$, where R is the region bounded by the planes $x=0$, $y=0$, $z=0$ and $x+y+z=1$.	3	5	5M
		OR			
	b	i) Evaluate $\iint xy(x+y)dxdy$, where R is the region bounded between the parabola $y=x^2$ and the line $y=x$.	3	5	5M
		ii) Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} (xyz)\,dz\,dy\,dx$	3	5	5M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025 **R23**

Sub Code: R23CC1102 **INTRODUCTION TO PROGRAMMING**

Time: 3 hours (Common to All Branches) Max. Marks: 70

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answering all the questions from Part-A is compulsory (10 x 2M = 20M)

Q.No		Questions	KL	CO	M
1	a	Differentiate top-down and bottom-up approaches.	K4	1	2M
	b	What is the memory hierarchy in a computer system?	K1	1	2M
	c	Write a C program to find whether a character is an alphabet or not.	K4	2	2M
	d	Differentiate break and continue statements within a loop.	K4	2	2M
	e	Define array. How to declare an array?	K1	3	2M
	f	Write a C function to find the reverse of a string without using strrev().	K4	3	2M
	g	What is pointer arithmetic.	K1	4	2M
	h	Specify the use of typedef in C.	K2	4	2M
	i	What is meant by library function?	K1	5	2M
	j	What is scope and lifetime of a local variable and global variable.	K1	5	2M

PART-B

Answer either 'a' or 'b' from each question of **PART-B** (5 x 10M = 50M)

Q.No		Questions	KL	CO	M
2		Unit-I			
	a	i)Define Algorithm. How to analyze the performance of an algorithm.	K1	1	10M
		OR			
	b	i)What is type casting in C? Explain the benefits of it.	K1	1	5M
		ii) Explain about primitive data types in C.	K2	1	5M
3		Unit-II			
	a	i) Explain about decision making statements in C.	K2	2	5M
		ii) Create a C program to create a simple calculator using switch case.	K4	2	5M
		OR			
	b	i)Explain about entry controlled statements in C with example.	K2	2	5M
		ii) Write a C program to display Fibonacci series.	K1	2	5M
4		Unit-III			
	a	i) Write and explain the syntax of any five string handling functions.	K1	3	10M
		OR			
	b	i) Explain about declaration and initialization of two-dimensional array.	K2	3	5M
		ii) What are the conditions to check weather two matrix can be multiplied or not with each other and write a program for matrix multiplication.	K4	3	5M
5		Unit-IV			
	a	i) Discuss about arithmetic operations on pointers.	K6	4	5M
		ii) Explain about array of pointers with example program.	K2	4	5M

		OR			
	b	i) Describe how to declare. initialize and access members of union in C with example program.	K4	4	5M
		ii) Write a C program to read and display student details using structure.	K1	4	5M
6		Unit-V			
	a	i) Describe user defined function and predefined function in C with example.	K4	5	5M
		ii) Explain in detail about call by value and call by reference.	K2	5	5M
		OR			
	b	i) Explain the syntax for opening the file with various modes and closing a file and also write a C program to display the content of a file.	K2	5	10M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025

Sub Code: R23CC1103 **COMMUNICATIVE ENGLISH**

Time: 3 hours (CSE,IT,CSE(AI)) Max. Marks: 70

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answering all the questions from Part-A is compulsory (10 x 2M = 20M)

Q.No		Questions	KL	CO	M
1	a	Define skimming.	2	1	2M
	b	Punctuate the following sentences correctly. Capitalise words where required. 1.i speak telugu and hindi better than English what about you 2.i need an assistant who can do the following input data write reports and complete tax forms	4	1	2M
	c	Fill in the blanks with suitable articles: 1.There is _____ European and _____ Ethiopian among the tourists. 2. It is _____ awe-inspiring sight to see _____ Brahmaputra in spate.	3	2	2M
	d	What is a homophone?	2	2	2M
	e	Fill in the blanks with correct form of the verbs. 1. Suma _____(watch) a film when her brother called her. 2. Rahul _____ (graduate) from law school.	4	3	2M
	f	Use the following compound words in sentences of your own: 1. homemade 2. warmhearted	2	3	2M
	g	Why did Harvey think elementary education needed to be rethought?	2	4	2M
	h	Fill in the blanks with the words from the options given in the brackets. 1. Please be _____ with this information. (discreet, discrete) 2. The new rules _____ much anger from the workers. (evoked, invoked)	3	4	2M
	i	What is meant by Technical jargon?	3	5	2M
	j	Rewrite the following sentences making necessary corrections. 1. She is beautiful then her. 2. There are less dresses.	5	5	2M

