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

Question Paper Code: 20CE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

STRUCTURAL ANALYSIS

(Civil Engineering)

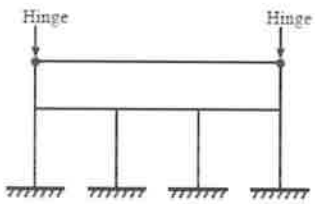
Time: 3Hrs **Max Marks: 60**

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

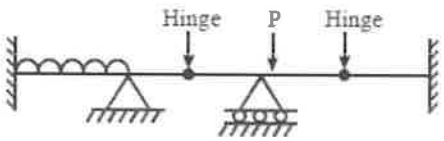
Q.No		Questions	Marks	CO	BL
Q.1	(i)	Distinguish between Determinate and Indeterminate Structures.	1M	1	1
	(ii)	What is the value of D_s & D_k for the Propped Cantilever Beam with General Loading.	1M	1	1
	(iii)	Write the Three Moment Equation.	1M	2	1
	(iv)	What is the values of Fixed End Moment at each end when the UDL is acting throughout the entire span.	1M	2	1
	(v)	Write the steps involved for solving Continuous beam by Slope Deflection Method.	1M	3	1
	(vi)	Write the few reasons for sway occurring in Portal Frames.	1M	3	1
	(vii)	Define Distribution Factor.	1M	4	1
	(vii)	What is the value of sum of all Distribution factor value at a particular joint?	1M	4	1
	(xi)	Write the steps involved for solving portal frames without side sway by Kani's Method.	1M	5	1
	(x)	Define Rotation Factor.	1M	5	1
Q.2(A)		Find the Static Indeterminacy and Degrees of Freedom for the following Beams and Rigid Jointed Frames .	10M	1	5

a)

b)



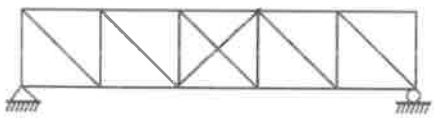
c)



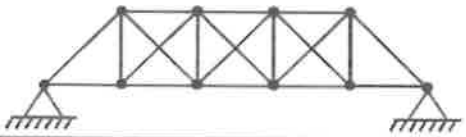
OR

Q.2(B)		Find the Static Indeterminacy and Kinematic Indeterminacy for the following Pin Jointed Frames.	10M	1	5

a)



b)

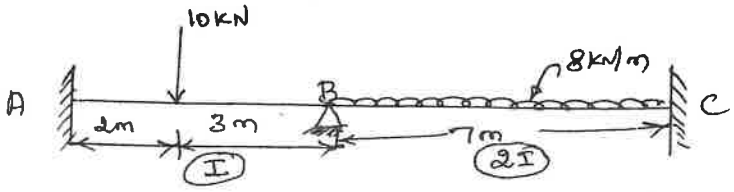


Q.3(A)		A Continuous beam ABC covers two consecutive spans AB and BC of lengths 4m and 6m respectively. The span AB carries a point load of 40 kN at 2m from A. The span BC carries no loads. Find the reactions at the supports and draw B.M.D and S.F.D. Use Three Moment Theorem Concept.	10M	2	5

OR

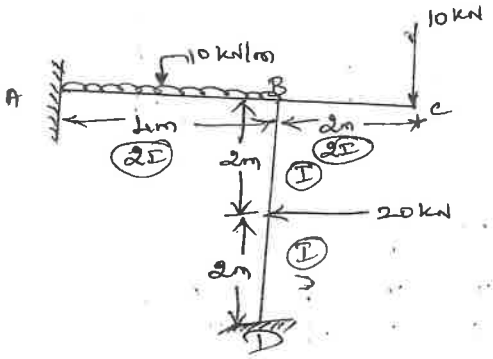
Q.3(B) Analyze the continuous beam loaded as shown in Fig. below by the Three-moment theorem. Sketch the bending moment diagrams and Shear Force Diagrams. 10M 2 5

Q.4(A) Analyse the Continuous beam ABC loaded as shown in Fig. by Slope Deflection Method. Sketch the bending moment diagrams. 10M 3 5

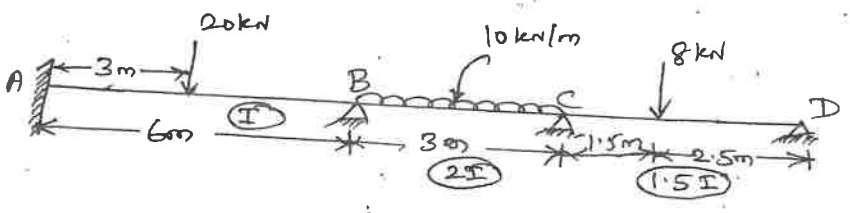


OR

Q.4(B) Analyze the Portal frames ABCD loaded as shown in Fig. by Slope Deflection Method. Sketch the bending moment diagrams. 10M 3 5

