Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23PHY101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech (R23) I Year II Semester Regular and I Year I & II Semesters Supplementary End Semester Examinations, July – 2025

ENGINEERING PHYSICS

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	What phenomenon is involved in the formation of colours in thin films?	1	1	1
	ii)	Mention any two differences between Fresnel and Fraunhofer diffraction.	1	1	2
	iii)	Define packing fraction of a lattice.	1	2	1
	iv)	Mention any two methods to determine the crystal structure of a material.	1	2	2
	v)	Write down the Schrödinger time dependent wave equation.	1	3	1
	vi)	Mention any two demerits of classical free electron theory.	1	3	2
	vii)	Mention any two differences between intrinsic and extrinsic semiconductors.	1	4	2
	viii)	Define drift current.	1	4	1
	ix)	Define magnetic susceptibility.	1	5	1
	x)	Write down any two properties of ferromagnetic materials.	1	5	1
2(A)	(i)	Explain the interference phenomenon in thin films with suitable diagrams.	6	1	2
	(ii)	Show that the diameter of the newtons rings is proportional to the natural numbers of wavelength.	6	1	2
		OR			
2(B)		Derive an expression for the intensity using Fraunhofer diffraction due to single slit with necessary schematics.	12	1	3
3(A)	(i)	Classify various crystal systems based on the lattice parameters.	6	2	2
	(ii)	Derive the packing fraction of SC, BCC and FCC lattices.	6	2	3
		OR			
3(B)		Explain the construction and working of X-ray diffractometer with suitable diagrams.	12	2	2
4(A)		Deduce an expression for the energy of a particle trapped in a one-dimensional infinite potential well. Sketch the wavefunction and probability densities.	12	3	3
		OR			
4(B)		Using quantum free electron theory, discuss the electrical conductivity with necessary diagrams.	12	3	2
5(A)	(i)	Classify the crystalline solids based on the formation of bands with suitable diagrams.	6	4	2
	(ii)	Define Hall effect. Discuss its importance and mention any two applications of Hall effect.	6	4	2
		OR			
5(B)		Derive an expression for the dependence of Fermi energy on carrier concentration and temperature	12	4	3

6(A)	(i)	Derive the relation between the dielectric vectors.	6	5	3
	(ii)	Explain the electronic polarization with suitable schematics.	6	5	2
		OR			
6(B)		Explain the domain concept of ferromagnetism using magnetic hysteresis loop. Mention any three applications of ferromagnetic materials.	12	5	3

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CHE102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech (R23) I Year II Semester Regular and I Year I & II Semesters Supplementary End Semester Examinations, July – 2025

CHEMITSTRY

(Common to EEE, ECE, CSE and CSM)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	Define eigenvalue with a suitable example.	1	1	1
	ii)	Interpret the number of bonding electrons present in N_2 molecule?	1	1	2
	iii)	Briefly explain p-type doping in semi-conductors.	1	2	2
	iv)	How does a nanomaterial differ from bulk material?	1	2	1
	v)	Define electrochemical series.	1	3	1
	vi)	Draw the conductometric graph of weak acid vs Strong base?	1	3	2
	vii)	What are the monomers present in Nylon6,6?	1	4	1
	viii)	Give one example for bio-degradable polymers?	1	4	2
	ix)	Find the number of vibrational modes for CO_2 molecule.	1	5	2
	x)	Write any two applications of HPLC method.	1	5	1
2(A)	(i)	Illustrate the molecular orbital diagram of the O_2 molecule.	8	1	2
	(ii)	Write the time-independent Schrödinger wave equation. Explain the physical significance of the wave function (Ψ) and its square (Ψ^2).	4	1	2
		OR			
2(B)		Derive the expression for energy and wavefunction for a particle in 1-D box.	12	1	2
3(A)		Define cooper pair of electrons. Apply the concept of BCS theory & cooper pair to explain the superconductivity of certain solid materials.	12	2	3
		OR			
3(B)	(i)	Classify supercapacitors. Discuss the working principle of any one of them.	6	2	3
	(ii)	Describe the structure of C_{60} (Buckminsterfullerene). List two unique properties and applications of fullerenes.	6	2	3
4(A)	(i)	Derive Nernst equation and explain each term.	6	3	3
	(ii)	Write the half-cell reactions and apply Nernst equation to calculate the EMF of the following cell at 298 K. Zn(s) / Zn^{2+} (0.001 M) // Cu^{2+} (0.0001 M) / Cu(s). E^0 Cu^{2+}/ Cu = 0.34 V, E^0 Zn^{2+}/Zn = −0.76 V	6	3	3
		OR			
4(B)		Construct a labelled diagram for rocking chair battery (Lithium -Ion) and explain its working principles, advantages, limitations and applications.	12	3	3
5(A)	(i)	Discuss the free radical chain polymerization mechanism for polyethylene.	8	4	2
	(ii)	Discuss the differences between thermoplastics and thermosetting polymers.	4	4	2
		OR			
5(B)		Discuss the synthesis, properties and applications of Buna-S and Bakelite.	12	4	2
6(A)		Briefly explain the basic principle, instrumentation and applications of UV-visible spectroscopy method.	12	5	2
		OR			
6(B)		Outline the principle, instrumentation, and applications of IR spectroscopy	12	5	2

END

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CHE101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year (R23) Supplementary End Semester Examinations, July – 2025

ENGINEERING CHEMITSTRY

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q. No.		Question	Marks	CO	BL
Q.1	i.	Draw the structure of disodium salt of EDTA.	1	1	2
	ii.	State electrodialysis.	1	1	1
	iii.	Define fuel-cell with an example	1	2	1
	iv	Write down the Nernst equation for the following half-cell reaction, $M^+ + e = M$	1	2	2
	v.	Define thermoplastic with an example.	1	3	1
	vi	'Octane number of a petrol sample is 80'- What do you mean by the statement?	1	3	2
	vii.	Define flash point of a liquid lubricant.	1	4	1
	viii	Give two examples of refractory material.	1	4	1
	ix.	Explain the role of gypsum in Portland cement.	1	5	2
	x.	Define adsorption isotherm.	1	5	1
Q.2(A)		Explain with a schematic the industrial treatment of water by ion exchange process.	12	1	2
		OR			
Q.2(B)		i) Discuss the principle and process of brackish water purification by reverse osmosis.	6	1	2
		ii) Discuss the formation of scale and sludge in boilers.	6	1	2
Q.3(A)		Illustrate the working principle with chemical reactions and applications of lithium-ion battery.	12	2	3
		OR			
Q.3(B)		i) Illustrate the conditions for copper electroplating.	4	2	2
		ii) Explain the factors affecting corrosion.	8	2	2
Q.4(A)		i) Explain the synthesis and application of biodiesel.	4	3	2
		ii) Discuss the petroleum refining process with neat sketch.	8	3	2
		OR			
Q.4(B)		i) Discuss the proximate analysis of coal sample.	6	3	3
		ii) Explain the preparation, properties and applications of Bakelite.	6	3	2
Q.5(A)		Discuss the factors affecting the refractory material.	12	4	2
		OR			
Q.5(B)		Illustrate Portland cement manufacturing process in details with a schematic.	12	4	2
Q.6(A)		i) Explain any one chemical method for preparation of nanomaterial	8	5	2
		ii) Discuss the assumptions and equations involved in Freundlich adsorption isotherm.	4	5	3
		OR			

Q.6(B)	i) Illustrate the process of micelle formation with diagrams.	4	5	3
	ii) Elaborate on the applications of nanomaterials in catalysis and medicine.	8	5	2

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23MAT102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July – 2025

DIFFERENTIAL EQUATIONS AND VECTOR CALCULUS

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	Find the integrating factor for the Differential Equation $3xy' - y = 1 + \ln x$	1	1	2
	ii)	State law of natural growth.	1	1	1
	iii)	Find the general solution of the D.E $3y'' - 20y' + 12y = 0$	1	2	2
	iv)	Find the particular integral of $y'' - 6y' + 9y = e^{3x}$	1	2	2
	v)	Form the PDE by eliminating the arbitrary constants from the $z = a(x^2 + y^2) + b$.	1	3	2
	vi)	Find the C.F. of $4r + 12s + 9t = 0$	1	3	2
	vii)	Find the $curlF$, if $F = (x^2 - y)i + 4zj + x^2k$	1	4	2
	viii)	Find the gradient of $f = x^2 + y^2 - 2z^2 + z\ln x$	1	4	2
	ix)	Find the circulation of the field $F = (x - y)i + xj$ around the circle $R(t) = \cos ti + \sin tj, 0 \le t \le 2\pi$.	1	5	2
	x)	State divergence theorem	1	5	1
2(A)	(i)	Solve $y(\log y)dx + (x - \log y)dy = 0$	6	1	3
	(ii)	Solve $xy(1 + xy^2)\frac{dy}{dx} = 1$	6	1	3
		OR			
2(B)	(i)	Solve $(xy - 1)dx + (x^2 - xy)dy = 0$	6	1	3
	(ii)	If 30% of radioactive substance disappeared in 10 days, how long will it take for 90% of it to disappears.	6	1	3
3(A)		Solve $y'' - 6y' + 25y = e^{2x} + \sin x + x^2e^x + x\cos x$	12	2	3
		OR			
3(B)		Solve $(D^2 - 2D + 2)y = e^x \tan x$ by the method of variation of parameters.	12	2	3
4(A)	(i)	Form the PDE by eliminating the arbitrary constants a and b from $(x - a)^2 + (y - b)^2 = z^2\cot^2\alpha$.	6	3	3
	(ii)	Solve $x(y^2 - z^2) + y(z^2 - x^2)q - z(x^2 - y^2) = 0$	6	3	3
		OR			
4(B)	(i)	Solve $\frac{\partial^2 z}{\partial x^2} - \frac{\partial^2 z}{\partial x \partial y} = \sin x \cos 2y$	6	3	3
	(ii)	Solve $\frac{\partial^3 z}{\partial x^3} - 2\frac{\partial^3 z}{\partial x^2 \partial y} = 2e^{2x} + 3x^2y$	6	3	3

5(A)	(i)	Find the $div(curlF)$ if $F(x,y,z)=x^2i-y^2j+z^2k$	6	4	3
	(ii)	If the directional derivative of $\phi=ax^2y+by^2z+cz^2x$, at the point **(1,1,1)** has maximum magnitude 15 in the direction parallel to the line $\frac{x-1}{2}=\frac{y-3}{-2}=z$, find the values of a,b and c.	6	4	3
		OR			
5(B)		If $f=\left(x^2+y^2+z^2\right)^{-n}$, find $div(gradf)$ and n if $div(gradf)=0$.	12	4	3
6(A)		Verify Green's theorem for $\int_C[(x^2y)dx+(x^2)dy]$ where C is the boundary described counterclockwise of triangle with vertices **(0,0), (1,0), (1,1)**.	12	5	3
		OR			
6(B)	(i)	Use Stoke's theorem to evaluate $\int_C[(x+y)dx+(2x-z)dy+(y+z)dz]$ where C is the boundary of the triangle with vertices (2, 0, 0), (0, 3, 0) and (0, 0, 6).	6	5	3
	(ii)	Using divergence theorem, evaluate $\int_S F\cdot dS$, where $F=x^3i+y^3j+z^3k$ and S is the surface of the sphere $x^2+y^2+z^2=a^2$	6	5	3

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech (R23) I Year II Semester Regular and I & II Semesters Supplementary End Semester Examinations, July – 2025

BASIC CIVIL AND MECHANICAL ENGINEERING

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 4 answer either A or B only

PART-A: BASIC CIVIL ENGINEERING

S.No.		Question	Marks	CO	BL
1.	i)	What are the different types of bricks?	1	1	1
	ii)	What is the sieve size for fineness test on cement?	1	1	1
	iii)	What is contour mapping?	1	2	1
	iv)	The true bearing of a line is 34° 20' and magnetic bearing of the line is 36° 40'. What will be the magnetic declination?	1	2	2
	v)	Write examples for natural harbours in India.	1	3	1
2(A)		Explain the role of civil engineers in society in detail.	10	1	2
		OR			
2(B)		Define aggregate. Write the types of aggregate. Explain different tests on aggregates.	10	1	2
3(A)		Define whole circle bearing and reduced bearings. Also convert the following reduced bearings of survey lines to whole circle bearings. (i) N 36°30' E (ii) S 25°10' E (iii) S 32° 28' W (iv) N 46°15' W	10	2	4
		OR			
3(B)		The following observations were taken with dumpy level and 4 m leveling staff. Observations are: 2.350, 1.625, 0.700, 2.900, 1.955, 1.400, 0.900, 0.600, 1.500, 1.150. The instrument was shifted after 3 rd and 7 th reading. The first reading was taken on a bench mark whose R.L. was 100.00 m. Prepare a page of level book and calculates RL of all the points. Use Rise and Fall Method.	10	2	4
4(A)		Classify the different types of pavements and explain in detail?	10	3	2
		OR			
4(B)		Define the term "Hydrology". Describe the concept of hydrological cycle with neat sketches.	10	3	2

*****END*****

PART-B: BASIC MECHANICAL ENGINEERING

S.No.		Question	Marks	CO	BL
1.	i)	Define smart materials.	1	1	2
	ii)	What are the differences between ferrous and non-ferrous metals?	1	1	2
	iii)	What are the advantages of CNC machines?	1	2	2
	iv)	Write difference between SI and CI engine.	1	2	2
	v)	What are the applications of gear drives?	1	3	2
2(A)		Describe the role of mechanical engineer in Aerospace and Marine Sector.	10	1	2

	OR			
2(B)	Explain what a composite material is and describe its key characteristics. Discuss the classification of composite materials, along with their advantages, disadvantages, and typical applications.	10	1	2
3(A)	Describe the Casting Process. List out the advantages, disadvantages and application of Casting Process.	10	2	2
	OR			
3(B)	Illustrate the working principle of a 4-stroke Compression Ignition (CI) engine with the help of a neat sketch and explain the function of each stroke.	10	2	3
4(A)	Explain about various types of joints and links in robots.	10	3	2
	OR			
4(B)	Explain the working process of hydro-electric power plant with neat sketch.	10	3	2

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23EEE101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular and I& II Semesters Supplementary End Semester Examinations, July- 2025

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

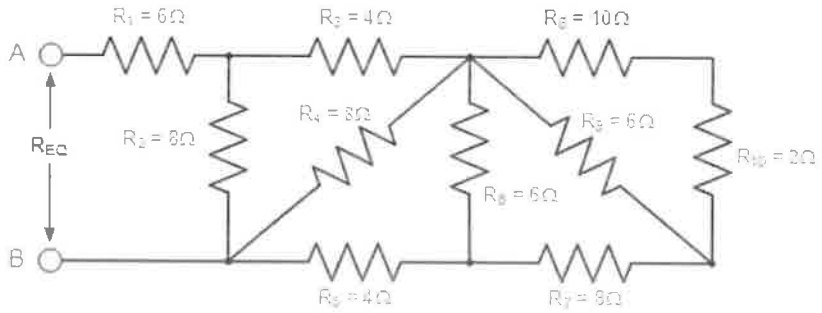
(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 4 answer either A or B only