PART-B

Answer either 'a' or 'b' from each question of **PART-B** (5 x 10M = 50M)

Q.No		Questions	KL	CO	M
2		Unit-I			
	a	i)Discuss how the actions of Jim and Della symbolize the strength of their love for each other.	4	1	10M
		OR			
	b	i)Write **Synonyms** for the following: 1.Ecstatic 2.Honest 3.Enhance 4. Primitive 5. Crucial	3	1	5M
		ii) Define Prefix. Write examples for inter, non, pre, semi, and tri prefixes.	4	1	5M

		Unit-II			
3	a	i) What does Tennyson want to convey through the poem "The Brook"?	2	2	10M
		OR			
	b	i) Write a Paragraph about your most memorable trip.	2	2	5M
		ii) Fill in the blanks with the following **collocations.** (great time, rough time, in time, spare time, precious time) 1. Tourists will have a _____ in the Andaman Islands. 2. We went to the cinema _____. 3. Leela has been through some _____. 4. Binu spends all his _____ helping others. 5. I spend my _____ watching nature.	5	2	5M
4		Unit-III			
	a	i)Discuss the traits in Elon Musk that have made him a successful entrepreneur.	3	3	10M
		OR			
	b	i) What is meant by paraphrasing? Why is paraphrasing an important skill?	2	3	5M
		ii) Fill in the blanks with the correct form of the verb. 1. Neither your hair clip nor your shoes _____ your dress. (matches/match) 2. The performance of William McKinley High School _____ great. (were /was) 3. Your heartbeat _____ not normal. (are/is) 4. All of my toys _____donated.(has been/have been) 5. Here ____ the books you asked for. (are/is)	3	3	5M
5		Unit-IV			
	a	i) How does Harvey try to introduce the concept of 'peace toys' to his nephews?	2	4	10M
		OR			
	b	i) Write an official letter to the Vice Chancellor of JNTUK to consider hosting the inter-university athletics competition	6	4	5M
		ii) Read the following sentences and change them into reported speech. 1. John said, "I like to play rugby." 2. The teacher said, "The French Revolution took place in 1789." 3. Anish said to Sid, "Please lend me the book." 4. Irin said, "I am playing the piano." 5. My uncle said, "I am cooking lunch."	3	4	5M
6		Unit-V			
	a	i) Explain the ways in which intrapersonal communication impacts self-conceptualization.,	4	5	10 M
		OR			
	b	i) Write an essay on the topic 'Benefits of Free Education'.	4	5	10 M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025 **R23**

Sub Code: R23CC1104 BASIC CIVIL AND MECHANICAL ENGINEERING

Time: 3 hours (CSE, IT, AI) Max. Marks: 70

PART-A

(CE)

Q.No		Questions	KL	CO	M
1	a	How are bricks classified?	KL	CO	1M
	b	Discuss the primary objectives of surveying	K1	CO1	1M
	c	List the difference between Dams and Reservoirs	K1	CO1	1M
	d	What are the basic components of a bulding?	K1	CO2	1M
	e	Define bearing capacity of soil.	K1	CO2	1M
2		Unit-I			
	a	i) List the uses of the following construction materials: cement and steel.	K1	CO1	5M
		What are the requirements of good building stone & state important varieties of Building stones	K2	CO1	5M
		OR			
	b	i) Explain various disciplines of civil engineering.	K1	CO1	5M
		ii) Briefly explain about how civil engineering contributes to the welfare of the society?	K2	CO1	5M
3		Unit-II			
	a	i) Explain with neat sketch chain and principles of chain surveying.	K2	CO2	5M
		ii) Solve the bearing problem WCB to RB: S 31°54'W, N 68°54' E, S 25°54' E and N45°54' W	K1	CO2	5M
		OR			
	b	i) The following readings are taken by dumpy level instrument with a RL (benchmark) of 150.00m and the readings are 2.500, 1.500,0.800,1.900,1.200,2.200,1.800,0.500. Find the levelling by using Rise and Fall method.	K2	CO2	10M
4		Unit-III			
	a	i)what is Rainwater Harvesting ? Explain the need of it.	K2	CO3	5M
		ii) Explain about rainwater harvesting and its advantages.	K4	CO3	5M
		OR			
	b	i) Differentiate Flexible and Rigid pavement.	K2	CO4	5M
		ii) Importance of Transportation in Nation's economic development	K1	CO4	5M