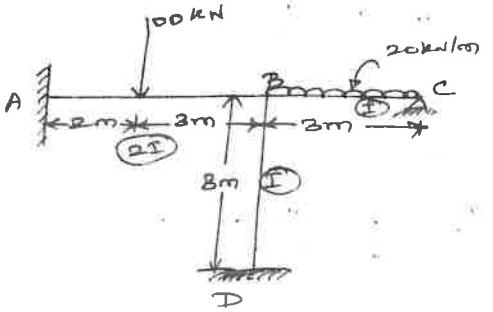


Q.5(A) Analyze the Continuous beam ABCD loaded as shown in Fig. by Moment Distribution Method. Sketch the bending moment diagrams. 10M 4 5

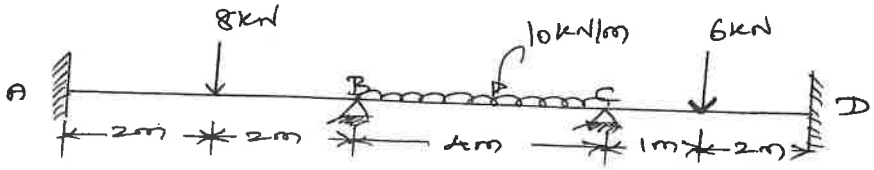


OR

Q.5(B) Analyze the Portal frames ABCD loaded as shown in Fig. by Moment Distribution Method. Sketch the bending moment diagrams. 10M 4 5

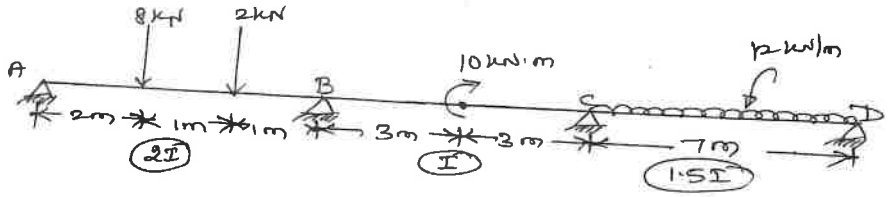


Q.6(A) Analyze the Continuous beam ABCD loaded as shown in Fig. by Kani's Method. Sketch the bending moment diagrams. 10M 5 5



OR

Q.6(B) Analyze the Continuous beam ABCD loaded as shown in Fig. by Kani's Method. Sketch the bending moment diagrams. 10M 5 5



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

Question Paper Code: 20CE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

IRRIGATION ENGINEERING

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Define Gross irrigation requirement	1M	1	1
	ii.	Define firm yield of a reservoir?	1M	3	1
	iii.	Define drowning ratio of outlet of irrigation canal	1M	2	1
	iv	What is High Gravity Dam?	1M	4	1
	v.	What is silt ejector?	1M	2	1
	vi	What is Aqueduct?	1M	3	1
	vii.	Explain the relation between is trap efficiency and capacity-inflow ratio of a reservoir.	1M	4	1
	viii	What is Density current in reservoir sedimentation?	1M	4	1
	ix.	What is load factor of a hydropower plant?	1M	5	1
	x.	Write an example of reaction turbine?	1M	5	1
Q.2(A)		Discuss about various types of irrigation methods used in the field	10M	1	2
		OR			
Q.2(B)		Identify the causes of waterlogging? What is land reclamation?	10M	1	2
Q.3(A)		What are the various components of canal regulation work? Discuss in brief.	10M	2	2
		OR			
Q.3(B)		Design a canal to carry a discharge of 60 cumecs using Lacey's theory. Take silt factor as 1.1	10M	2	5
Q.4(A)		Draw neat sketches and describe various types of cross drainage works based on the relative levels of canal and drainage.	10M	3	2
		OR			
Q.4(B)		Draw a neat sketch and explain the process of reservoir sedimentation. What are the silt control measures in reservoirs?	10M	3	2
Q.5(A)		With neat sketches elaborate the different ways that an earthen dam can fail	10M	4	2
		OR			
Q.5(B)		What are the various loads that act on solid gravity dam? Discuss them in detail.	10M	4	2
Q.6(A)		What are the main components of a Hydropower Plant? Discuss in along with neat sketch.	10M	5	2
		OR			
Q.6(B)		The load on a hydel plant varies from a minimum of 8,000 kW to a maximum of 32,000 kW. Two turbo generators of capacities 20,000 kW each have been installed. Calculate: (i) Total installed capacity of the plant, (ii) plant factor, maximum demand, (iii) load factor, (iv) utilization factor	10M	5	4