PART-A: BASIC ELECTRICAL ENGINEERING

S.No.		Question	Marks	CO	BL
1.	i)	State Kirchhoff's Voltage Law.	1	1	1
	ii)	Define Average value.	1	1	1
	iii)	What is the function of commutator?	1	2	1
	iv)	What is mean by penstock?	1	3	1
	v)	List the safety precautions to avoid shock?	1	3	1
2(A)		A series circuit of resistance 60Ω and inductance 75mH is connected to a 110V, 50Hz supply. Calculate (a) reactance, (b) Impedance, (c) Current taken from the Supply (d) phase angle between supply voltage and current, (e) power dissipated.	10	1	3
		OR			
2(B)		Simplify and find equivalent resistance (R_{eq})for the following circuit.	10	1	3



3(A)	Explain the construction and working of Single-phase transformers with diagram.	10	2	2
	OR			
3(B)	Explain the construction and working of Moving Iron instrument with the help of neat sketch.	10	2	2
4(A)	Draw the layout of Solar power plant and explain the components associated with the power plant.	10	3	2
	OR			
4(B)	What is mean by Earthing? Explain any one type of Earthing with diagram.	10	3	2

END

PART-B: BASIC ELECTRONICS ENGINEERING

S.No.		Question	Marks	CO	BL
1.	i)	What is P type semiconductor?	1	1	1
	ii)	Draw the V-I characteristics of PN Junction diode.	1	1	1
	iii)	Define primary Sensing element.	1	2	1
	iv)	List the applications of Zener voltage regulator.	1	2	1
	v)	Draw the logic diagram of Half adder.	1	3	1
2(A)		Explain in detail the operation of a Zener diode with its characteristics.	10	1	2
		OR			
2(B)		With a neat sketch, explain the input and output characteristics of Common Emitter configuration.	10	1	2
3(A)		Draw the block diagram of a public address system and explain each block.	10	2	2
		OR			
3(B)		Discuss in detail the operation of a Bridge rectifier with a neat circuit diagram and relevant waveforms.	10	2	2
4(A)		Draw the circuit diagram of a JK flip-flop and explain its operation with the help of a truth table.	10	3	2
		OR			
4(B)		Solve the following number systems? (i)$(567)_{10}$ =-----(8) (ii)$(111011111010)_2$ =-----(8) (iii)$(C9D)_{16}$ =--(2) (iv)$(2654)_{16}$ =----(10) (v)$(0101101101111)_2$=_____(8)	10	3	3

END

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ENG101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular and I& II Semesters Supplementary End Semester Examinations, July– 2025

COMMUNICATIVE ENGLISH

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	**Rewrite the jumbled sentence in the correct order:** Garden the in children playing are.	1	1	2
	ii)	What is scanning (in the context of reading skills)	1	1	1
	iii)	**Fill in the blank with the correct homophone from the options given in the brackets:** I can't-------- (bare / bear) this pain any longer.	1	2	2
	iv)	**Choose the appropriate article to complete the sentence:** Rohit is turning out to be _____ Einstein.	1	2	2
	v)	**Complete the sentence by choosing the correct preposition:** She is fond _____ classical music.	1	3	2
	vi)	**Fill in the blank with the appropriate form of the verb given in the brackets:** Everyone _____ (know/knows) the answer.	1	3	2
	vii)	**Change the following sentence from direct speech to indirect speech:** Rohan said, "Alas! My pet died.	1	4	2
	viii)	**Convert the sentence from active to passive voice:** The committee appointed her as the team leader.	1	4	2
	ix)	What is intrapersonal communication?	1	5	1
	x)	**Correct the error in the below given closing phrase.** Your's sincerely....	1	5	2
2(A)		What is the significance of the title "The Gift of the Magi"? How does it relate to the story's message?	12	1	3
		OR			
2(B)		Write WH questions for the following sentences: a) The employees submitted the report before the deadline. b) The conference will be held in New Delhi. c) The manager approved the proposal yesterday. d) The professor explained the concept clearly. e) The seminar begins at 10 a.m. sharp. f) The students submitted their assignments through the online portal. g) The Vice Chancellor addressed the gathering. h) The researchers conducted the experiment in the laboratory. i) The results will be published next month. j) The faculty meeting lasted for two hours. k) She presented her paper at the international symposium. l) The books were issued from the central library.	12	1	3
3(A)		Do you believe that "'The Brook' serves as a source of inspiration for mankind." Elucidate your response by drawing comparisons between the journey of the brook and journey of human life." (300 words).	12	2	3

	OR			
3(B)	Write a paragraph of about 150 words each on the following topics: (i) Operation Sindoor (ii) Artificial Intelligence	12	2	3
4(A)	"Elon Musk proved to be a visionary leader of cutting-edge technology." Justify the given statement referring to his recent contribution to the society. (300 words)	12	3	3
	OR			
4(B)	**Paraphrase the following passage:** The habit of reading is one of the greatest resources of mankind; and we enjoy reading books that belong to us much more than if they are borrowed. A borrowed book is like a guest in the house; it must be treated with punctiliousness, with a certain considerate formality. You must see that it sustains no damage; it must not suffer while under your roof. You cannot use it familiarly. And then, someday, although this is seldom done, you really ought to return it. But your own books belong to you; you treat them with that affectionate intimacy that annihilates formality. Books are for use not for show; you should own no book that you are afraid to mark up, or afraid to place on the table, wide open and face down. A good reason for marking favourite passages in books is that this practice enables you to remember more easily the significant saying, to refer to them quickly, and then in later years, it is like visiting a forest where you once blazed a trail.	12	3	4
5(A)	How does the story "The Toys of Peace" satirize the campaign by the National Peace Council, a coordinating Committee of anti-war organization?	12	4	4
	OR			
5(B)	Write a letter to the University Librarian analysing the challenges students face due to limited library hours and outdated resources, and suggest ways to improve accessibility and resource quality.	12	4	3
6(A)	Analyse the significance of intrapersonal communication in one's personal and professional life with relevant examples. (300 words)	12	5	4
	OR			
6(B)	Analyse the various benefits of meditation on mental and physical health and explain how these benefits can improve overall well-being.	12	5	4

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CSE102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July- 2025

DATA STRUCTURES

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	List out the types of linear data structures.	1	1	2
	ii)	What is an Abstract Data Type (ADT)?	1	1	1
	iii)	Define a stack and list its primary operations.	1	2	1
	iv)	Differentiate between array and linked list.	1	2	2
	v)	What is a heap tree?	1	3	1
	vi)	What are the applications of Queue?	1	3	2
	vii)	Differentiate between Binary tree and BST.	1	4	2
	viii)	What is height balanced tree?	1	4	1
	ix)	Define Hashing.	1	5	1
	x)	List out the collision resolution techniques.	1	5	2
2(A)	(i)	Write an algorithm and explain the steps of Insertion Sort on the following array: [12, 5, 3, 8, 7]	6	1	3
	(ii)	Write pseudocode for binary search and trace it with an example array and a search key.	6	1	3
		OR			
2(B)		Elaborate the concepts of Time complexity and Space complexity with examples.	12	1	2
3(A)	(i)	Differentiate between a singly linked list and a doubly linked list with the help of diagrams.	6	2	3
	(ii)	How do we implement a stack using arrays? Illustrate with an example.	6	2	3
		OR			
3(B)		Explain with a diagram how a doubly linked list works by performing various operations.	12	2	2
4(A)	(i)	Perform heap sort on the following array and explain intermediate steps: 9, 5, 6, 2, 3	6	3	3
	(ii)	Illustrate the process to Convert the following infix expression to postfix using stack-based steps: (A + B) * (C - D) / E	6	3	3
		OR			
4(B)		Sketch the binary search tree resulting after inserting the following integer keys 49, 27, 12, 11, 33, 77, 26, 56, 23, 6. i) Check whether the tree is almost complete or not? ii) Determine the height of the tree Write post order and preorder traversals	12	3	3
5(A)	(i)	Write and explain a recursive pseudocode for inserting a node into a BST.	6	4	3
	(ii)	Illustrate the process of building a heap tree using the values [4, 9, 1, 7, 3, 8] and show the structure after each insertion.	6	4	3
		OR			
5(B)		Given the following elements, construct a BST and perform the different tree traversals with algorithms 50, 30, 70, 20, 40, 60, 80	12	4	3

6(A)	(i)	Given the directed graph below, perform a topological sort: Vertices = {A, B, C, D, E, F} Edges = {(A, D), (F, B), (B, D), (F, A), (D, C)} Provide at least one valid topological ordering.	6	5	3
	(ii)	Illustrate basic implementation of hash table along with it's operations.	6	5	2
		OR			
6(B)		Explain various collision resolution techniques in detail with an example.	12	5	2

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CE101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July – 2025

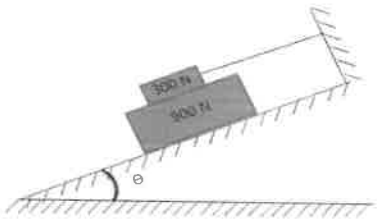
ENGINEERING MECHANICS

(Civil Engineering)

Time: 3Hrs **Max Marks: 70**

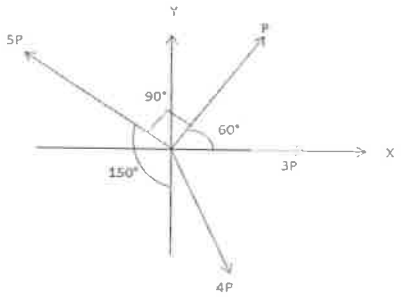
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	What is parallelogram law of forces?	1	1	1
	ii)	What is rigid body?	1	1	1
	iii)	Explain about applied and non-applied forces.	1	2	1
	iv)	What is moment?	1	2	1
	v)	What do you understand by centroid of a body?	1	3	1
	vi)	What do you understand by axis of reference?	1	3	1
	vii)	Differentiate about kinetic and kinematics.	1	4	1
	viii)	Define the terms linear and angular velocity?	1	4	1
	ix)	Explain about potential energy?	1	5	1
	x)	Define the principle of work and energy for a system of particle?	1	5	1
2(A)		What should be the value of θ in figure that will make the motion of 900 N blocks down the plane to impend? The coefficient of friction for all contact surfaces is 1/3.	12	1	5

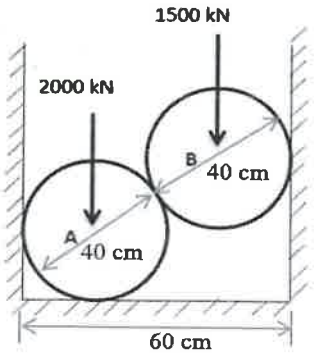


OR

2(B)	Find the magnitude and direction of the resultant 'R' of four concurrent forces acting as shown in figure below.	12	1	5

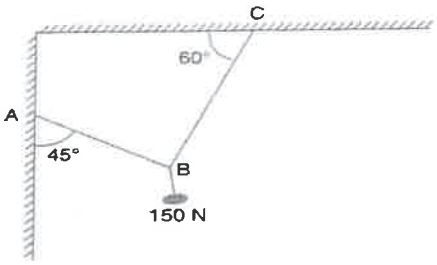


3(A)	Draw the free body diagrams for all cylinders. Find the reaction forces at all contact points. Cylinders A and B are resting on a horizontal channel of width 60 cm. The diameters of all the cylinders is 40 cm.	12	2	5

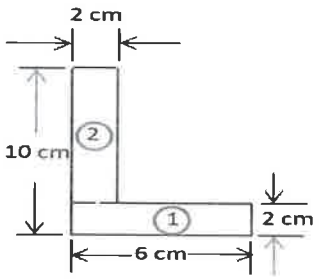


OR

3(B)	Find the forces developed in the wires, supporting electric fixtures as shown in fig below.	12	2	5

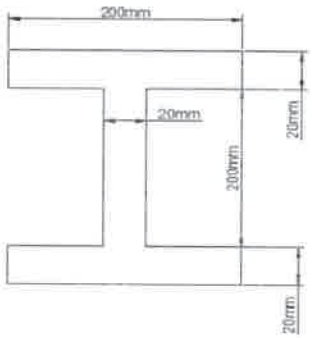


4(A)	Determine the moment of inertia of the L section shown in Figure with respect to its centroidal axes.	12	3	5



OR

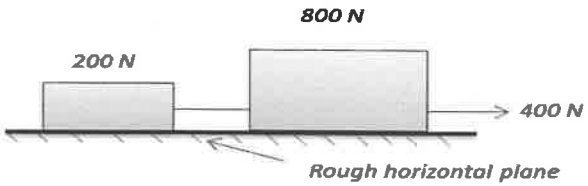
4(B)	Determine the moment of inertia of the symmetrical I-section shown in figure with respect to its centroid?	12	3	5



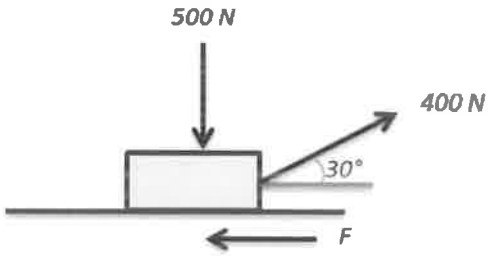
5(A)	A pump lifts 40 m^3 of water to a height of 50 m and delivers with a velocity of 5 *m/sec.* What is the amount of energy spent during this process? If the job is done in 30 min, what is the input power of the pump which as an overall efficiency of 70%.	12	4	5

OR

5(B)	Two weights 800 N and 200 N are connected by a thread and move along a rough horizontal plane under the action of force 400N applied to the first weight of 800 N as shown in figure. The coefficient of friction between the sliding surfaces of the weights and the plane is 0.3. Determine the acceleration of the weights and the tension of the thread using D'Alembert's principle.	12	4	5



6(A)	A flywheel weighing 48 KN and having radius of gyration 1m loses its speed from 380 rpm to 280 rpm in 2 minutes. Calculate (i) the retarding torque acting on it (ii) change in its kinetic energy during the above period (iii) change in its angular momentum during the same period.	12	5	4
	OR			
6(B)	A 50 kg block rests on a horizontal floor for which coefficient of friction is 0.3. If a block is subjected to a force of 400 N as shown in figure, find velocity of a block (in m/sec^2) after 3 *sec.* Assume , a = 10 m/sec^2.	12	5	5



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Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23EEE102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July – 2025

ELECTRICAL CIRCUIT ANALYSIS -I

(Electrical & Electronics Engineering)

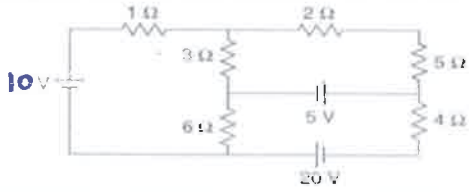
Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	Define supernode?	1	1	1
	ii)	If two capacitors c1=10 microfarad and c2=20 microfarad are connected in series, what is the equivalent capacitance?	1	1	1
	iii)	What factors affect the self-inductance of a coil?	1	2	1
	iv)	How the flux and current is related with respect to the coil?	1	2	1
	v)	In case of pure resistive circuit, what is amount of reactive power consumed from the supply?	1	3	1
	vi)	Define the peak factor of the sine wave?	1	3	1
	vii)	List the properties of Resonance circuit?	1	4	1
	viii)	At resonance, for a parallel LC, the admittance is minimum. (True/False)	1	4	1
	ix)	What are the limitations of reciprocity theorem?	1	5	1
	x)	Draw the thevenin's equivalent circuit?	1	5	1
2(A)	(i)	Write short notes on source transformation?	6	1	2
	(ii)	Replace the circuit between A and B in below Fig with a voltage source in series with a single resistor.	6	1	3

OR

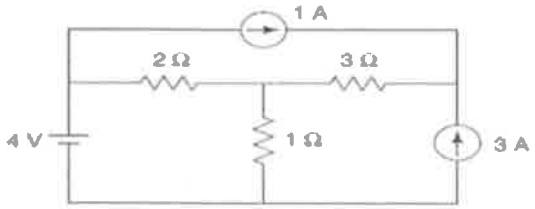
2(B)		Using mesh analysis calculates all mesh currents	12	1	3



3(A)	(i)	Write short notes on series and parallel magnetic circuit?	6	2	2
	(ii)	Compare electric and magnetic circuit by their similarities and dissimilarities?	6	2	2
		OR			
3(B)		From the fundamental principles, derive the expression for self-inductance, mutual inductance and co-efficient of coupling?	12	2	3
4(A)	(i)	Explain the series RC circuit and draw the phasor diagrams.	6	3	2
	(ii)	Derive the expressions for RMS value and Peak factor of the sinusoidal signal?	6	3	3
		OR			
4(B)		A series combination of 10 ohms resistance and 50mH inductance is connected to a 220V, 50 Hz supply. Determine the current, power	12	3	3

factor, active power, reactive power, apparent power, voltage drop across inductance also draw the phasor diagram.