...5

PART-B

(ME)

Q.No		Questions	KL	CO	M
5	a	What is the mechanical engineering role in Manufacturing Engineering?	K2	CO1	1M
	b	Define casting.	K2	CO2	1M
	c	List the different types of boilers	K2	CO2	1M
	d	**Outline** the links and Joints used in robot?	K3	CO3	1M
	e	List any two advantages and two disadvantages of Rope drives	K2	CO3	1M
6		Unit-IV			
	a	i) Analyze the mechanical engineering technologies role in Marine Engineering?	K4	CO2	5M
		ii) Outline the applications of Composites?	K2	CO2	5M
		OR			
	b	i) **Distinguish** the ferrous and non-ferrous metals?	K2	CO2	5M
		ii) what is the Role of Mechanical Engineering in Industries and Society?	K4	CO2	5M
		Unit-V			
7	a	i) Explain the basic Refrigeration and air conditioning cycles?	K4	CO3	10M
		OR			
	b	i) what are the Components of Electric and Hybrid Vehicles ?	K4	CO3	10M
		Unit-VI			
8	a	i) Working principle of Hydro plant with neat Sketch?	K4	CO4	10M
		OR			
	b	i) Explain the Basic components of Robot with neat sketch	K4	CO4	10M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025 **R23**

Sub Code: R23CC1105 **CHEMISTRY**

Time: 3 hours (CSE,IT & CSE(AI)) Max. Marks: 70

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answering all the questions from Part-A is compulsory (10 x 2M = 20M)

Q.No		Questions	KL	CO	M
1	a	Write any two characteristics of Anty-bonding orbitals	K1	1	2M
	b	Give any two examples of inter molecular H-bonding	K1	1	2M
	c	Write any two applications of supercapacitors	K1	2	2M
	d	Write any two applications of carbon nanotubes (CNTs)	K1	2	2M
	e	Define Fuel cell with example	K1	3	2M
	f	Write any two uses of Sodium Ion Battery	K1	3	2M
	g	State Thermo setting plastics with examples	K1	4	2M
	h	Write any two applications of Buna-N rubber	K1	4	2M
	i	Define electromagnetic spectrum	K1	5	2M
	j	Write any two applications of NMR-Spectroscopy	K1	5	2M

PART-B

Answer either 'a' or 'b' from each question of **PART-B** (5 x 10M = 50M)

Q.No		Questions	KL	CO	M
2		Unit-I			
	a	i)Calculate bond order of CO-molecule using M.O energy level diagram	K3	1	5M
		ii)Discuss conditions for Linear Combination of Atomic Orbitals (LCAO)	K2	1	5M
		OR			
	b	i)Summarize π – Molecular Orbital energy level diagram of Benzene	K5	1	5M
		ii)Explain Intramolecular Hydrogen Bonding with examples	K2	1	5M
3		Unit-II			
	a	i)Discuss Czochralski Method for the preparation of semiconductors	K2	2	5M
		ii)Explain the differences between Type-1 and Type-2 superconductors	K2	2	5M
		OR			
	b	i)Discuss Laser Ablation Method for the preparation of Nanomaterials	K2	2	5M
		ii)Discuss the properties of Graphenes nanoparticles	K4	2	5M
4		Unit-III			
	a	i)Explain strong acid Vs weak base conductometric titration with graph	K2	3	5M
		ii)Explain working and applications of Potentiometric sensors	K2	3	5M