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

Question Paper Code: 20CE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

DESIGN OF CONCRETE STRUCTURES

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

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.	State the assumptions made in working state method.	1M	1	1
	ii.	Write down the values of partial safety factor for concrete and steel.	1M	1	1
	iii.	Define under reinforced section.	1M	2	1
	iv.	Write the difference between the singly and doubly reinforced sections.	1M	2	1
	v.	Define creep.	1M	3	1
	vi	Define bond stress. Write the factors affecting development of bond stress	1M	3	1
	vii.	Define slab and its classification	1M	4	1
	viii	Define the tread and riser	1M	4	1
	ix.	Where are the failure modes to be considered while designing the foundation/footing?	1M	5	1
	x.	Write the minimum and maximum percentage of steel area to be provide for column as per IS code?	1M	5	1
Q.2(A)		Describe the actual behavior of concrete and steel material and revised behavior of concrete and steel material as per IS 456 2000.	10M	1	2
		OR			
Q.2(B)		Explain the different design methods of reinforced concrete structural elements?	10M	1	2
Q.3(A)		A beam of rectangular section 250 mm wide and 450 mm deep to the centre of the tensile reinforcement provided with 4 bars of 20 mm diameter. Find the depth of neutral axis, section classification and determine the moment resistance of the given section. Use M20 concrete and Fe 500 steel.	10M	2	5
		OR			
Q.3(B)		Find the reinforcement required for a doubly reinforced beam section to the following particulars: Width of the beam = 250 mm, Depth of the beam to the center of the tensile reinforcement=475 mm, Effective cover to the center of the compression reinforcement = 50 mm, Maximum bending moment under working load conditions = 160 kN-m. Use M25 concrete and Fe 415 steel.	10M	2	5
Q.4(A)		A rectangular RCC beam 300 mm x 550 mm has a service shear force of 120 kN at a section near the support. Four bars of 20 mm diameters are provided as tensile reinforcement at the section with an effective cover of 50 mm, which are continued to the support. Design shear reinforcement using vertical stirrups without any bent-up bar to resist the shear. Assume grade of concrete and steel are M25 and Fe415 respectively.	10M	3	5
		OR			

Q.4(B)	Design a rectangular beam of size 350 x 750 mm which is acted upon by a factored twisting moment of 150 kN-m in combination with a factored bending moment of 210 kN-m and ultimate shear force of 110 kN. Use M30 grade concrete and Fe415 steel. Adopt effective cover of 50 mm.	10M	3	5
Q.5(A)	Design a reinforced concrete slab for room measuring 3 m x 4 m interior dimension. The slab is simply supported and is discontinuous on all four edges, with corners held down. The slab carries a super imposed load of 3 kN/m² inclusive of floor finishes. Use M20 mix grade and Fe 415 steel.	10M	4	5
	OR			
Q.5(B)	(i) Write are the different types of staircases? (ii) Write the design procedure for design of dog legged staircase	5M 5M	4	5
Q.6(A)	Design a circular column of diameter 400 mm subjected to working load of 1200 kN. Use M25 concrete and Fe 415 steel. The column has unsupported length of 3 m and is effectively held in position at both ends but not restrained against rotation. Use helical reinforcement as a lateral tie.	10M	5	5
	OR			
Q.6(B)	Design a square footing for an axially loaded column of size 250 mm × 250 mm carrying 500 KN load. Use M 20 concrete and Fe 415 steel. Safe bearing capacity of soil is 180 kN/m2. Sketch the details of reinforcement.	10M	5	5