5(A)		Derive the expression for equivalent inductance of the coupled coils (i) Two coils are connected in series aiding (ii) Two coils are connected in series opposing	12	4	3
		OR			
5(B)		Derive the expression for resonant frequency and bandwidth for a series RLC resonant circuit?	12	4	3
6(A)	(i)	State Norton's theorem and explain the procedure to obtain the Norton equivalent circuit?	6	5	2
	(ii)	Find the current in the 1Ω resistor by using super position theorem?	6	5	3



OR

6(B)	(i)	State and explain Reciprocity theorem?	6	5	2
	(ii)	State the maximum power transfer theorem and derive the condition for the maximum power transfer in DC Circuits?	6	5	2

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

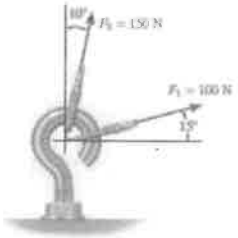
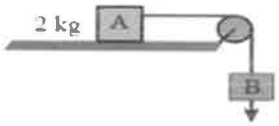
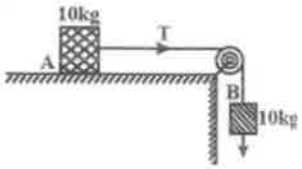
B. Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July – 2025

ENGINEERING MECHANICS

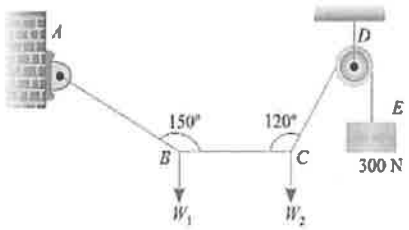
(Mechanical Engineering)

Time: 3Hrs **Max Marks: 70**

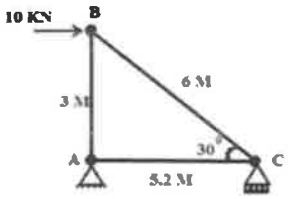
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	What is meant by concurrent forces?	1	1	1
	ii)	What is coefficient of friction?	1	1	1
	iii)	Draw the free body diagram of the sphere of mass M resting on a platform as shown in figure. 	1	2	1
	iv)	State the necessary conditions for the application of Lami's theorem.	1	2	1
	v)	What is the physical significance of centre of gravity?	1	3	
	vi)	Calculate the moment of inertia of a circular section of 50 mm diameter about an axis passing through its centre.	1	3	1
	vii)	What is the difference between curvilinear and rectilinear motion?	1	4	1
	viii)	The displacement value of a particle may be negative. The statement is true or false?	1	4	1
	ix)	Define angular acceleration?	1	5	1
	x)	Define kinematics?	1	5	1
2(A)	(i)	The screw eye in figure is subjected to two forces, F1 = 150 N and F2 = 100 N. Determine the magnitude and direction of the resultant force. 	6	1	3
	(ii)	The coefficient of static friction, μs, between block A of mass 2 kg and the table as shown in the figure is 0.2. What would be the maximum mass value of block B so that the two blocks do not move? The string and the pulley are assumed to be smooth and massless. (g=10 m/s²) 	6	1	3
		OR			
2(B)		A block of mass 10 kg resting on a horizontal surface is connected by a cord passing over a light frictionless pulley to a hanging block of mass 10 kg as shown in the figure. The coefficient of friction between the block and the surface is 0.5. Calculate the acceleration of the system. 	12	1	3

3(A)	(i)	A light string ABCDE whose extremity A is fixed, has weights W1 and W2 attached to it at B and C respectively. It passes round peg at D carrying a weight of 300 N at the free end E as shown in figure. The entire system is in the equilibrium. Find tension in the portion AB, BC and CD of the string. Also, find magnitude of W1 and W2.	6	2	3

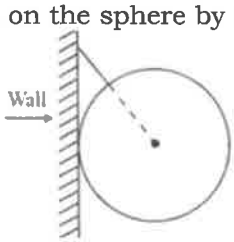


	(ii)	The truss is supported by roller at C and hinge at A. Find the magnitude and nature of forces in all the member of the truss.	6	2	3

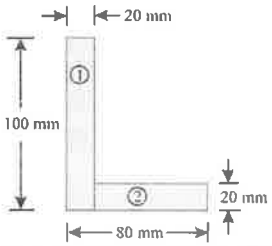


OR

3(B)		A uniform sphere of weight 'w' and radius 3 m is being held by a string of length 2 m attached to a friction less wall as shown in the figure. Find the tension in the string as well as normal reaction force on the sphere by the wall.	12	2	3



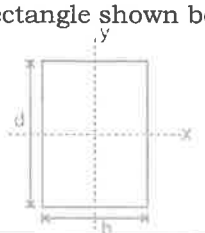
4(A)	(i)	Find the centroid of an unequal angle section 100 mm × 80 mm × 20 mm.	6	3	3



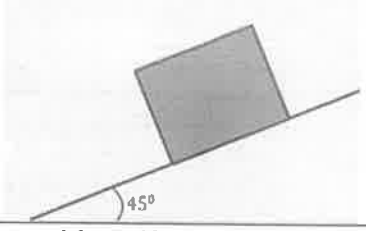
	(ii)	Derive an expression for the mass moment of inertia of cylinder about the z-axis. The density of material is constant.	6	3	3

OR

4(B)		Determine the centroid of the rectangle shown below.	12	3	3



5(A)	(i)	A single force acts on a 3.0 kg particle-like object whose position is given by $x = 3t-4t^2 + t^3$, with x in meter and t in second. Find the work done by the force t=0 sec to t=4 sec.	6	4	3

	(ii)	A ball of mass 1 kg moving with a velocity of 3 m/sec strikes a ball of 5 kg moving with a velocity of 0.6 m/sec in the same direction. If the coefficient of restitution is (e)= 0.75, Find the loss in kinetic energy.	6	4	3
		OR			
5(B)		A block of mass 10 kg was initially stationary on an inclined plane as shown in fig. Coefficient of friction is 0.5. The body slides down the plane and attains a velocity of 20 m/s. Calculate the distance traveled by the block along the plane. Assume g=10 m/s^2 	12	4	3
6(A)	(i)	A fly wheel rotates with uniform angular acceleration. If its angular velocity increases from 20π rad/s to 40π rad/s in 10 seconds. Find the number of rotations in that period.	6	5	3
	(ii)	The angular acceleration of a fly wheel is given by α=8-t, where α is in radians/s^2 and t is in seconds. If the angular velocity of the flywheel is 42 rad/s at the end of 6 seconds, determine the initial angular velocity.	6	5	3
		OR			
6(B)		A child stands at the centre of a turntable with his arms outstretched. The turntable is set rotating with an angular speed of 40 rev/min. How much is the angular speed of the child if he folds his hands back and thereby reduces his moment of inertia to 2/5 times the initial value? Also, show that the child's new kinetic energy of rotation is more than the initial kinetic energy of rotation.	12	5	3

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ECE101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular & Supplementary End Semester Examinations, July – 2025

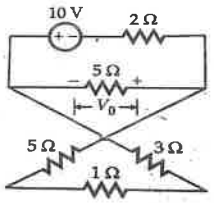
NETWORK ANALYSIS

(Electronics & Communication Engineering)

Time: 3Hrs **Max Marks: 70**

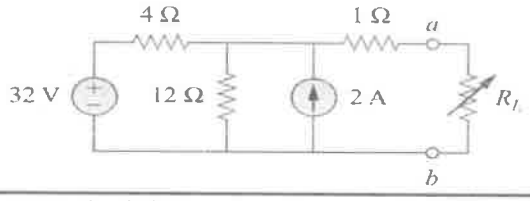
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	Define the passive and active element with suitable example.	1	1	1
	ii)	Draw the Thevenin equivalent circuit.	1	1	1
	iii)	Write the definition of time constant and expression for series RC and RL circuits.	1	2	1
	iv)	Write the difference between transient state and steady state.	1	2	1
	v)	A series RL circuit has R = 5 Ω and L = 0.01 H. Find the impedance at 100Hz.	1	3	2
	vi)	A series RLC circuit has R = 8 Ω and L = 0.05 H and C = 10 F. Find the impedance of circuit at 50Hz and 1000Hz.	1	3	2
	vii)	Write the condition of resonance for parallel RLC circuit.	1	4	1
	viii)	Write the expression for the coefficient of coupling (K).	1	4	1
	ix)	How can you relate the Y-parameter to the Z-parameter?	1	5	2
	x)	Which parameters are useful for representation in each of Cascade, parallel and series connection of two port networks?	1	5	2
2(A)		Write the KCL and KVL. Solve the following network with the help of KVL and find the V0.	12	1	3

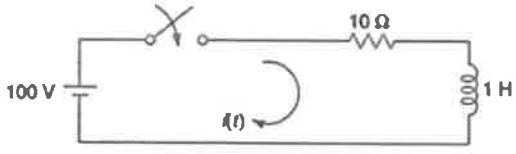


OR

2(B)		State and explain Thevenin's theorem. What is the advantage of using this theorem? Find the Thevenin equivalent circuit of the circuit shown in figure to the left of terminal a-b. Then find the current through load resistance R_L=6 Ω.	12	1	3

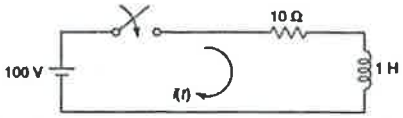


3(A)		State and prove the initial value theorem. In the given network switch is closed at t=0. Find i(t) and voltage across inductor at t = infinite.	12	2	3

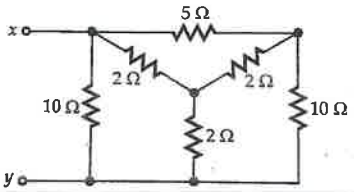


OR

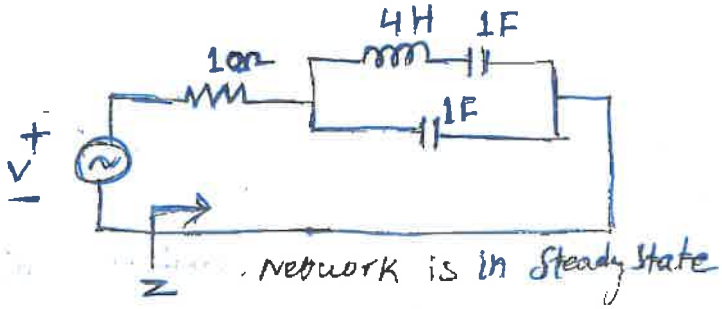
3(B)	(i)	In the given network switch is closed at t=0. Find i(t), voltage across inductor (V_L(t)).	8	2	3



	(ii)	What is time constant and explain the time constant of the RL series circuit with an example.	4	2	3
4(A)		What do you understand by steady-state analysis of AC circuits? Obtain the expression for a sinusoidal response of a series RLC circuit and analyse the current and voltage leading or lagging condition with a suitable phasor diagram.	12	3	3
		OR			
4(B)		Evaluate the expression for Star connection to Delta connection. Find the equivalent resistance between terminal x-y in the given resistive network.	12	3	3

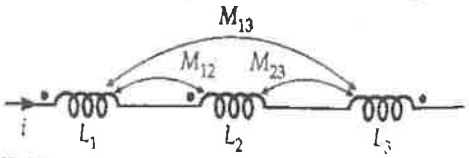


5(A)	(i)	Derive the expression for quality factor and bandwidth of the series RLC circuit.	6	4	2
	(ii)	Determine the resonance frequency ω_0.	6	4	2



OR

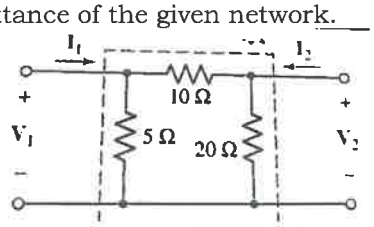
5(B)	Write the definition of self-induction and mutual induction with expression. Find the total inductance of the three series connected coupled coils, as shown in Fig.	12	4	3



Given,

$L_1 = 1H$, $L_2 = 2H$, $L_3 = 5H$, $M_{12} = 0.5H$, $M_{23} = 1H$ and $M_{31} = 1H$.