		OR			
	b	i)Illustrate construction and working of Lithium-ion Battery	K4	3	5M
		ii)Explain construction and working of Hydrogen-Oxygen Fuel cell	K2	3	5M
5		Unit-IV			
	a	i)Explain Ziegler-Natta polymerization	K2	4	5M
		ii)Explain Injection Moulding technique with neat sketch	K3	4	5M
		OR			
	b	i)Explain the mechanism of conducting polymer.	K2	4	5M
		ii)Define Bio-degradable polymers and discuss applications of Poly Lactic Acid (PLA)	K2	4	5M
6		Unit-V			
	a	i)Discuss Absorption Spectra	K2	5	5M
		ii) Explain the applications of UV Spectroscopy	K2	5	5M
		OR			
	b	i)Illustrate FT-IR Instrumentation with neat sketch	K2	5	5M
		ii)Explain NMR Instrumentation with a neat diagram	K2	5	5M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025 **R23**

Sub Code: R23CC1106 ENGINEERING PHYSICS

Time: 3 hours (CE,EEE,ME,ECE,CSE(AIML),DS,CS,AIML) Max. Marks: 70

Note: Question Paper consists of Two parts (Part-A and Part-B)

PART-A

Answering all the questions from Part-A is compulsory (10 x 2M = 20M)

Q.No		Questions	KL	CO	M
1	a	What is Population inversion	K	1	2M
	b	What is the Basic principle of optical fibre	K2	1	2M
	c	Define Basis	K1	2	2M
	d	What is Bragg's law	K1	2	2M
	e	What is Magnetic susceptibility	K1	3	2M
	f	What are the Properties of Superconductivity	K3	3	2M
	g	What is Heisenberg's Uncertainty Principle	K1	4	2M
	h	What are the failures of Classical free electron theory	K1	4	2M
	i	What are the types of semiconductors	K2	5	2M
	j	Define Thermoelectric materials	K1	5	2M

PART-B

Answer either 'a' or 'b' from each question of **PART-B** (5 x 10M = 50M)

Q.No		Questions	KL	CO	M
2		Unit-I			
	a	i)) With the help of suitable diagram explain the principle, construction and working Semiconductor laser.	K2	1	6M
		ii) Write about Spontaneous and Stimulated emission of radiation	K1	1	4M
		OR			
	b	i) Write about Step Index index fibers with Applications and also calculate the acceptance angle	K3	1	7M
		ii)Calculate the Numerical aperture of an optical fibre with refractive index of core and cladding as 1.49 and 1.46	K4	1	3M
3		Unit-II			
	a	i) Derive packing fraction of BCC, FCC structures	K3	2	7M
		ii)Define Bravais Lattices, Unit cell and Lattice parameters	K1	2	3M
		OR			
	b	i)Write the crystal structure determination by Laue's method.	K3	2	5M
		ii)State and explain Miller indices	K1	2	5M

4		Unit-III			
	a	i)Write about Magnetic susceptibility, permeability and relation between them and also write about dia, para and ferro materails	K2	3	7M
		ii)Write about Magnetic dipole moment	K1	3	3M
		OR			
	b	i)Write about AC and DC Josephson effect with Applications	K1	3	7M
		ii)Define Hysteresis	K3	3	3M
5		Unit-IV			
	a	i)Derive Schrodinger's time independent wave equation	K3	4	7M
		ii)Write the significance of wave function Ψ	K3	4	3M
		OR			
	b	i)Write about Classical free electron theory	K1	4	5M
		ii)Write about Fermi-Dirac distribution.	K3	4	5M
6		Unit-V			
	a	i)Write about Drift and diffusion currents	K3	5	5M
		ii)Write about Hall Effect and its applications.	K2	5	5M
		OR			
	b	i)Distinguish between magneto rheological fluids and electro rheological fluids	K2	5	5M
		ii)Write the Engineering applications of smart materials.	K1	5	5M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular/Supple. Examinations, Dec-2025