***** END*****

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

Question Paper Code: 20CE402

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

CONSTRUCTION PLANNING AND MANAGEMENT

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

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.	How does the choice of technology and construction method impact the overall development of construction plans?	1M	1	1
	ii.	What are the key considerations in defining work tasks when creating a construction project plan?	1M	1	1
	iii.	Why is it essential for construction projects to have well-defined schedules?	1M	2	2
	iv	Explain the basic principles of bar charts in construction scheduling and how they visually represent project timelines.	1M	2	2
	v.	How can Database Management Systems enhance efficiency in construction project documentation and record-keeping?	1M	3	2
	vi	What role do spatial data management systems play in optimizing site layout and resource allocation in construction projects?	1M	3	1
	vii.	Why is ensuring quality and safety crucial in construction projects, and what are the primary concerns associated with these aspects?	1M	4	2
	viii.	How can construction organizations effectively organize and implement measures for maintaining both quality and safety standards on-site?	1M	4	2
	ix.	What are the different types of project information, and how does the nature of information vary across different stages of a project?	1M	5	1
	x.	Discuss the importance of accuracy in project information and how it influences decision-making and project outcomes.	1M	5	2
Q.2(A)		How does the strategic choice of technology and construction methods influence the overall planning and execution of construction projects?	10M	1	2
		OR			
Q.2(B)		Explore the process of defining work tasks in construction planning, emphasizing its role in project clarity and scope understanding.	10M	1	2
Q.3(A)		How does the effective management of construction schedules contribute to the overall success and efficiency of construction projects?	10M	2	2
		OR			
Q.3(B)		Explore the advantages and limitations of using bar charts as a tool for visualizing and communicating construction project timelines	10M	2	2
Q.4(A)		How has the integration of Information Technology transformed traditional construction processes, and what are the key benefits observed in the industry?	10M	3	2
		OR			
Q.4(B)		What role do Database Management Systems play in storing, managing, and analyzing vast amounts of construction project data, and how does this contribute to project success?	10M	3	1
Q.5(A)		How do quality and safety concerns impact the overall success and reputation of construction projects, and what strategies can be employed to address these concerns effectively?	10M	4	2

	OR			
Q.5(B)	Discuss the organizational structures and processes that construction companies can implement to ensure a comprehensive approach to quality and safety management.	10M	4	2
Q.6(A)	How does the variety of project information impact decision-making processes throughout the lifecycle of a construction project?	10M	5	2
	OR			
Q.6(B)	Discuss the critical role of accuracy in project information and its implications for project success and stakeholder satisfaction.	10M	5	2

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

Question Paper Code: 20HUM3M02

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MOOC: ETHICS IN ENGINEERING PRACTICE

(Civil Engineering)

Time: 3Hrs **Max Marks: 60**

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 the main goal of ethical reasoning in engineering?	1	1	1
	ii)	Which term refers to fairness in addressing moral problems in engineering?	1	1	1
	iii)	**True or False:** Engineers must prioritize safety and welfare of the public over loyalty to their employer.	1	2	2
	iv)	Which field involves ethics as a process similar to problem-solving or design?	1	2	2
	v)	What is intellectual property (IP)?	1	3	1
	vi)	Name one example of a workplace right for engineers.	1	3	1
	vii)	**True or False:** Copying software without a license is ethically permissible if it is for educational use only.	1	4	5
	viii)	What is meant by 'sustainable engineering practice'?	1	4	2
	ix)	Which professional responsibility is central to managing digital information ethically?	1	5	4
	x)	Who holds the final responsibility for the environmental impact of engineering projects?	1	5	2
2(A)		Define ethical reasoning. Explain its relevance to professional decision-making in engineering.	10	1	2
		OR			
2(B)		Discuss the concept of 'ethics as design'. How can engineers use design thinking to solve moral problems?	10	1	3
3(A)		Explain the central professional responsibilities of engineers with examples.	10	2	2
		OR			
3(B)		Describe a situation where an engineer faces a moral dilemma in the workplace. How should it be resolved ethically?	10	2	4
4(A)		What are the ethical implications of software piracy and digital information misuse?	10	3	5
		OR			
4(B)		Discuss the rights and responsibilities of engineers regarding intellectual property.	10	3	4
5(A)		Evaluate the ethical issues involved in protecting employee rights in the engineering workplace.	10	4	5
		OR			
5(B)		Explain the concept of whistleblowing in the context of workplace ethics. When is it justified?	10	4	2
6(A)		Analyze the environmental responsibilities of engineers. Suggest ways to integrate sustainability into engineering projects.	10	5	4
		OR			
6(B)		How can engineers balance professional obligations, public interest, and corporate goals when ethical conflicts arise?	10	5	5

END

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

Question Paper Code: 20EEE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

POWER SYSTEMS – I

(Electrical & Electronics Engineering)

Time: 3Hrs **Max Marks: 60**

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.		Questions	Marks	CO	BL
Q.1	i.	What do you understand by (i) base load and (ii) peak load of a power station?	1M	1	1
	ii.	Draw the schematic diagram of electrical power system network.	1M	1	2
	iii.	What is Proximity effect.	1M	2	2
	iv	What do you mean by transposition?	1M	2	1
	v.	Draw the phasor diagram of short transmission line.	1M	3	2
	vi	What is Ferranti effect?	1M	3	2
	vii.	Define string efficiency?	1M	4	1
	viii	What do you mean by radio interference?	1M	4	1
	ix.	What are the types of cables used in transmission line?	1M	5	1
	x.	List the name of various insulating materials?	1M	5	2
Q.2(A)	A generating station has the following daily load cycle:		10M	1	3