6(A)	Find the expression for the inter-conversion equation from Z-parameter to h-parameter and vice versa.	12	5	3
	OR			
6(B)	Determine the admittance of the given network.	12	5	3



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Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23MAT101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year I Semester (R23) Supplementary End Semester Examinations, July - 2025

LINEAR ALGEBRA AND CALCULUS

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

S.No.		Question	Marks	CO	BL
1.	i)	Check whether the system of equations $x+2y=1;\ 7x+14y=12$ are consistent or inconsistent.	1	1	2
	ii)	State Cauchy-Binet formula	1	1	1
	iii)	Find the eigenvalues of A+2I for the matrix $A=\begin{bmatrix}-5 & 6 & 7\\ 0 & -2 & 0\\ 0 & 0 & 3\end{bmatrix}$	1	2	2
	iv)	Consider the matrix A of order 3×3 with eigenvalues $1,5$ and trace of A is 9. Find the determinant of the matrix.	1	2	2
	v)	Determine the value of c for the function $f(x)=x^2$ in $[2,3]$	1	3	2
	vi)	Derive the Maclaurin's series for $f(x)=\sinh x$	1	3	2
	vii)	Examine $\frac{\partial w}{\partial s}$ in terms of r and s if $w=x^2+y^2,\ x=r-s,\ y=r+s$	1	4	2
	viii)	When the function $f(x,y)$ has saddle point at stationary point (a,b)	1	4	1
	ix)	Evaluate $\iint_R dxdy$ in polar coordinates where $R: 0\le r\le 2, 0\le\theta\le 2\pi$	1	5	2
	x)	Evaluate $\int_{-2}^{2}\int_{-1}^{1} ydydx$	1	5	2
2(A)	(i)	Reduce the following matrix $A=\begin{bmatrix}2 & 3 & 4 & 5\\ 3 & 4 & 5 & 6\\ 4 & 5 & 6 & 7\\ 9 & 10 & 11 & 12\end{bmatrix}$ into Echelon form and hence find the rank.	6	1	3
	(ii)	Solve completely the system of equations $x+y-2z+3w=0;\ x-2y+z-w=0;\ 4x+y-5z+8w=0;\ 5x-7y+2z-w=0$ by Gauss Elimination method	6	1	3
		OR			
2(B)		Solve the following system by Jacobi's iteration method: $20x+y-2z=17;\ 3x+20y-z=-18;\ 2x-3y+20z=25$	12	1	3
3(A)		Find the eigenvalues and eigenvectors of the matrix $\begin{bmatrix}1 & 1 & 1\\ -1 & 3 & -3\\ 2 & 4 & 4\end{bmatrix}$	12	2	3
		OR			

3(B)		Using Cayley-Hamilton theorem, find A^{-1} and A^4 of the matrix $A=\begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$	12	2	4
4(A)		Verify the Cauchy's mean value theorem for the functions (i). $\sin x$ and $\cos x$ in the interval $[a,b]$, (ii) $\log_e x$ and $\frac{1}{x}$ in the interval $[1,e]$	12	3	3
		OR			
4(B)	(i)	Expand $e^x \cos x$ by Maclaurin's series up to the term containing x^6 .	6	3	3
	(ii)	Prove that $\log\left(1+e^x\right)=\log 2+\frac{x}{2}+\frac{x^2}{8}-\frac{x^4}{192}+--$.	6	3	3
5(A)	(i)	If $u=\log\left(x^3+y^3+z^3-3xyz\right)$ then evaluate $\left(\frac{\partial}{\partial x}+\frac{\partial}{\partial y}+\frac{\partial}{\partial z}\right)^2 u$	6	4	3
	(ii)	If $\theta=t^n e^{\frac{-r^2}{4t}}$, what value of n will make $\frac{1}{r^2}\frac{\partial}{\partial r}\left(r^2\frac{\partial\theta}{\partial r}\right)=\frac{\partial\theta}{\partial t}$	6	4	3
		OR			
5(B)	(i)	Expand $x^2y+3y-2$ in powers of $(x-1)$ and $(y+2)$ using Taylor's series.	6	4	3
	(ii)	The temperature T at any point (x,y,z) in space is $T=400xyz^2$. Find the highest temperature on the surface of the unit sphere $x^2+y^2+z^2=1$.	6	4	3
6(A)	(i)	Evaluate the integral $\int_0^{\infty}\int_x^{\infty}\frac{e^{-y}}{y}dydx$ by changing the order of Integration.	6	5	3
	(ii)	Find the area lying inside the circle $r=a\sin\theta$ and outside the cardioid $r=a(1-\cos\theta)$	6	5	3
		OR			
6(B)	(i)	Evaluate $\int_{-1}^{1}\int_0^z\int_{x-z}^{x+z}(x+y+z)\,dydxdz$	6	5	3
	(ii)	By Changing into spherical coordinates, evaluate $\int_0^1\int_0^{\sqrt{1-x^2}}\int_0^{\sqrt{1-x^2-y^2}}\frac{1}{\sqrt{1-x^2-y^2-z^2}}dzdydx$	6	5	3

*****END*****

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23CSE101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech I Year I Semester (R23) Supplementary End Semester Examinations, July– 2025

INTRODUCTION TO PROGRAMMING

(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	List the rules for naming variables in C language.	1M	1	1
	ii.	What is the difference between '=' and '==' operators in C?	1M	1	2
	iii.	Write the differences between Entry-controlled loop and Exit-controlled loop	1M	2	2
	iv.	Write the syntax of switch statement in C.	1M	2	1
	v.	What are the advantages of arrays?	1M	3	2
	vi	List any four string handling functions in C.	1M	3	1
	vii.	What is the purpose of & operator in C? How is it used with pointers?	1M	4	2
	viii.	Write differences between malloc() and calloc()	1M	4	2
	ix.	What are various parameter passing techniques available in C?	1M	5	2
	x.	Differentiate between scope and lifetime of a variable in C	1M	5	2
Q.2(A)		Define Data type. What a data type specifies. List and explain various data types available in C.	12M	1	2
		OR			
Q.2(B)		Define flowchart. Explain its symbols in detail and draw the flowchart to find the greatest of three numbers.	12M	1	2
Q.3(A)		Develop a C program to demonstrate the use of break and continue loop control statements. Additionally, explain their significance in loop structures.	12M	2	3
		OR			
Q.3(B)		Illustrate the various conditional branching statements used in C, including their syntax, flowchart, and a suitable example program.	12M	2	2
Q.4(A)		Develop a program that checks whether a given string is a palindrome or not. You must compare the string's characters without using built-in string functions.	12M	3	3
		OR			
Q.4(B)		Define Array. Explain how to declare, access and initialize a two-dimensional array with an example. Write a c program to print the addition of a matrix.	12M	3	2
Q.5(A)		Illustrate the memory allocation of structure and union in C? Write a program to demonstrate this difference.	12M	4	2
		OR			
Q.5(B)		Demonstrate the differences between malloc() and calloc() by explaining their functionality and behaviour. Write a C program to show how realloc() can be used to dynamically resize memory for an array with suitable example.	12M	4	2
Q.6(A)		Develop a C programs to demonstrate and compare call by Value and call by Reference. Analyse their impact on function behaviour and parameter modification.	12M	5	3
		OR			
Q.6(B)		List the four ways of calling a function. Develop the c program to implement swapping of two numbers by using the call by value and call by reference method.	12M	5	3

***** END*****

SET-1

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

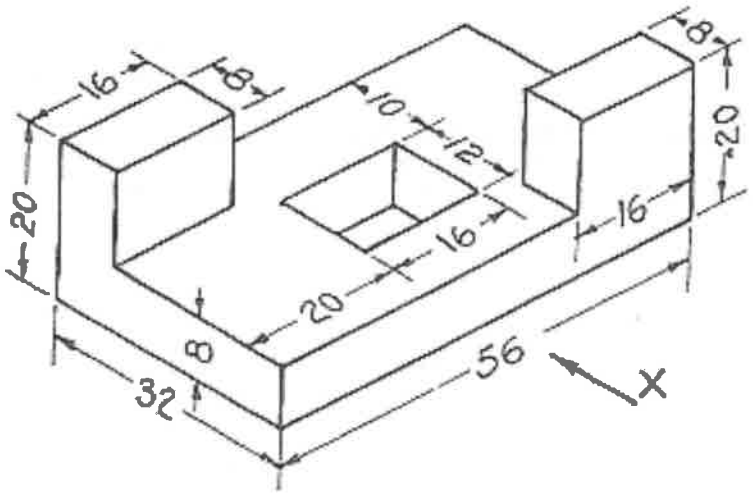
ENGINEERING GRAPHICS

(CSE-Artificial Intelligence)

Time: 3Hrs **Max Marks: 70**

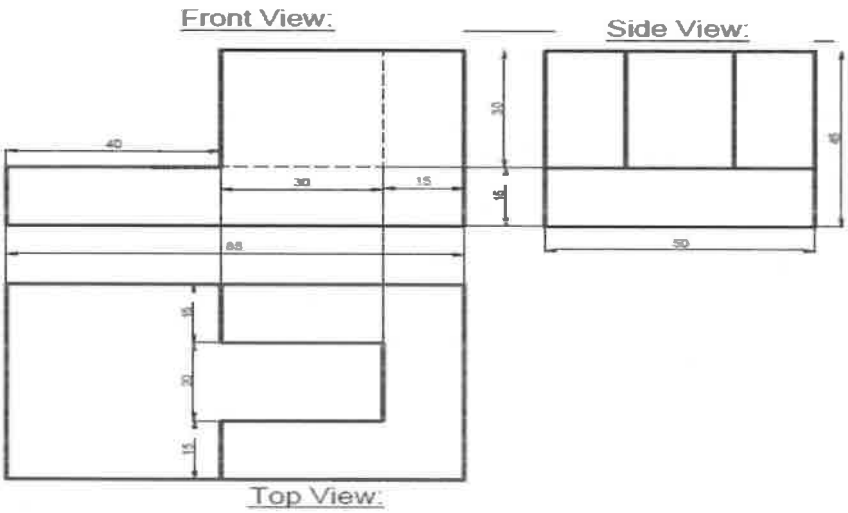
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Draw a hyperbola with the distance of the focus from the directrix at 50mm and e=3/2 (Eccentricity method). Also draw tangent and normal 40 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw an involute circle of diameter 50mm. Also draw tangent and normal 90 mm from the centre of the circle.	14M	1	3
Q.2(A)	(i) Draw the projections of the following points on the same ground line; keeping the distance between the projectors is 40 mm. 1. Point P, 20 mm in front of the V.P. and 25 mm above the H.P. 2. Point Q, 18 mm below the H.P. and 30 mm behind the V.P. 3. Point R, 20 mm above the H.P. and 30 mm behind the V.P.	7M	2	3
	(ii) A line PQ has its end P 15mm above HP and 10mm in front of VP. The end Q is 55mm above HP and the line is inclined at 30° to HP. The distance between the end projectors of the line when measured parallel to the line of intersection of HP and VP is 50mm. Draw the projectors of the line and find its inclination with VP.	7M	2	3
	OR			
Q.2(B)	Draw the projections of a circle of 40mm diameter resting in the HP one point on the circumference. Its plane is inclined at 35° to the HP and the top view of the diameter making an angle of 40° with the VP.	14M	2	3
Q.3(A)	A Pentagonal Prism of base edge 30mm and axis 60mm. Axis of the Solid is parallel to VP and HP and rectangular face resting on HP. Draw its projections.	14M	3	3
	OR			
Q.3(B)	A Cone of 40 mm diameter and 50 mm axis is resting on one point of a base circle on VP while its axis makes 45 ^{0} with VP and parallel to HP. Draw its projections.	14M	3	3
Q.4(A)	A cylinder of 40 mm diameter, 60 mm height and having its axis vertical, is cut by a section plane, perpendicular to the V.P and inclined at 45° to the H.P. and intersecting the axis 32 mm from the base. Draw its front view, sectional top view and true shape of the section.	14M	4	3
	OR			
Q.4(B)	A hexagonal prism of side of base 30 mm and axis 70 mm long is resting on its based on H.P. such that a rectangular face is parallel to V.P. It is cut by a section plane perpendicular to V.P. and inclined at 30 ^{0} to H.P. The section plane is passing through the axis at a height of 40mm from the base. Draw the development of the lateral surface of the cut prism, Use parallel line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below. 14M 5 3



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SET-2

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

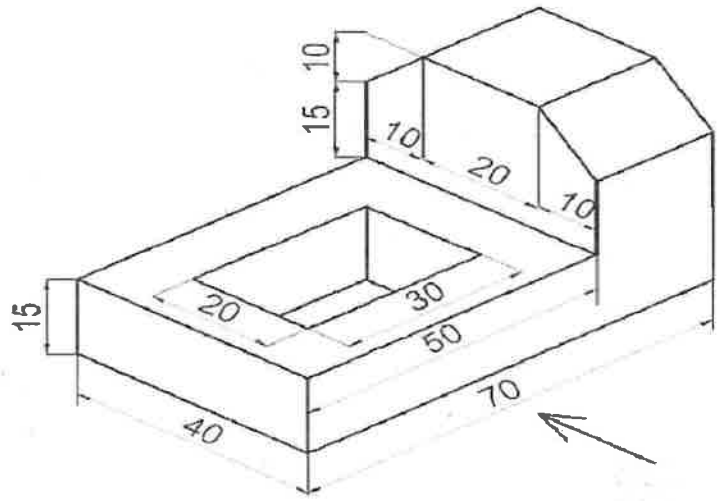
ENGINEERING GRAPHICS

(CSE-Artificial Intelligence)

Time: 3Hrs **Max Marks: 70**

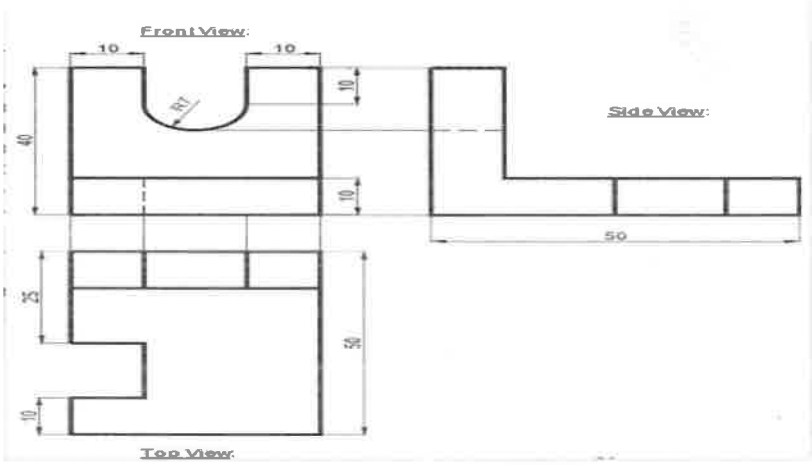
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Construct a cycloid given the radius of the generating circle is 30 mm and draw a tangent and normal to the curve at a point 40 mm from the directing line.	14M	1	3
	OR			
Q.1(B)	Construct an ellipse when the distance between the focus and directrix is 35 mm and eccentricity is 3/4. Also draw the tangent and normal to any point on the curve.	14M	1	3
Q.2(A)	(i) A line AB 70mm long has its end A at 15 mm above H.P and 20 mm in front of V.P. Its front view and top view measures 50 mm and 60 mm respectively. Draw the projections of the line and determine its inclination with H.P and V.P.	7M	2	3
	(ii) Two points F and G are on H.P. The point F being 25mm in front of V.P, while G is 30 mm behind V.P. The line joining their top views makes an angle of 45^0 with XY. Find the horizontal distance between two points.	7M	2	3
	OR			
Q.2(B)	A Square ABCD of 40mm side, has its corner A in the HP, its diagonal AC is inclined at 40° to the HP and the diagonal BD is inclined at 45° to the VP and parallel to HP. Draw its projections.	14M	2	3
Q.3(A)	Draw the projection of a cone base 40 mm diameter and axis 50mm long when it is resting on a ground on a point on its base circle with the axis making an angle of 35^0 with HP.	14M	3	3
	OR			
Q.3(B)	A Hexagonal prism of base edge 30 mm and axis 65 mm rests on an edge of its base in the V.P. Its axis is parallel to H.P. and inclined at 45^0 to the V.P. Draw its projections.	14M	3	3
Q.4(A)	A Pentagonal Prism 30mm base side & 60mm axis is standing on HP on its base whose one side is perpendicular to VP. It is cut by a section plane 45° inclined to HP, through mid-point of axis. Draw FV, sectional TV and sectional side View.	14M	4	3
	OR			
Q.4(B)	A Cylinder of base 40mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the top of the generator and cuts all other generators. Draw the development of surface. Use parallel line method.	14M	4	3
Q.5(A)	Draw the front view, top view and side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below: 14M 5



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SET-3

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

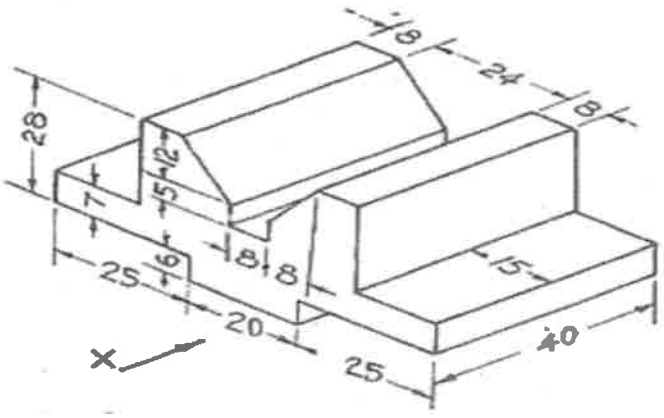
ENGINEERING GRAPHICS

(CSE- AI and CSE-DS)