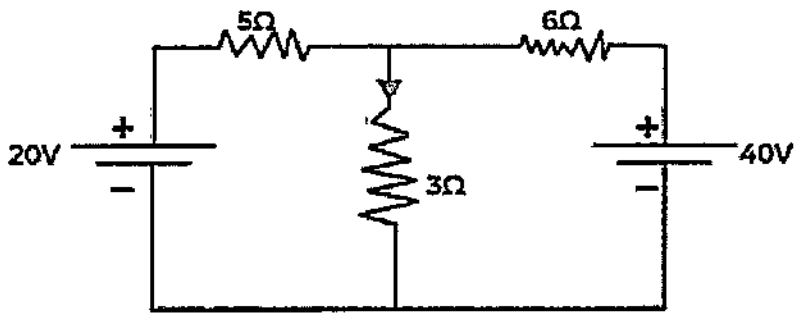
R23

Sub Code: R23CC1107 BASIC ELECTRICAL & ELECTRONICS ENGINEERING

Time: 3 hours (CE,EEE,ME,ECE,CSE(AIML),DS,CS,AIML) Max. Marks: 70

PART-A

(EEE)

Q.No		Questions	KL	CO	M
1	a	What are the limitations of Superposition theorem?	K1	1	1M
	b	Explain the principle of operation of a DC Motor.	K2	2	1M
	c	Differentiate Conventional and non-conventional energy resources	K1	3	1M
	d	Define Form Factor and Amplitude Factor of an Alternating quantity.	K1	1	1M
	e	Explain the working principle of Permanent Magnet Moving Coil Instruments.	K1	2	1M
		Unit-I			
2	a	i) Find the current flowing through 3Ω resistor in the network shown below using superposition theorem. 	K3	1	5M
		ii) Draw the phasor diagram, voltage triangle and power triangle for R circuit excited with an AC source.	K2	1	5M
		OR			
	b	i) Define Potential Difference, Resistance, Inductance, Capacitance, Power and Energy.	K1	1	5M
		ii) A 4μF capacitor is connected in parallel with a 6μF capacitor. This arrangement is then connected in series with a 10μF capacitor. A supply voltage of 250V is connected across the circuit. Find (a) the equivalent capacitance of the circuit, (b) the voltage across the 10 μF capacitor, and (c) the charge on each capacitor.	K2	1	5M
		Unit-II			
3	a	Draw the construction diagram and explain each part of DC Generator.	K2	2	10M
		OR			
	b	Explain the Construction and working Principal of Moving Iron instruments.	K2	2	10M
		Unit-III			
4	a	i) Explain the operation of Nuclear power plant with the help of single line diagram.	K2	3	5M
		ii) Explain the two-part tariff method and mention advantages and disadvantages.	K2	4	5M
		OR			
	b	i) Explain the operation of Hydel power plant with the help of single line diagram.	K2	3	5M
		ii) With the aid of one simple example, explain the calculation of electricity bill for domestic consumers.	K2	4	5M

PART-B(ECE)

Q.No		Questions	KL	CO	M
5	a	What is forward bias and reverse bias in a PN junction?	K1	1	1M
	b	Define ripple factor. What is the value of ripple factor for FWR and HWR?	K1	2	1M
	c	Draw the truth table of J-K Flip flop.	K1	3	1M
	d	Compare CB and CC Configurations.	K1	1	1M
	e	Realize the AND gate using NAND gate.	K1	3	1M
6		Unit-IV			
	a	Draw the circuit and explain the characteristics of CB and CE configuration.	K2	1	10M
		OR			
	b	Draw the PN-Junction Diode and explain its Characteristics	K2	1	5M
		ii) What is a Zener diode? Explain the Zener voltage regulator function.	K2	1	5M
		Unit-V			
7	a	What are the elements of amplifier and explain the RC coupled amplifier with its frequency response.	K2	2	10M
		OR			
	b	With the help of a neat block diagram explain the Public Address system and discuss each part of it.	K2	2	10M
		Unit-VI			
8	a	i) Explain NOT, AND, NOR, NAND and XOR gates with their truth tables.	K2	3	5M
		ii) Explain the T flip flop using its truth table.	K2	4	5M
		OR			
	b	i) Design and implement half adder with truth table.	K2	3	5M
		ii) Explain different types of Counters.	K2	4	5M