Time (hours)	0—6	6—10	10—12	12—16	16—20	20—24
Load (MW)	20	25	30	25	35	20

Draw the load curve and find
(i) maximum demand,
(ii) units generated per day,
(iii) average load,
(iv) load factor,

OR

Q.2(B)	Draw the schematic diagram of a nuclear power station and explain its operation.	10M	1	2
Q.3(A)	Derive an expression for the loop inductance of a single-phase line.	10M	2	3

OR

Q.3(B)	Deduce an expression for line to neutral capacitance for a 3-phase overhead transmission line when the conductors are (i) symmetrically placed (ii) unsymmetrically placed but transposed	10M	2	2
Q.4(A)	Show how regulation and transmission efficiency are determined for medium lines nominal π method, Illustrate your answer with suitable vector diagrams.	10M	3	2

OR

Q.4(B)	A single-phase 50 Hz generator supplies an inductive load of 5,000 kW at a power factor of 0.707 lagging by means of an overhead transmission line 20 km long. The line resistance and inductance are 0.0195 ohm and 0.63 mH per km. The voltage at the receiving-end is required to be kept constant at 10 kV. Find (a) the sending-end voltage and voltage regulation of the line; (b) the value of the capacitors to be placed in parallel with the load such that the regulation is reduced to 50% of that obtained in part (a).	10M	3	3

Q.5(A)	Explain the following terms with reference to corona and drive power loss formula. (i) Critical disruptive voltage (ii) Visual critical voltage (iii) Power loss due to corona	10M	4	2
	OR			
Q.5(B)	A transmission line has a span of 275 m between level supports. The conductor has an effective diameter of 1·96 cm and weighs 0·865 kg/m. Its ultimate strength is 8060 kg. If the conductor has ice coating of radial thickness 1·27 cm and is subjected to a wind pressure of 3·9 gm/cm2 of projected area, calculate sag for a safety factor of 2. Weight of 1 c.c. of ice is 0·91 gm.	10M	4	3
Q.6(A)	(i) Describe the general construction of an underground cable with a neat sketch.	5M	5	**2**
	(ii) Explain capacitance grading of cables with necessary diagram.	5M	5	2
	OR			
Q.6(B)	In a 66 kV lead-sheathed paper insulated cable with one intersheath, the insulating material has a permissible potential gradient of 40 kV/cm. Calculate the maximum overall diameter of the cable and the voltage at which the intersheath must be maintained. What is the economic conductor diameter and overall diameter of a similar cable with no intersheath?	10M	5	3

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

Question Paper Code: 20EEE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

POWER ELECTRONICS

(EEE)

Time: 3Hrs **Max Marks: 60**

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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	Define latching current.	1M	1	1
	ii.	List out the different turn-ON methods of SCR.	1M	1	1
	iii.	A 1-phase full bridge controlled rectifier feeding a pure resistive load is supplied from 230 V, 50 Hz. Find out the average output voltage of the rectifier.	1M	2	1
	iv	When the full bridge converter acts as an inverter?	1M	2	1
	v.	For a boost converter the typical values are D = 0.5, R = 10Ω, and f = 100 kHz, calculate the value of critical inductance.	1M	3	1
	vi	Define duty ratio of a DC-DC converter.	1M	3	2
	vii.	How are inverters classified?	1M	4	3
	viii.	What is pulse width modulation?	1M	4	1
	ix.	List some industrial applications of cycloconverter.	1M	5	1
	x.	In AC voltage controllers the a) variable ac with fixed frequency is obtained b) variable ac with variable frequency is obtained c) variable dc with fixed frequency is obtained d) variable dc with variable frequency is obtained	1M	5	1
Q.2(A)		A bipolar transistor has current gain β =50. The load resistance R_C = 10 Ω, dc supply voltage V_{CC} = 120 V and input voltage to base circuit, V_B =10 V. For V_{CES} =1.2 V and V_{BES} = 1.6 V, calculate. a) the value of R_B for operation in the saturated state b) the value of R_B for an over drive factor 6 c) forced- current gain and d) power loss in the transistor for both parts (a) and (b).	10M	1	3
		OR			
Q.2(B)		Define commutation? Classify various methods to commutate a SCR. Explain any three methods of commutation with relevant sketches.	10M	1	3
Q.3(A)		A single phase fully controlled thyristor bridge converter supplies a load consisting of R, L and VC. The inductance L in the circuit is so large that the output current may be considered to be virtually constant. Assume the SCR to be ideal with following data: RMS supply voltage = 220 V, load resistance = 0.5 W, output current idc = 10 A. Determine: (a) Firing angle α if VC = 135 V (b) α if VC = -145 (c) Which source (ac or dc) is supplying power in (a) and (b).	10M	2	2
		OR			