Time: 3Hrs **Max Marks: 70**

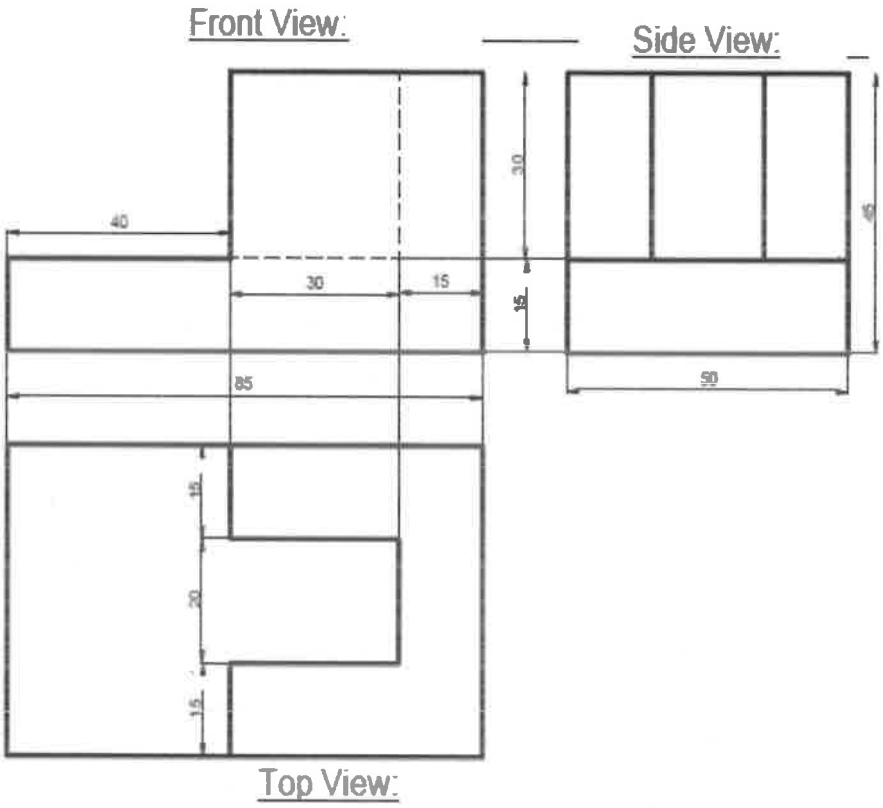
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	A circle of 50mm diameter rolls along a straight line, draw the locus of a point P on the circumference of the circle for one complete revolution. Name the curve. Draw a normal and tangent to the curve at a point on it 40mm from the directing line (Base line).	14M	1	3
	OR			
Q.1(B)	Construct a hyperbola when the distance between the focus and directrix is 45 mm and eccentricity is 5/4. Also, draw the tangent and normal 35 mm from the directrix.	14M	1	3
Q.2(A)	(i) A line AB, 65mm long has its end A 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 60 mm in front of V.P. Draw the projections of AB and show its inclination with H.P and V.P.	7M	2	3
	(ii)Draw the projections of the following: a) Point S 30mm above HP, 20 mm in front of VP, 15mm in front of PP. b) Point T 25 mm above HP and 10 in front of VP and 10mm in front of PP. c) Point U 30mm below HP and 25mm behind VP and 20mm in front of PP.	7M	2	3
	OR			
Q.2(B)	A regular Hexagon of 30 mm sides is resting on HP, on one of its corner with its surface 45^0 inclined to HP. Draw its projections when the side in HP makes 35^0 angle with VP?	14M	2	3
Q.3(A)	A pentagonal prism of base edge 30mm and axis 70mm has a corner on the H.P. with its axis inclined at 45^0 to the H.P. Draw the projections when the plane containing the resting corner and the axis is parallel to V.P.	14M	3	3
	OR			
Q.3(B)	Draw the projection of a cone base 40 mm diameter and axis 50mm long when it is resting on a ground on a point on its base circle with the axis making an angle of 35 ^{0} with HP.	14M	3	3
Q.4(A)	A Hexagonal prism of 30mm sides and 80mm long is resting on HP on its base with two of its lateral faces parallel to VP. The prism is sectioned by an inclined section plane that passes through the midpoint of the axis and makes 60° with the HP. Draw the sectional top views, true shape of the section and sectional side view.	14M	4	3
	OR			
Q.4(B)	A square pyramid, base 40 mm side and axis 80 mm long, has its based on the HP and all the edges of the base equally inclined to the VP. It is cut by a section plane, perpendicular to the VP, inclined at 45° to the HP and bisecting the axis. Draw its development of the remaining portion. Use radial line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below: 14M 5 3



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SET-4

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

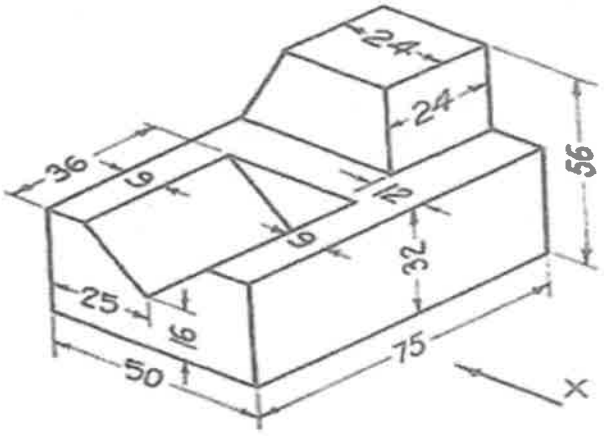
ENGINEERING GRAPHICS

(CSE- AI and CSE-DS)

Time: 3Hrs **Max Marks: 70**

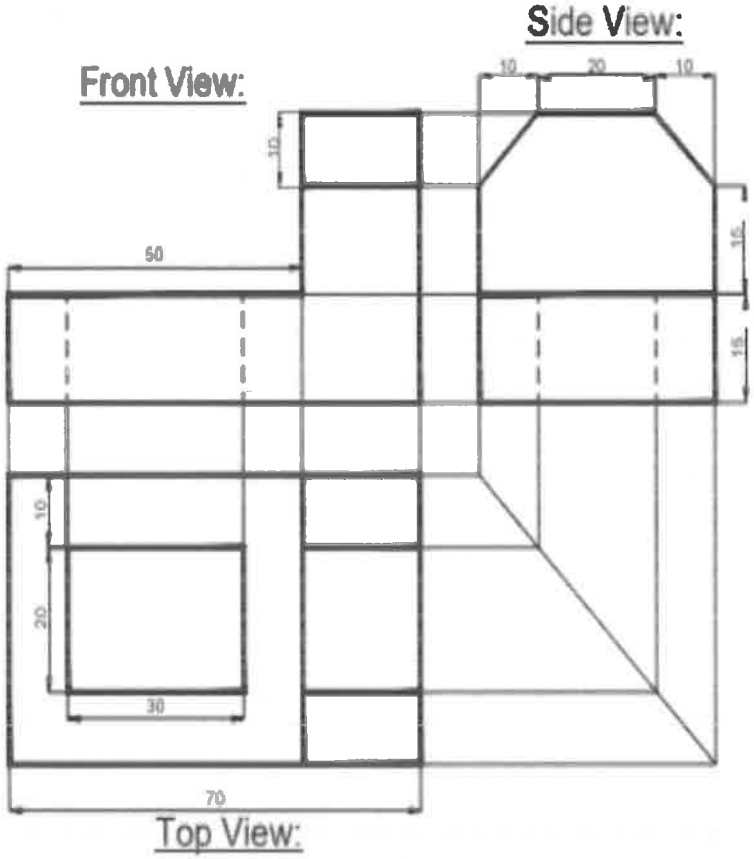
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Draw an involute for the path traced by a point at the end of a string, when it is wound around a hexagon of size 45 mm. Also draw tangent and normal at any point on the curve.	14M	1	3
	OR			
Q.1(B)	Construct an ellipse when the distance between of the focus and directrix is 35 mm and eccentricity is 3/4. Also draw tangent and normal 55 mm from directrix.	14M	1	3
Q.2(A)	(i) Front View of line AB 50° inclined to XY and measures 55mm, its top view 60° inclined XY. End A is 10mm above HP and 15mm in front of VP. Find TL, θ, φ.	7M	2	3
	(ii)Draw the projections of the following points on the same ground line and keep the distance between the projectors as 50mm. Name the quadrants in which they are? a) Point P – 50mm in front of the VP and 30mm above the HP. b) Point Q – 65mm below the HP and on the VP. c) Point R – 35mm below the HP and 50mm behind the VP.	7M	2	3
	OR			
Q.2(B)	Draw the projections of a regular Pentagon of 30 mm side, having one of its sides in HP and inclined at 40° to VP. The surface of the pentagon is making an angle of 45° with HP.	14M	2	3
Q.3(A)	A Hexagonal Pyramid of base side 30mm and axis 60mm has a corner of its base on the ground. Its axis is inclined at 35° to the ground and parallel to VP. Draw its Projections.	14M	3	3
	OR			
Q.3(B)	A Hexagonal prism of base edge 35 mm and axis 65 mm has an edge of its base in the V.P such that the axis is inclined at 35° to V.P and parallel to H.P. Draw its projections.	14M	3	3
Q.4(A)	A Cube of 50mm edges is resting one of its faces on HP with vertical faces equally inclined to VP. It is cut by a plane 45° inclined to HP and passing through the midpoint of axis. Draw the sectional top views, true shape of the section and sectional side view.	14M	4	3
	OR			
Q.4(B)	A Cone of base 50mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the base of the end generator and cuts all other generators. Draw the development of surface. Use radial line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below: 14M 5 3



*** END***

SET-5

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

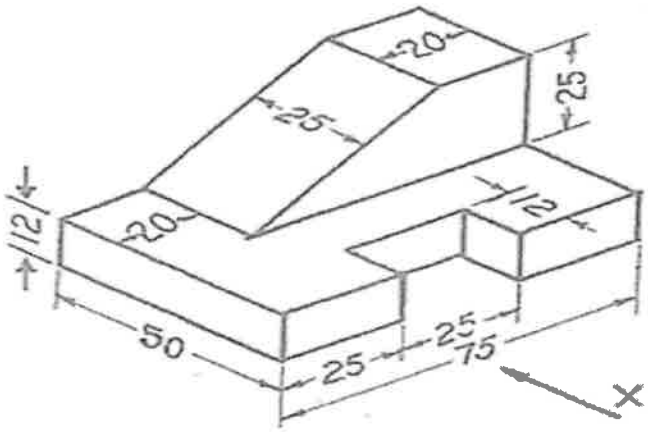
ENGINEERING GRAPHICS

(CSE-Data Science)

Time: 3Hrs **Max Marks: 70**

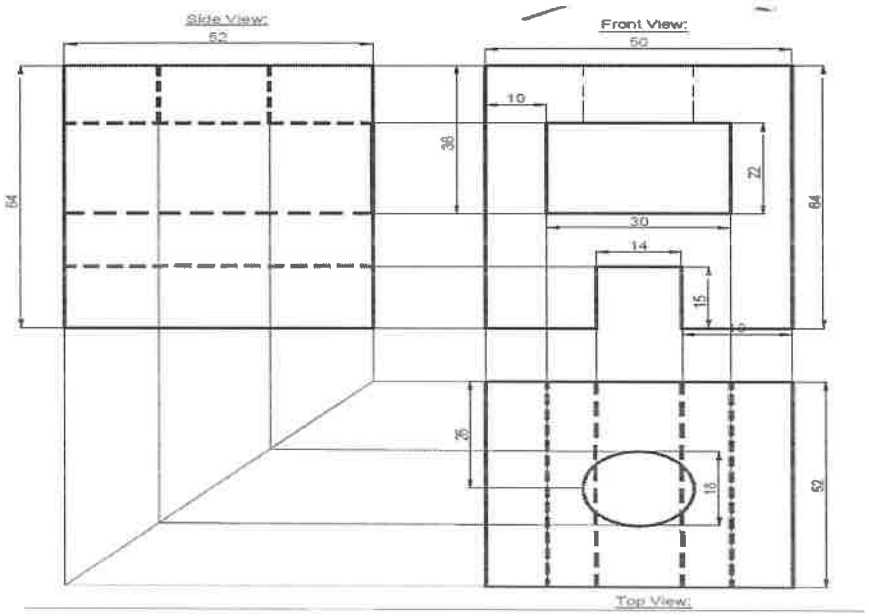
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q. No	Question	Marks	CO	BL
Q.1(A)	Construct a parabola with the distance of the focus from the directrix at 60 mm. Also draw tangent and normal to the curve at 55 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Construct a cycloid given the radius of the generating circle is 40 mm and draw a tangent and normal to the curve at a point 50 mm from the directing line.	14M	1	3
Q.2(A)	(i) Front View of line AB 50° inclined to XY and measures 55mm, its top view 60° inclined XY. End A is 10mm above HP and 15mm in front of VP. Find TL, θ, φ. (7M) (ii) Draw the projections of the following points on the same ground line and keep the distance between the projectors as 50mm. Name the quadrants in which they are? a) Point P – 50mm in front of the VP and 30mm above the HP. b) Point Q – 65mm below the HP and on the VP. c) Point R – 35mm below the HP and 50mm behind the VP. (7M)	14M	2	3
	OR			
Q.2(B)	Draw the projections of a circle of 40mm diameter resting in the HP one point on the circumference. Its plane is inclined at 35° to the HP and the top view of the diameter making an angle of 40° with the VP.	14M	2	3
Q.3(A)	A Pentagonal Prism of base edge 30mm and axis 60mm. Axis of the Solid is parallel to VP and HP, and the rectangular face rests on HP.	14M	3	
	OR			
Q.3(B)	A cone 40 mm in diameter and 50 mm axis is resting on one of its generators on HP, which makes 30 ^{0} inclinations with VP. Draw its projections?	14M	3	3
Q.4(A)	A Hexagonal prism of 30mm sides and 80mm long is resting on HP on its base with two of its lateral faces parallel to VP. The prism is sectioned by an inclined section plane that passes through the midpoint of the axis and makes 60° with the HP. Draw the sectional top views ,true shape of the section and sectional side view.	14M	4	3
	OR			
Q.4(B)	A Cylinder of base 40mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the top of the generator and cuts all other generators. Draw the development of surface. Use parallel line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below. 14M 5 3



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SET-6

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech. I Year II Semester (R23) Regular End Semester Examinations, July- 2025

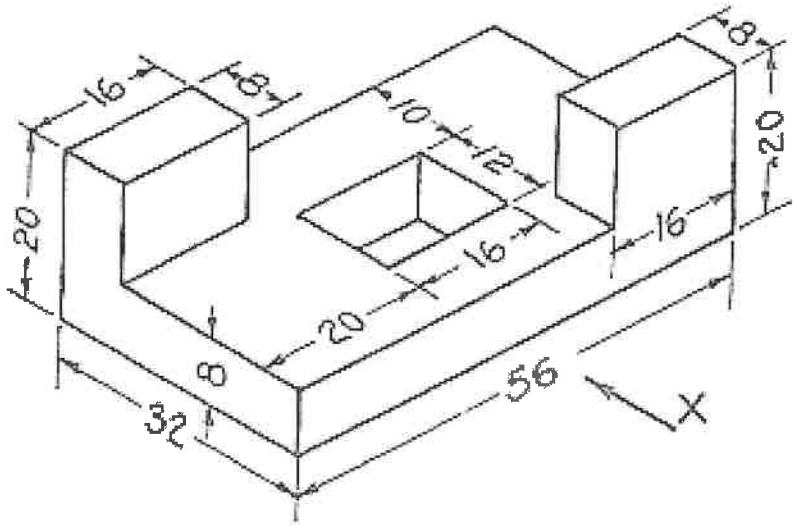
ENGINEERING GRAPHICS

(CSE-Data Science)