L: Blooms Taxonomy Knowledge Level CO: Course Outcome M: Marks

***

NAMASAMUDRAM

NEC ENGINEERING COLLEGE

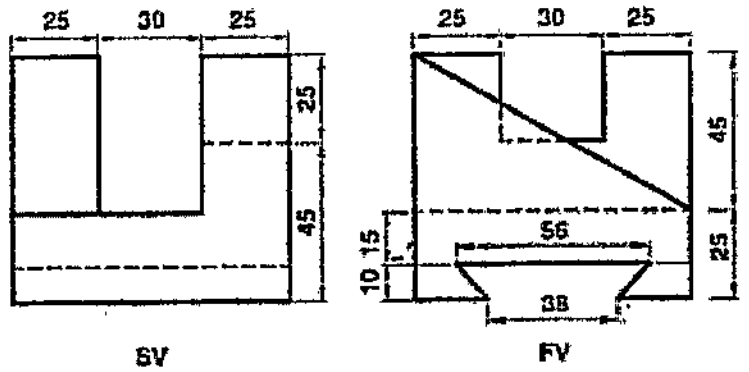
(AUTONOMOUS)

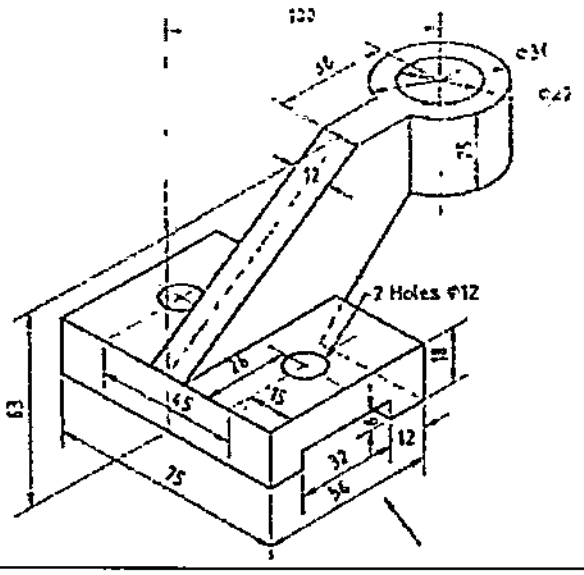
I B.Tech I Semester Regular & Supple. Examinations, December-2025

Sub Code: R23CC1108 **ENGINEERING GRAPHICS**

Time: 3 hours (CSE (AIML), CY & AIML) Max. Marks: 70

Note: Answer All **FIVE** Questions. All Questions Carry Equal Marks (5 X 14 = 70M)

Q.No		Questions	KL	CO	M
1		Unit-I			
	a	A coin of 35 mm diameter rolls over dining table without slipping. A point on the circumference of the coin is in contact with the table surface in the beginning and after one completer revolution. Draw the curve traced by the point. Draw a tangent and normal at any point on the curve.	K2	1	14M
		OR			
	b	Draw an Ellipse having the eccentricity 2/3 and the distance from directrix to the focus is 50mm. Also draw a tangent and normal on the curve at a point on that curve.	K2	1	14M
2		Unit-II			
	a	A regular hexagon of 40mm side has a corner in the HP. Its surface inclined at 45° to the HP and the top view of the diagonal through the corner which is in the HP makes an angle of 60° with the VP. Draw its projections	K3	2	14M
		OR			
	b	A point S is on both HP and VP. Another point T is 35mm above HP and 40 mm in front of VP. Draw its projections when the line joining their top views is 70mm. Also draw and measure the line joining their front views.	K3	2	14M
3		Unit-III			
	a	Draw the projections of a solids of a cone 40 mm diameter, resting on HP on a point on the circumference. Its acess is inclined at 30° to the HP. Draw its projections.	K3	3	14M
		OR			
	b	A hexagonal pyramid of 35mm side stands with one of its edges parallel to VP. Such that the surface is 45° inclined to VP. Draw the projections of the solid.	K3	3	14M
4		Unit-IV			
	a	Develop the complete surface of a cone with 40 mm diameter and height 80 mm long acess. The cone is resting on HP on its base.	K3	4	14M
		OR			
	b	Draw the development of the lateral surface of a square pyramid, side of base 30 mm and height 50 mm, resting with its base on H.P. All edge of the base are equally inclined to V.P.	K3	4	14M
5		Unit-V			
	a	Fig.1 below shows the FV and SV of an object. Draw its isometric view. 	K4	5	14M

		OR			
	b	Draw the elevation, plan and left side view of the object shown in Fig.2. 	K4	5	14M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

NARASARAOPETA ENGINEERING COLLEGE
(AUTONOMOUS)