Q.3(B)	Describe the working of single phase dual converter in circulating and non circulating mode.	10M	2	3
Q.4(A)	What is the name of the DC-DC converter whose voltage gain ratio is $\frac{V_0}{V_S} = D$. Here, Vo is the average output voltage, V_S is the input voltage and D is the duty ratio of the converter. Describe the working of the converter with its appropriate waveforms in CCM and DCM.	10M	3	3
	OR			
Q.4(B)	Describe the working principle of Boost converter with relevant waveforms in CCM and DCM. Also, derive an expression for the output voltage in terms of input voltage and duty cycle.	10M	3	3
Q.5(A)	With the help of neat circuit diagram and associated waveforms, explain the operation of the single-phase full bridge inverter with R load. Also write the appropriate expressions.	10M	4	3
	OR			
Q.5(B)	Explain the principle of operation of the single-phase full bridge inverter with RL load along with suitable waveforms. Also write the appropriate expressions.	10M	4	3
Q.6(A)	Describe the basic principle of working of a single-phase to single-phase cycloconverter with resistive load in (a) Centre-tapped transformer configuration (b) Bridge configuration.	10M	5	3
	OR			
Q.6(B)	Describe the basic principle of working of a three-phase to three-phase cycloconverter along with the help of schematic diagram and basic circuit.	10M	5	

*** END***

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

Question Paper Code: 20EEE111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MICRO-CONTROLLERS AND INTERFACING

(Electrical & Electronics Engineering)

Time: 3Hrs **Max Marks: 60**

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.	What are the different kinds of control signals that are available in 8085 microprocessor?	1M	1	1
	ii.	What is the difference between embedded system and a micro-controller?	1M	1	2
	iii.	What is the function of the bits PSW.4 and PSW.3?	1M	2	2
	iv.	What is the reason for writing '1' to the port before the read operation?	1M	2	2
	v.	Explain the DA instruction.	1M	3	1
	vi	what is the purpose of the assembler?	1M	3	1
	vii.	With a step size of 19.53mV, what is the analog input voltage if all outputs are1?	1M	4	2
	viii	calculate the time delay the timer generates when TH0=EA, TL0=BA.	1M	4	2
	ix.	What is the role of SBUF in serial data transfer?	1M	5	2
	x.	What is the purpose of the optoisolator?	1M	5	1
Q.2(A)		Outline the pin diagram of 8085 and describe the function of each pin.	10M	1	2
		OR			
Q.2(B)		Identify and explain the key characteristics that distinguish embedded systems from general-purpose micro-controller.	10M	1	3
Q.3(A)		How is internal memory organized in the 8051 microcontrollers, and how do internal and external memory differ in structure and usage?	10M	2	3
		OR			
Q.3(B)		i. Explain the significance of each bit in a PSW register. How will the flag bits of the PSW register be affected after the addition of 69 and FA?	5M	2	3
		ii. Explain the bus structure of the 8051 microcontroller and discuss the role of buses in data transfer and communication within the microcontroller.	5M	2	2
Q.4(A)		What are the logical instructions in the 8051 microcontroller's instruction set, and provide examples for each.	10M	3	2
		OR			
Q.4(B)		Write an ALP and flow chart for the rotate right, rotate left operation with carry for 3 times on B9H.	10M	3	3
Q.5(A)		Explain the architecture of the 8255 PPI. Discuss its functional blocks it is used for interfacing with external devices	10M	4	3
		OR			
Q.5(B)		Explain the process of interfacing ROM with 8051. Design a micro-controller system to interface the external RAM of size 32K×8.	10M	4	4
Q.6(A)		What are the key peripherals of the PIC microcontroller? Explain their functions and how they are used to interface with external devices.	10M	5	3
		OR			
Q.6(B)		How can the 8051 microcontroller be used to receive character bytes serially? Explain with an ALP.	10M	5	3

***** END*****

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

Question Paper Code: 20EEE403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