Time: 3Hrs **Max Marks: 70**

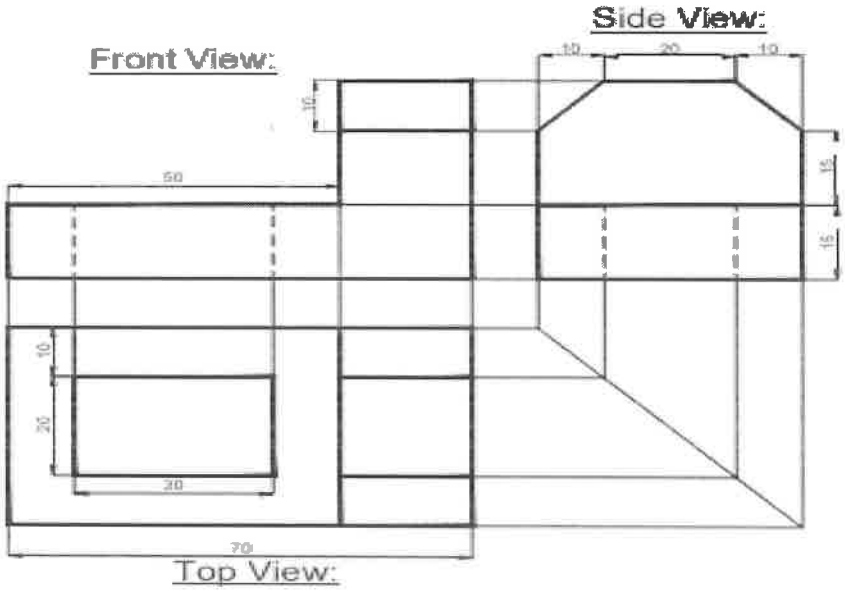
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Draw a hyperbola with the distance of the focus from the directrix at 50mm and e=3/2 (Eccentricity method). Also draw tangent and normal 40 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw an involute for the path traced by a point at the end of a string, when it is wound around a hexagon of size 45 mm. Also draw tangent and normal at any point on the curve.	14M	1	3
Q.2(A)	(i) Draw the projections of the following points on the same ground line; keeping the distance between the projectors is 40 mm. 1. Point P, 20 mm in front of the V.P. and 25 mm above the H.P. 2. Point Q, 18 mm below the H.P. and 30 mm behind the V.P. 3. Point R, 20 mm above the H.P. and 30 mm behind the V.P. (ii) A line PQ has its end P 15mm above HP and 10mm in front of VP. The end Q is 55mm above HP and the line is inclined at 30° to HP. The distance between the end projectors of the line when measured parallel to the line of intersection of HP and VP is 50mm. Draw the projectors of the line and find its inclination with VP.	(7+7) M	2	3
	OR			
Q.2(B)	A regular Hexagon of 30 mm sides is resting on HP, on one of its corner with its surface 45 ^{0} inclined to HP. Draw its projections when the side in HP makes 35 ^{0} angle with VP?	14M	2	3
Q.3(A)	Draw the projections of a Pentagonal pyramid with a base side of 40 mm and an axis length of 65 mm. The base rests on the horizontal plane with one of base side and the axis is inclined at 45° to the H.P and parallel to the V.P.	14M	3	3
	OR			
Q.3(B)	A Hexagonal prism of base edge 35 mm and axis 65 mm has an edge of its base in the V.P such that the axis is inclined at 35° to V.P and parallel to H.P. Draw its projections.	14M	3	3
Q.4(A)	A Cylinder of 45mm diameter and 70mm long is resting on one of its bases on HP. It is cut by a section plane, inclined at 60° with HP and passing through a point on the axis at 15mm from one end. Draw the three views of the solid and also obtain the true shape of the section.	14M	4	3
	OR			
Q.4(B)	A Hexagonal pyramid, base 40 mm side and axis 80 mm long, has its base on the HP with two edges of the base perpendicular to the VP. It is cut by a section plane, perpendicular to the VP, inclined at 45^0 to the HP and bisecting the axis. Draw development. Use radial line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first-angle projection.	14M	5	3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below. 14M 5 3



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SET-7

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

ENGINEERING GRAPHICS

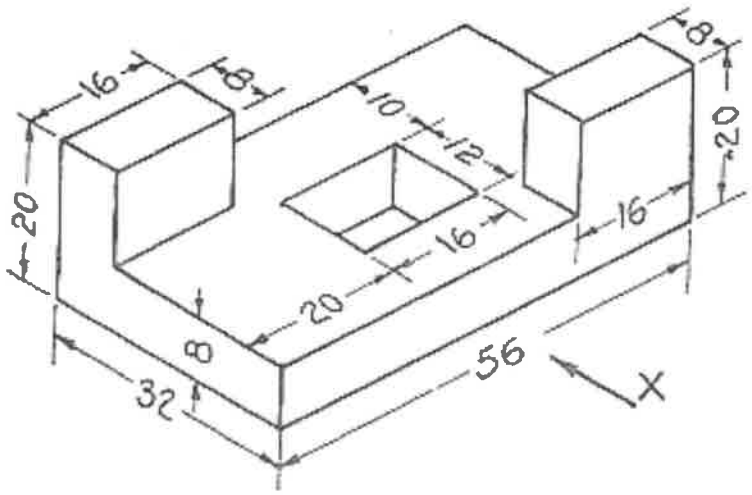
(CSE-Data Science and CSE-Cyber Security)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

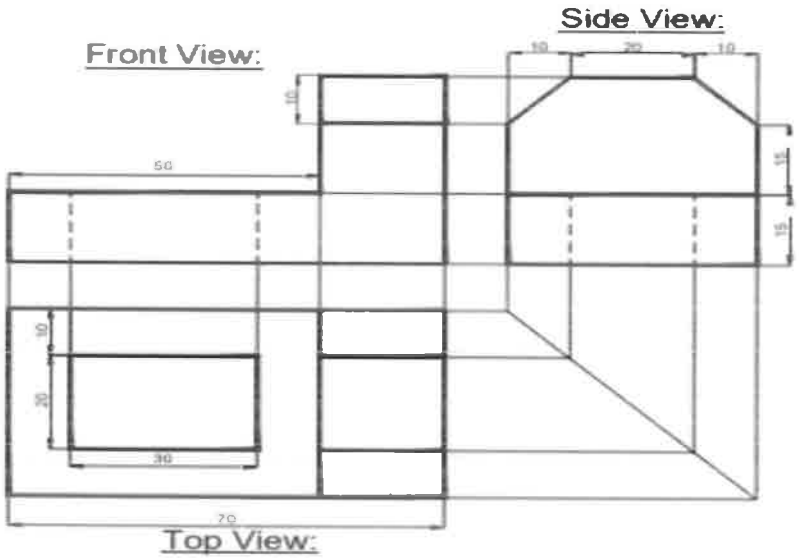
Q.No	Question	Marks	CO	BL
Q.1(A)	Construct a parabola with the distance of the focus from the directrix at 50 mm. Also draw tangent and normal to the curve at 45 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Construct a cycloid given the radius of the generating circle is 30 mm and draw a tangent and normal to the curve at a point 40 mm from the directing line.	14M	1	3
Q.2(A)	(i) A line AB, 65mm long has its end A 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 60 mm in front of V.P. Draw the projections of AB and shows its inclination with H.P.	7M	2	3
	(ii)Draw the projections of the following: 1.Point S 30mm above HP, 20 mm in front of VP, 15mm in front of PP. 2.Point T 25 mm above HP and 10 in front of VP and 10mm in front of PP. 3.Point U 30mm below HP and 25mm behind VP and 20mm in front of PP.	7M	2	3
	OR			
Q.2(B)	A Pentagonal lamina of 40 mm sides is resting on HP on one of its sides with its surface 45^0 inclined to HP. Draw the projections of the lamina when the side in HP makes 35^0 angle with VP.	14M	2	3
Q.3A)	A pentagonal prism of base edge 30mm and axis 70mm has a corner on the H.P. with its axis inclined at 45^0 to the H.P. Draw the projections when the plane containing the resting corner and the axis is parallel to V.P	14 M	3	3
	OR			
Q.3(B)	A cone 40 mm diameter and 50 mm axis is resting on one of its generator on HP, which makes 30 ^{0} inclinations with VP. Draw its projections.	14M	3	3
Q.4(A)	A Hexagonal prism of 30mm sides and 80mm long is resting on HP on its base with two of its lateral faces parallel to VP. The prism is sectioned by an inclined section plane that passes through the midpoint of the axis and makes 60° with the HP. Draw the sectional top views, true shape of the section and sectional side view.	14M	4	3
	OR			

Q.4(B)	A Cylinder of base 40mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the top of the generator and cuts all other generators. Draw the development of surface. Use parallel line method.	14M	4	3
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection. All dimensions are in mm.	14M	5	3



OR

Q.5(B)	Draw the isometric view of the object, the multi view projection of which is shown below. All dimensions are in mm.	14M	5	3



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SET-8

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July- 2025

ENGINEERING GRAPHICS

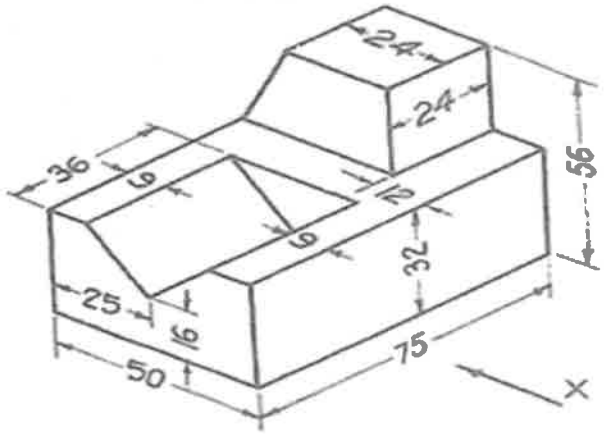
(CSE-Data Science and CSE-Cyber Security)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

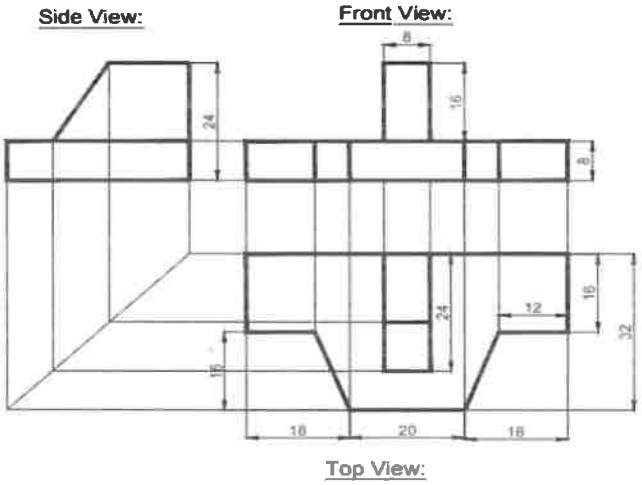
Q.No	Question	Marks	CO	BL
Q.1(A)	Draw a hyperbola with the distance of the focus from the directrix at 50mm and e=3/2 (Eccentricity method). Also draw tangent and normal 40 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw an involute for the path traced by a point at the end of a string, when it is wound around a hexagon of size 45 mm. Also draw tangent and normal at any point on the curve.	14M	1	3
Q.2(A)	(i) Front View of line AB 50° inclined to XY and measures 55mm, its top view 60° inclined XY. End A is 10mm above HP and 15mm in front of VP. Find TL, θ, φ.	7M	2	3
	(ii)Draw the projections of the following points on the same ground line and keep the distance between the projectors as 50mm. Name the quadrants in which they are? a) Point P – 50mm in front of the VP and 30mm above the HP. b) Point Q – 65mm below the HP and on the VP. c) Point R – 35mm below the HP and 50mm behind the VP.	7 M	2	3
	OR			
Q.2(B)	Draw the projections of a regular Pentagon of 30 mm side, having one of its sides in HP and inclined at 40° to VP. The surface of the pentagon is making an angle of 45° with HP.	14M	2	3
Q.3(A)	Draw the projections of a Pentagonal pyramid with a base side of 40 mm and an axis length of 65 mm. The base rests on the horizontal plane with one of base side and the axis is inclined at 45° to the H.P and parallel to the V.P.	14M	3	3
	OR			
Q.3(B)	A Hexagonal prism of base edge 35 mm and axis 65 mm has an edge of its base in the V.P such that the axis is inclined at 35° to V.P and parallel to H.P. Draw its projections.	14M	3	3
Q.4(A)	A Pentagonal Prism 30mm base side & 60mm axis is standing on HP on its base whose one side is perpendicular to VP. It is cut by a section plane 45° inclined to HP, through mid-point of axis. Draw FV, sectional TV and sectional side View.	14M	4	3
	OR			
Q.4(B)	A Cone of base 50mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the base of the end generator and cuts all other generators. Draw the development of surface. Use radial line method.	14M	4	3

Q.5(A) Draw the front view, top view and right-side view of the following object. Use first angle projection: 14M 5 3



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below: 14M 5 3



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SET-9

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

ENGINEERING GRAPHICS

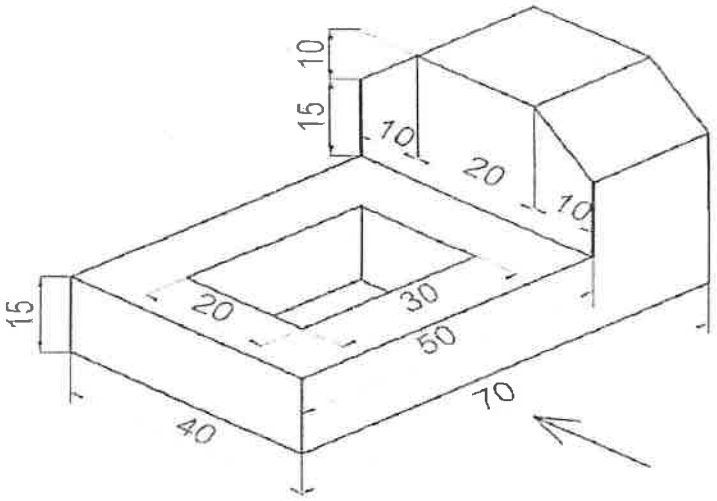
(CST and CSE-CS)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