I B.Tech I Semester Regular & Supple. Examinations, December-2025

R23

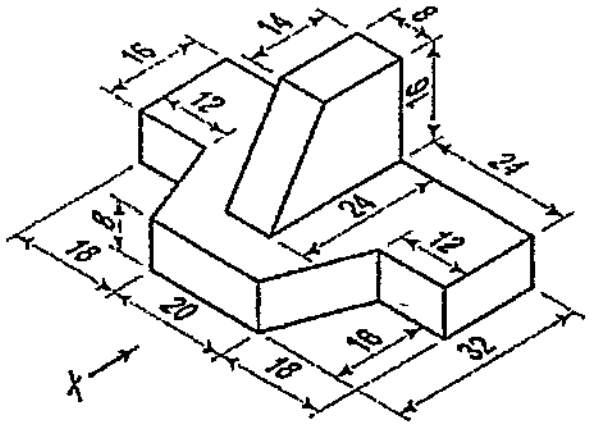
Sub Code: R23CC1108 **ENGINEERING GRAPHICS**

Time: 3 hours (CE, EEE, ME, ECE & DS) Max. Marks: 70

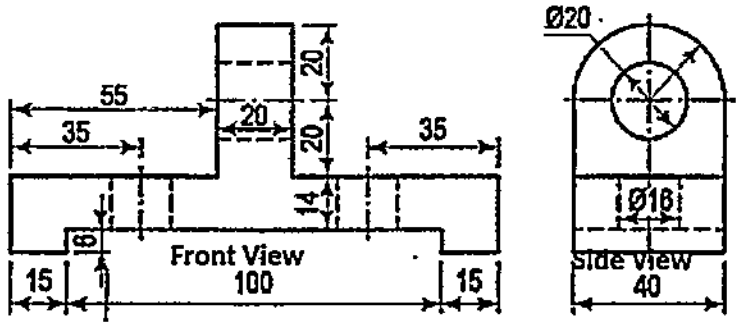
Note: Answer All **FIVE** Questions.

All Questions Carry Equal Marks (5 X 14 = 70M)

Q.No		Questions	KL	CO	M
1		Unit-I			
	a	Construct regular pentagon and regular heptagon having a side 40 mm using general method.	K1	CO1	14M
		OR			
	b	Draw an cycloid generated by rolling a circle of diameter 50 mm. Draw a tangent and a normal on the curve.	K3	CO1	14M
2		Unit-II			
	a	(i) What is the true length of a line whose top view measures 90 and whose inclination to the H.P. is 45°, point A 30mm above HP and 20mm infornt of VP	K2	CO2	7M
		(ii) A line 60 mm long is inclined at 45° to the H.P., 30° to the V.P. Its end A is in the H.P. and 40 mm in front of the V.P. Draw its projections.	K3	CO2	7M
		OR			
	b	A rectangular plane surface of size 70x35 is positioned in the first quadrant and inclined at an angle of 60° with the H.P. and 30° with the V.P. Draw its projections.	K4	CO2	14M
3		Unit-III			
	a	A prism with a 30 mm side is resting on HP. One of its edge lying on V.P. Draw its projections.	K3	CO3	14M
		OR			
	b	A pentagonal pyramid with base 25 mm side and axis 50 mm long has one of its triangular faces in the V.P. and the edge of the base contained by that face makes an angle of 30° with the H.P. Draw its projections	K6	CO3	14M
4		Unit-IV			
	a	A cone, base 60 mm diameter and axis 90 mm long is resting on its base on the H.P. It is cut by a section plane perpendicular to the V.P., inclined at 45° to the H.P. and cutting the axis at a point 35 mm from the apex. Draw its front view, sectional top view, sectional side view and true shape of the section.	K4	CO4	14M
		OR			
	b	Draw the development of lateral surface of a square pyramid with a 40 mm base 60 mm long axis which is resting on its base in the H.P.	K1	CO4	14M
5		Unit-V			
	a	For the given object draw (i) front view (ii) top view and (iii) side view. (All dimensions are in mm)	K3	CO5	14M



OR

	b	Convert orthogonal projections given below into isometric view. (All dimensions are in mm) 	K5	CO5	14M

KL: Blooms Taxonomy Knowledge Level CO: Course Outcome M:Marks

***