SPECIAL ELECTRICAL MACHINES

(Electrical & Electronics Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Write the application of servomechanism.	1M	1	1
	ii.	State the working principle of stepper motor.	1M	1	1
	iii.	Classify the variable reluctance stepping motors	1M	2	1
	iv	What is multistack variable reluctance stepper motor?	1M	2	1
	v.	Compare the SRM and VR stepper motor.	1M	3	1
	vi	List the types of SRM.	1M	3	1
	vii.	What are the advantages dc brushless dc motor drives?	1M	4	1
	viii	What are the two types of rotor position sensors?	1M	4	1
	ix.	What is permanent magnet synchronous motor?	1M	5	1
	x.	Draw the diagram for Claw pole.	1M	5	1
Q.2(A)		Explain the construction and working principle of Variable reluctance stepper motor.	10 M	1	3
		OR			
Q.2(B)		Discuss the different configurations for switching the phase windings of stepper motor with neat sketch.	10M	1	3
Q.3(A)		Explain the closed loop operation of VR stepper and discuss the characterizes of VR stepper motor.	10 M	2	3
		OR			
Q.3(B)		Draw the block diagram of driver system for stepper motor and discuss the methods of suppressing circuits used to protect the transistor.	10M	2	3
Q.4(A)		Derive the torque equation of switched reluctance motor.	10M	3	3
		OR			
Q.4(B)		Explain the sensor less operation of SRM with neat sketch.	10M	3	3
Q.5(A)		Explain the operation of 180* magnetic arc BLDC motor with 120-degree square wave phase current with neat sketch.	10M	4	3
		OR			
Q.5(B)		Derive the EMF Equation of PM brushless DC motor.	10M	4	3
Q.6(A)		Explain the construction and operation of PMSM with neat sketch.	10M	5	3
		OR			
Q.6(B)		Explain the power controller for PMSM with rotor position sensor used in PMSM.	10M	5	3

***** END*****

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

Question Paper Code: 20IE3M05

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MOOC: RESEARCH METHODOLOGY

(Electrical & Electronics Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Define research.	1M	1	2
	ii.	Mention two characteristics of a researcher.	1M	1	1
	iii.	What is a primary source of literature?	1M	2	1
	iv.	Name two tools used for managing references in research.	1M	2	1
	v.	What is empirical modelling?	1M	3	2
	vi	Define hypothesis testing.	1M	3	1
	vii.	What is Sternberg's theory of creativity?	1M	4	2
	viii	Define research ethics.	1M	4	1
	ix.	What is the Trademark registration?	1M	5	1
	x.	What is probability density function	1M	5	2
Q.2(A)		Discuss the steps involved in the research process with examples.	10M	1	4
		OR			
Q.2(B)		Explain the role of a guide/advisor and a student in the research process.	10M	1	3
Q.3(A)		Elaborate on the strategies for conducting a literature survey and their importance in research.	10M	2	2
		OR			
Q.3(B)		Describe how to perform a literature survey using Scopus and Web of Science.	10M	2	4
Q.4(A)		Discuss the systematic procedure for building models from data, highlighting critical aspects.	10M	3	3
		OR			
Q.4(B)		Explain different types of data analysis with suitable examples.	10M	3	3
Q.5(A)		Explain the traits of a creative engineer and strategies to improve crea	10M	4	3
		OR			
Q.5(B)		Discuss the ethical dimensions of research and the evolution of modern research ethics with examples.	10M	4	2
Q.6(A)		Explain the importance of Analysis of Variance (ANOVA) in experiments with examples.	10M	5	2
		OR			
Q.6(B)		State the difference between IP & IPR in detail	10M	5	3

***** END*****

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

Question Paper Code: 20ME109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

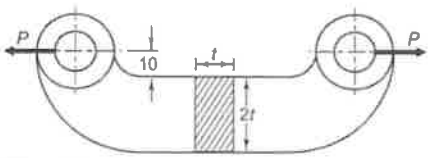
B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

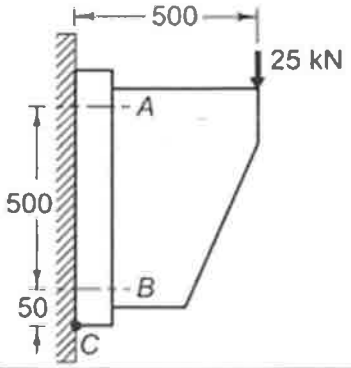
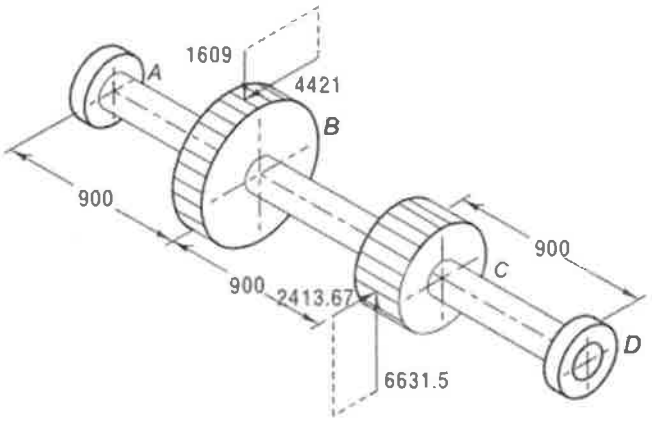
DESIGN OF MACHINE ELEMENTS