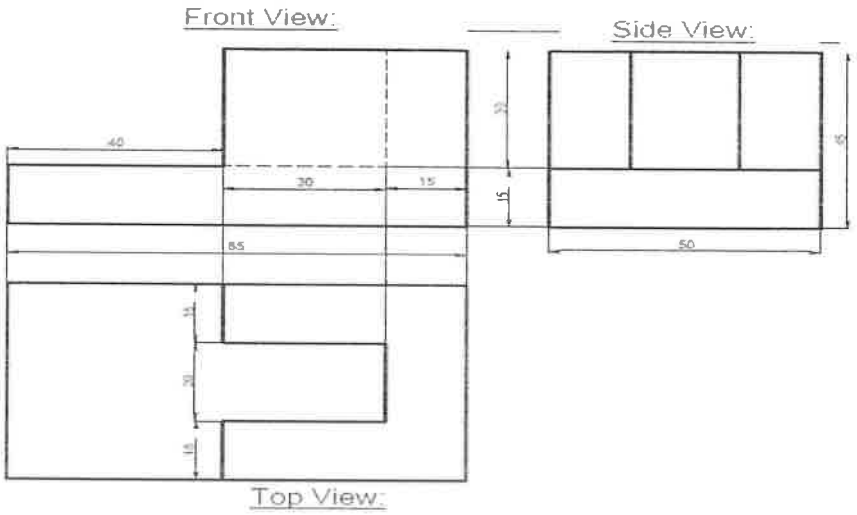
Q.No	Question	Marks	CO	BL
Q.1(A)	Construct a parabola with the distance of the focus from the directrix at 50 mm. Also draw tangent and normal to the curve at 45 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw an involute for the path traced by a point at the end of a string, when it is wound around a hexagon of size 45 mm. Also draw tangent and normal at any point on the curve.	14M	1	3
Q.2(A)	(i) A line AB 70mm long has its end A at 15 mm above H.P and 20 mm in front of V.P. Its front view and top view measures 50 mm and 60 mm respectively. Draw the projections of the line and determine its inclination with H.P and V.P.	7M	2	3
	(ii) Two points F and G are on H.P. The point F being 25mm in front of V.P, while G is 30 mm behind V.P. The line joining their top views makes an angle of 45 ^{0} with XY. Find the horizontal distance between two points.	7M	2	3
	OR			
Q.2(B)	A Pentagonal lamina of 40 mm sides is resting on HP on one of its sides with its surface 45^0 inclined to HP. Draw the projections of the lamina when the side in HP makes 35^0 angle with VP.	14M	2	3
Q.3(A)	A Hexagonal Pyramid of base side 30mm and axis 60mm has a corner of its base on the ground. Its axis is inclined at 35° to the ground and parallel to VP. Draw its Projections.	14M	3	3
	OR			
Q.3(B)	A Pentagonal prism of base edge 35 mm and axis 65 mm has an edge of its base in the V.P such that the axis is inclined at 35° to V.P and parallel to H.P. Draw its projections.	14M	3	3
Q.4(A)	A Hexagonal prism of 30mm sides and 80mm long is resting on HP on its base with two of its lateral faces parallel to VP. The prism is sectioned by an inclined section plane that passes through the midpoint of the axis and makes 60° with the HP. Draw the sectional top views ,true shape of the section and sectional side view.	14M	4	3
	OR			
Q.4(B)	A square pyramid, base 40 mm side and axis 80 mm long, has its base on the HP and all the edges of the base equally inclined to the VP. It is cut by a section plane, perpendicular to the VP, inclined at 45° to the HP and bisecting the axis. Draw its development of the remaining portion. Use radial line method.	14M	4	3

Q.5(A)	Draw the front view, top view and side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B)	Draw the isometric view of the object, the multi view projection of which is shown below.	14M	5	3



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SET-10

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

ENGINEERING GRAPHICS

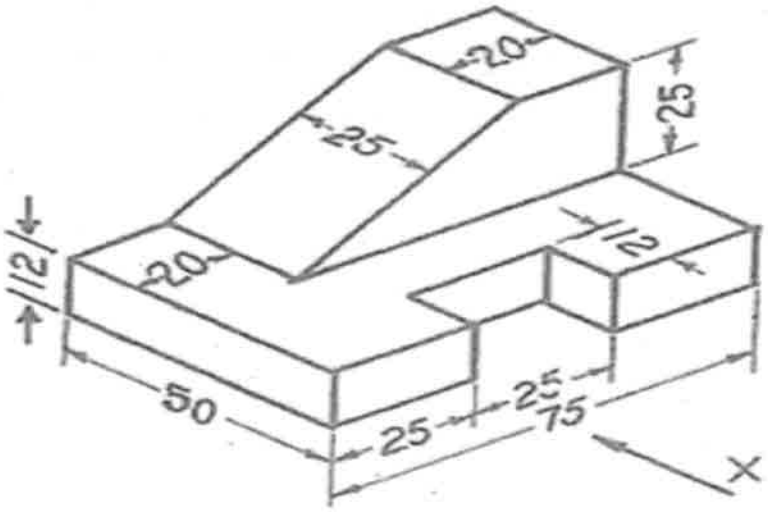
(CST and CSE-CS)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

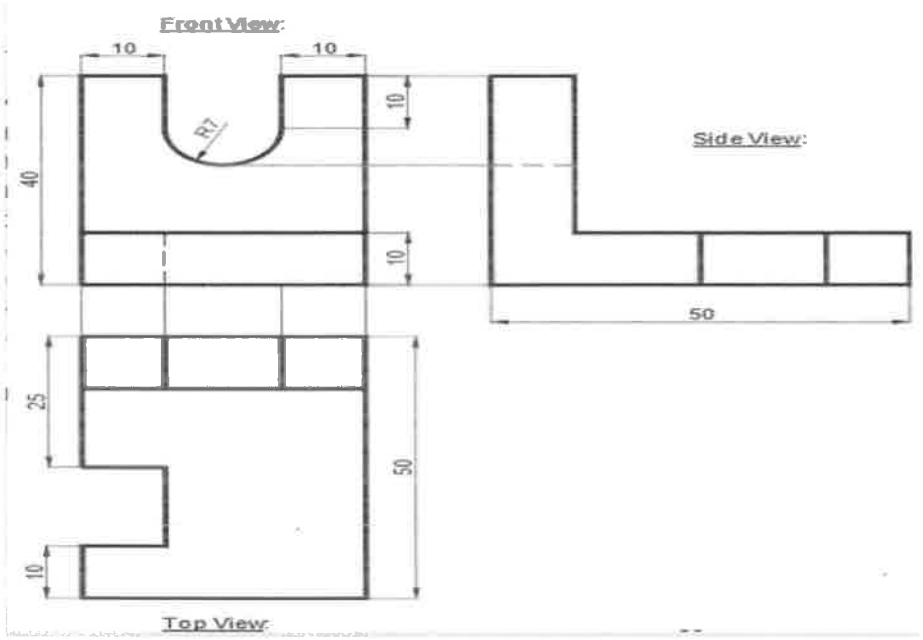
Q.No	Question	Marks	CO	BL
Q.1(A)	Draw a hyperbola with the distance of the focus from the directrix at 50mm and e=3/2 (Eccentricity method). Also draw tangent and normal 40 mm from directrix	14M	1	3
	OR			
Q.1(B)	Construct a cycloid given the radius of the generating circle is 30 mm and draw a tangent and normal to the curve at a point 40 mm from the centre.	14M	1	3
Q.2(A)	(i) A line AB, 65mm long has its end A 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 60 mm in front of V.P. Draw the projections of AB and shows its inclination with H.P. (ii) Draw the projections of the following: 1.Point S 30mm above HP, 20 mm in front of VP. 2.Point T 25 mm above HP and 10 in front of VP. 3.Point U 30mm below HP and 25mm behind VP.	14M	2	3
	OR			
Q.2(B)	Draw the projections of a circle of 40mm diameter resting in the HP one point on the circumference. Its plane is inclined at 35° to the HP and the top view of the diameter making an angle of 40° with the VP	14M	2	3
Q.3(A)	Draw the projections of a Pentagonal pyramid with a base side of 40 mm and an axis length of 65 mm. The base rests on the horizontal plane with one of base side and the axis is inclined at 45° to the H.P and parallel to the V.P.	14M	3	3
	OR			
Q.3(B)	A Cylinder of 40 mm diameter and 50 mm axis is resting on one point of a base circle on VP while its axis makes 45 ^{0} with VP and parallel to HP. Draw its projections.	14M	3	3
Q.4(A)	A Cube of 50mm edges is resting one of its faces on HP with vertical faces equally inclined to VP. It is cut by a plane 45° inclined to HP and passing through the midpoint of axis. Draw the three views of the solid and also obtain the true shape of the section.	14M	4	3
	OR			
Q.4(B)	A Cylinder of base 40mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the top of the generator and cuts all other generators. Draw the development of surface. Use parallel line method.	14M	4	3

Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	3



OR

Q.5(B)	Draw the isometric view of the object, the multi view projection of which is shown below.	14M	5	3



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SET-11

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

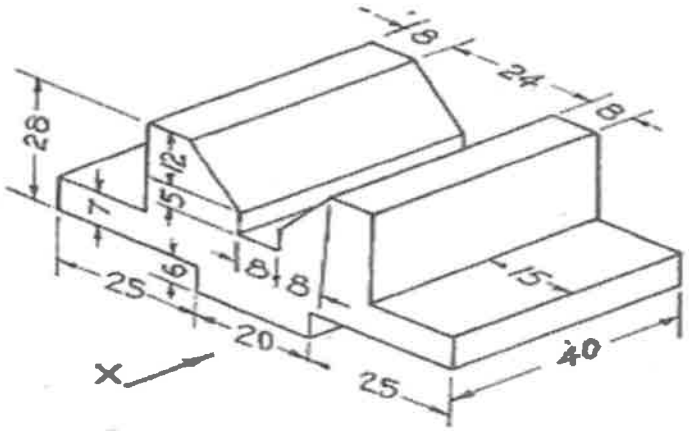
ENGINEERING GRAPHICS

(CE, ME and CST)

Time: 3Hrs **Max Marks: 70**

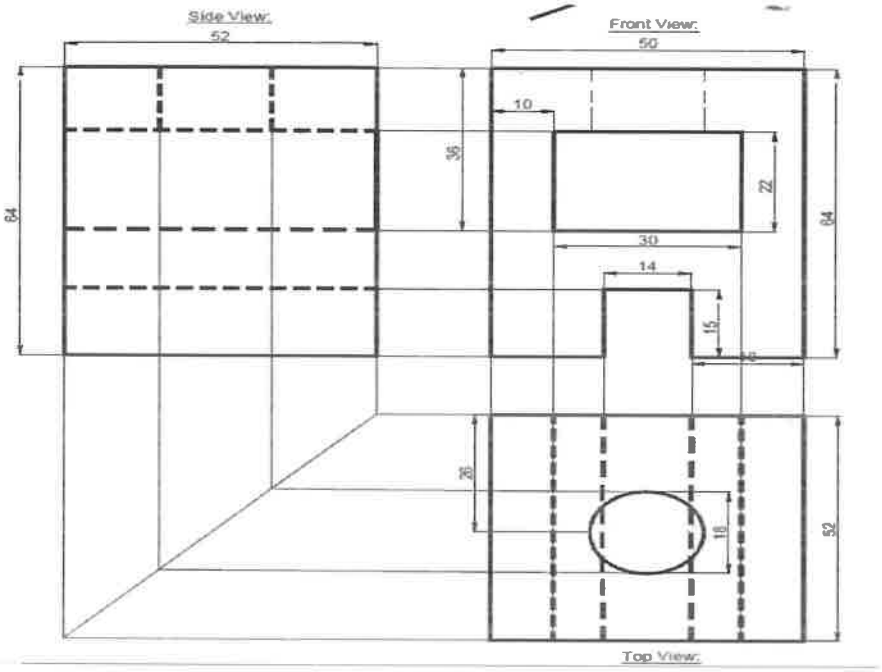
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Construct an ellipse when the distance between of the focus and directrix is 65 mm and eccentricity is 2/3. Also draw tangent and normal 50 mm from directrix.	14M	1	4
	OR			
Q.1(B)	Draw the Involute of a circle of radius 30 mm. Also draw the tangent and normal 100 mm from the center of the circle.	14M	1	4
Q.2(A)	Draw the projections of the following points on the same ground line xy, keeping the distance between the projectors is 30mm apart. Name the quadrants in which they lie. 1) Point A is 40 mm above the HP and 20mm in front of VP 2) Point B is 25mm above the H.P and 15mm behind the V.P. 3) Point C is 30mm below the H.P. and 30 mm behind the V.P. 4) Point D, 35mm below the H.P. and 20 mm in front of the V.P.	14M	2	4
	OR			
Q.2(B)	A regular Hexagon of 30 mm sides is resting on HP, on one of its corner with its surface 45 ^{0} inclined to HP. Draw its projections when the side in HP makes 35 ^{0} angle with VP?	14M	2	4
Q.3(A)	A pentagonal prism of base edge 30mm and axis 70mm has a corner on the H.P. with its axis inclined at 45^0 to the H.P. Draw the projections when the plane containing the resting corner and the axis is parallel to V.P.	14M	3	4
	OR			
Q.3(B)	A pentagonal pyramid of base 25 side and axis 60 long, is resting on an edge of the base on H.P. The axis of the solid is inclined at 45^0 to the H.P. Draw the Projections of the pyramid,	14M	3	4
Q.4(A)	A cube of 50mm edges is resting one of its faces on HP with vert equally inclined to VP. It is cut by a plane 45° inclined to HP an through the midpoint of axis. Draw the three views of the solid and al the true shape of the section	14M	4	4
	OR			
Q.4(B)	A Cylinder of base 40mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the top of the generator and cuts all other generators. Draw the development of surface. Use parallel line method.	14M	4	4
Q.5(A)	Draw the front view, top view and right side view of the following object. Use first angle projection.	14M	5	4



OR

Q.5(B) Draw Isometric view of following conversion 14M 5 4



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SET-12

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech I Year II Semester (R23) Regular End Semester Examinations, July– 2025

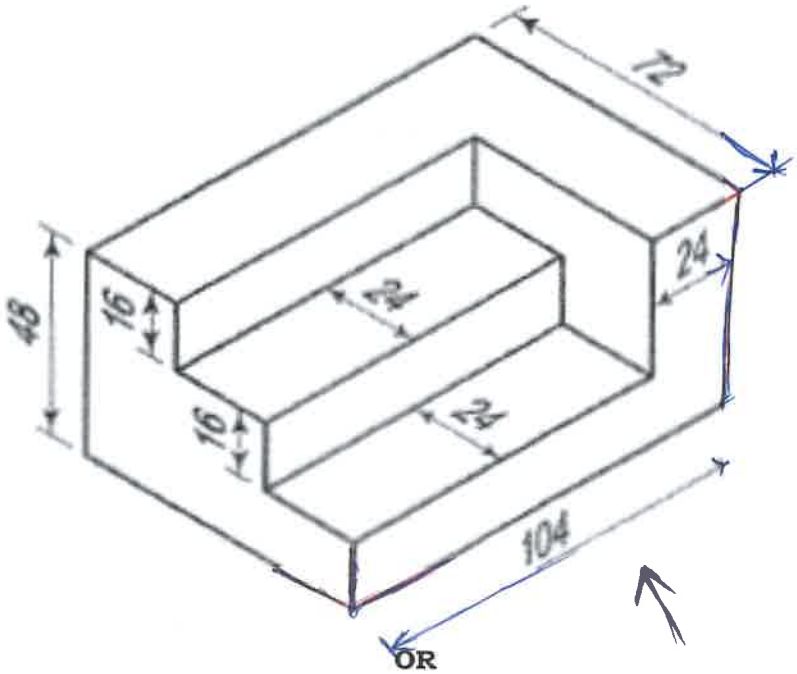
ENGINEERING GRAPHICS

(CE, ME and CST)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

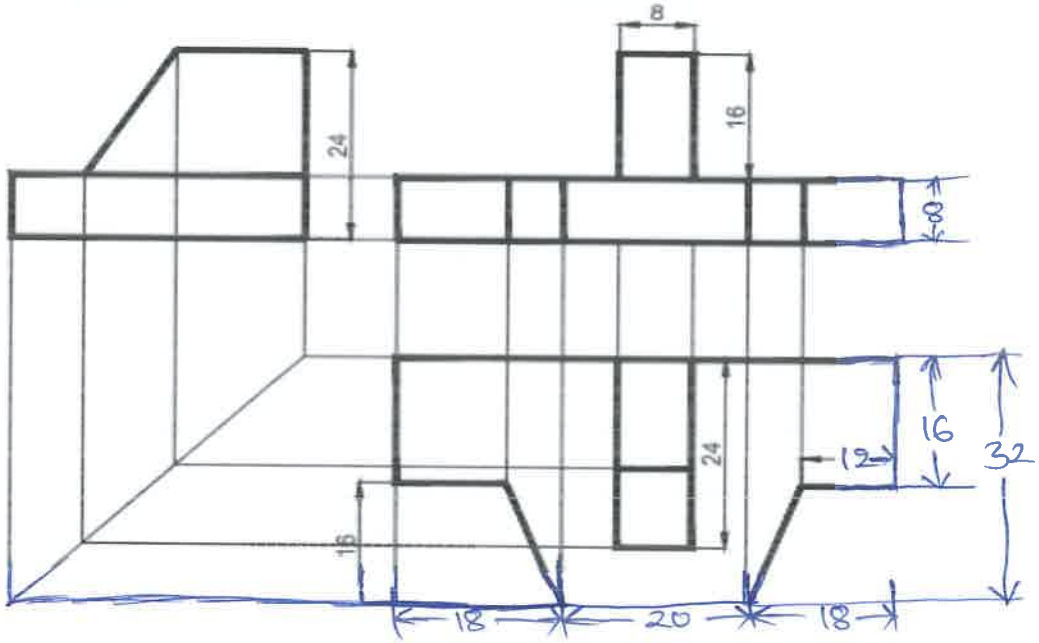
Q.No	Question	Marks	CO	BL
Q.1(A)	Draw a hyperbola with the distance of the focus from the directrix at 50mm and e=3/2 (Eccentricity method). Also draw tangent and normal 40 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw a cycloid, given rolling circle diameter 60 mm. Draw the normal and tangent for a point 40 mm from the base line and on the descending side of the curve.	14M	1	4
Q.2(A)	A line AB 80mm long is inclined at an angle of 30^0 to H.P and 45^0 to V.P. The point A is 15mm above H.P. and 20mm in front of V.P. Draw the projections of the straight line determine angles made by Front View and Top View.	14M	2	4
	OR			
Q.2(B)	A regular pentagon plane of 25 mm side has one side on the ground. Its plane is inclined at 45^0 to the HP and perpendicular to the V.P. Draw its projections.	14M	2	4
Q.3(A)	Draw the projections of a hexagonal prism of base 25 side and axis 60 long, when it is resting on one of its corners of the base on H.P. The axis of the solid is inclined at 45^0 to the H.P	14M	3	4
	OR			
Q.3(B)	A cone 40 mm diameter and 50 mm axis is resting on one of its generator on HP, which makes 30 ^{0} inclinations with VP. Draw its projections	14M	3	4
Q.4(A)	A cylinder of base diameter 40 mm and height 80 mm rests on its base on HP. It is cut by section plane perpendicular to VP and inclined at 45° to HP and passing through the axis at a distance 40 mm from base. Draw the front view, sectional top view and true shape.	14M	4	4
	OR			
Q.4(B)	A hexagonal prism of side of base 30 mm and axis 70 mm long is resting on its base on H.P. such that a rectangular face is parallel to V.P. It is cut by a section plane perpendicular to V.P. and inclined at 30 ^{0} to H.P. The section plane is passing through the axis at a height of 40mm from the base. Draw the development of the lateral surface of the cut prism, Use parallel line method.	14M	4	4
Q.5(A)	Draw the front and top views and any one of the side view for shown object.	14M	5	4



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below. 14M 5 4

Side View: **Front View:**



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SET-13

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech. I Year II Semester (R23) Supplementary End Semester Examinations, July 2025

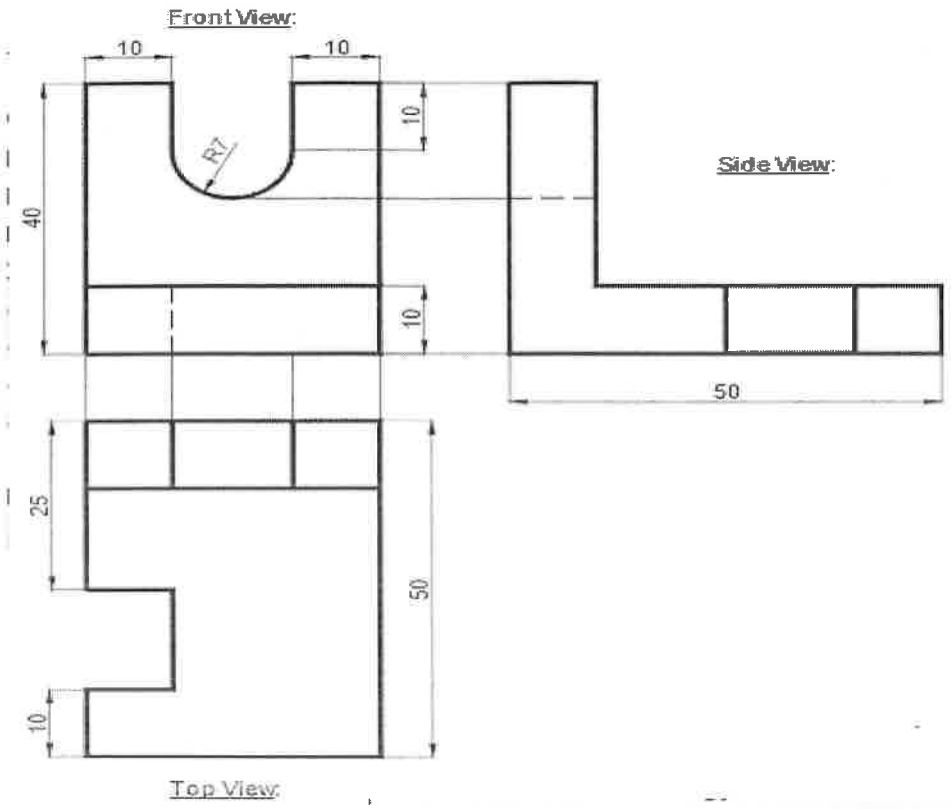
ENGINEERING GRAPHICS

(Common to All)

Time: 3Hrs **Max Marks: 70**

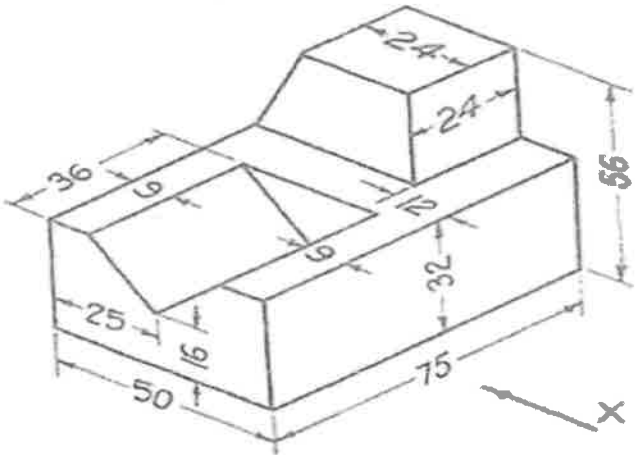
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

Q.No	Question	Marks	CO	BL
Q.1(A)	Construct a parabola with the distance of the focus from the directrix at 50 mm. Also draw tangent and normal to the curve at 45 mm from directrix.	14M	1	3
	OR			
Q.1(B)	Draw a diagonal scale of RF = 3/100, showing meters, decimeters and centimetres and to measure up to 5 meters. Show the length of 3.69 meters on it.	14M	1	3
Q.2(A)	(i) A line AB, 65mm long has its end A 20mm above H.P. and 25mm in front of VP. The end B is 40mm above H.P. and 60 mm in front of V.P. Draw the projections of AB and show its inclination with H.P.	7M	2	3
	(ii) Draw the projections of the following: 1.Point S 30mm above HP, 20 mm in front of VP, 15mm in front of PP. 2.Point T 25 mm above HP and 10 in front of VP and 10mm in front of PP. 3.Point U 30mm below HP and 25mm behind VP and 20mm in front of PP.	7M	2	3
	OR			
Q.2(B)	Draw the projections of a circle of 40mm diameter resting in the HP one point on the circumference. Its plane is inclined at 35° to the HP and the top view of the diameter making an angle of 40° with the VP.	14M	2	3
Q.3(A)	A Hexagonal Pyramid of base side 30mm and axis 60mm has a corner of its base on the ground. Its axis is inclined at 35° to the ground and parallel to VP. Draw its Projections.	14M	3	4
	OR			
Q.3(B)	Draw the projections of a Pentagonal pyramid with a base side of 40 mm and an axis length of 65 mm. The base rests on the horizontal plane with one of base side and the axis is inclined at 45° to the H.P and parallel to the V.P.	14M	3	4
Q.4(A)	A Hexagonal prism of 30mm sides and 80mm long is resting on HP on its base with two of its lateral faces parallel to VP. The prism is sectioned by an inclined section plane that passes through the midpoint of the axis and makes 60° with HP. Draw the sectional top views , true shape of the section and sectional side view.	14M	4	4
	OR			
Q.4(B)	A Cone of base 50mm and axis 60mm is resting on ground with its axis vertical. It is cut by a section plane perpendicular to VP and inclined at 45° to HP passing through the base of the end generator and cuts all other generators. Draw the development of surface. Use radial line method.	14M	4	4
Q.5(A)	Draw the isometric view of the object, the multi view projection of which is shown below:	14M	5	4



OR

Q.5(B) Draw the front view, top view and right-side view of the following object. Use first angle projection. 14M 5



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SET-14

Hall Ticket No: | | | | | | | | | | |

Question Paper Code: 23ME101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B.Tech. I Year II Semester (R23) Supplementary End Semester Examinations, July 2025

ENGINEERING GRAPHICS

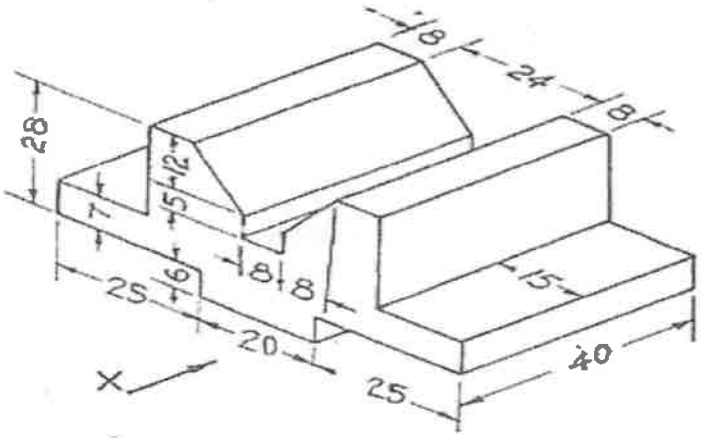
(Common to All)

Time: 3Hrs **Max Marks: 70**

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part-A or B only

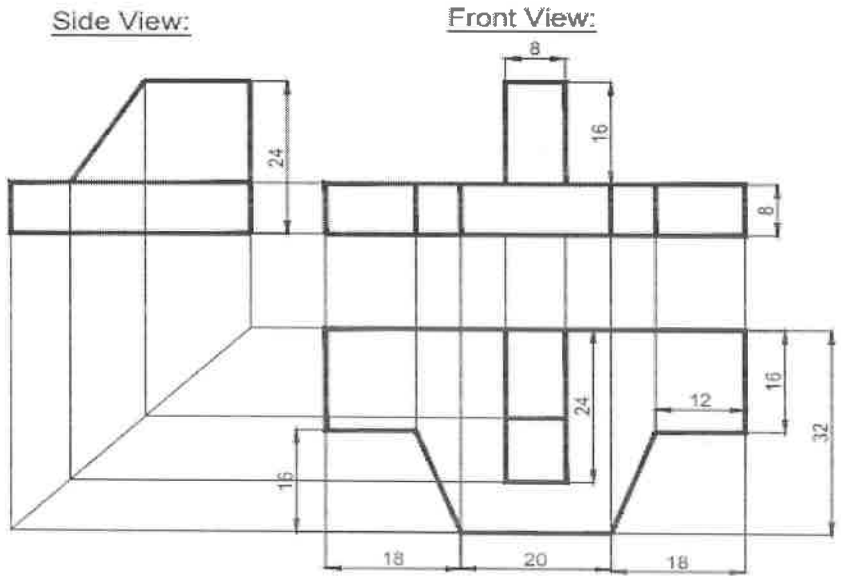
Q.No	Question	Marks	CO	BL
Q.1(A)	Draw an involute for the path traced by a point at the end of a string, when it is wound around a hexagon of size 45 mm. Also draw tangent and normal at any point on the curve.	14M	1	3
	OR			
Q.1(B)	Construct an ellipse when the distance between of the focus and directrix is 35 mm and eccentricity is 3/4. Also draw tangent and normal 55 mm from directrix.	14M	1	3
Q.2(A)	(i) Draw the projections of the following points on the same ground line; keeping the distance between the projectors is 40 mm. 1. Point P, 20 mm in front of the V.P. and 25 mm above the H.P. 2. Point Q, 18 mm below the H.P. and 30 mm behind the V.P. 3. Point R, 20 mm above the H.P. and 30 mm behind the V.P.	7M	2	3
	(ii) A line PQ has its end P 15mm above HP and 10mm in front of VP. The end Q is 55mm above HP and the line is inclined at 30° to HP. The distance between the end projectors of the line when measured parallel to the line of intersection of HP and VP is 50mm. Draw the projectors of the line and find its inclination with VP.	7M	2	3
	OR			
Q.2(B)	A regular Hexagon of 30 mm sides is resting on HP, on one of its corner with its surface 45^0 inclined to HP. Draw its projections when the side in HP makes 35 ^{0} angle with VP?	14M	2	4
Q.3(A)	A Hexagonal prism of base edge 30 mm and axis 65 mm rests on an edge of its base in the V.P. Its axis is parallel to H.P. and inclined at 45^0 to the V.P. Draw its projections.	14M	3	4
	OR			
Q.3(B)	A cone 40 mm diameter and 50 mm axis is resting on one of its generator on HP, which makes 30 ^{0} inclinations with VP. Draw its projections.	14M	3	4
Q.4(A)	A Hexagonal pyramid, base 40 mm side and axis 80 mm long, has it the HP with two edges of the base perpendicular to the VP. It is cut by plane, perpendicular to the VP, inclined at 45^0 to the HP and bisecting Draw development. Use radial line method.	14M	4	4
	OR			
Q.4(B)	A Cube of 50mm edges is resting one of its faces on HP with vertical faces equally inclined to VP. It is cut by a plane 45° inclined to HP and passing through the midpoint of axis. Draw the three views of the solid and also obtain the true shape of the section.	14M	4	4

Q.5(A) Draw the front view, top view and right-side view of the following object. Use first angle projection. 14M 5 4



OR

Q.5(B) Draw the isometric view of the object, the multi view projection of which is shown below: 14M 5 4



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