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Define Design? And list the different types of design	1M	1	1
	ii.	What are the basic requirements of the machine elements?	1M	1	2
	iii.	Write the expressions for maximum and minimum principal stresses given the 3 components of stresses: σ_x, σ_y, & τ_{xy}.	1M	2	2
	iv	State the difference between static and dynamic loading.	1M	2	2
	v.	What are the applications of knuckle joint.	1M	3	2
	vi	Draw a simple diagram of a hexagonal nut.	1M	3	2
	vii.	Write the Basic Strength equation of double transverse fillet weld.	1M	4	2
	viii.	Define shaft?	1M	4	2
	ix.	What are the two different criteria to design the tooth of spur gears.	1M	5	2
	x.	What is spring index?	1M	5	2
Q.2(A)		Write a brief note on different phases of design of machine elements with flow chart	10M	1	3
		OR			
Q.2(B)		An offset link subjected to a force of 25 kN is shown in Figure below. It is made of grey cast iron FG300 and the factor of safety is 3. Determine the dimensions of the cross-section of the link. 	10M	1	4
Q.3(A)		A mild steel shaft of 50 mm diameter is subjected to a bending moment of 2×10^6 N mm and a torque T. If the yield point of the steel in tension is 200 MPa, find the maximum value of this torque without causing yielding of the shaft according to: (i) Maximum principal stress theory; (ii) Maximum shear stress; and (iii) Maximum distortion energy (Von Mises) theory.	10M	2	4
		OR			
Q.3(B)		A machine component is subjected to fluctuating stress that varies from 40 to 100 N/mm^2. The corrected endurance limit stress for the machine component is 270 N/mm^2. The ultimate tensile strength and yield strength of the material are 600 and 450 N/mm^2 respectively. Find the factor of safety using (i) Gerber theory (ii) Soderberg line (iii) Goodman line. Also, find the factor of safety against static failure.	10M	2	4
Q.4(A)		It is required to design a knuckle joint to connect two circular rods subjected to an axial tensile force of 50 kN. The rods are co-axial and a small amount of angular movement between their axes is permissible. Design the joint and specify the dimensions of its components. Take Yield strength as 400 N/mm^2 and factor of safety as 5. Draw the front sectional view and top views of the joint with the designed dimensions.	10M	3	3
		OR			

Q.4(B)	A wall bracket is attached to the wall by means of four identical bolts, two at A and two at B, as shown in Figure. Assuming that the bracket is held against the wall and prevented from tipping about the point C by all four bolts and using an allowable tensile stress in the bolts as 35 N/mm^2, determine the size of the bolts on the basis of maximum principal stress theory. 	10M	3	4
Q.5(A)	(a) What is a welded joint? List few applications of welded joints. (b) Explain the difference between fillet weld and butt weld joints with sketches.	5 M 5 M	4 4	3
	OR			
Q.5(B)	The layout of an intermediate shaft of a gear box supporting two spur gears B and C is shown in Figure. The shaft is mounted on two bearings A and D. The pitch circle diameters of gears B and C are 900 and 600 mm respectively. The material of the shaft is steel FeE 580 (S_{ut} = 770 and S_{yt} = 580 N/mm^2).  The factors k_b and k_t of ASME code are 1.5 and 2.0 respectively. Determine the shaft diameter using the ASME code. Assume that the gears are connected to the shaft by means of keys.	10M	4	4
Q.6(A)	It is required to design a helical compression spring subjected to a maximum force of 1250 N. The deflection of the spring corresponding to the maximum force should be approximately 30mm. The spring index can be taken as 6. The spring is made of patented and cold-drawn steel wire. The ultimate tensile strength and modulus of rigidity of the spring material are 1090 and 81 370 N/mm^2 respectively. The permissible shear stress for the spring wire should be taken as 50% of the ultimate tensile strength. Design the spring and calculate: (i) wire diameter; (ii) mean coil diameter; (iii) number of active coils; (iv) total number of coils; (v) free length of the spring.	10M	5	4
	OR			
Q.6(B)	It is required to design a pair of spur gears with 20° full-depth involute teeth based on the Lewis equation. The velocity factor is to be used to account for dynamic load. The pinion shaft is connected to a 10 kW, 1440 rpm motor. The starting torque of the motor is 150% of the rated torque. The speed reduction is 4:1. The pinion as well as the gear is made of plain carbon steel 40C8 (S_{ut} = 600 N/mm^2). The factor of safety can be taken as 1.5. Design the gears, specify their dimensions and suggest suitable surface hardness for the gears.	10M	5	4

***** END*****

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

Question Paper Code: 20ME110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MANUFACTURING TECHNOLOGY - II

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Write the expression for Taylor's tool life equation.	1M	1	1
	ii.	What do you mean tool wear?	1M	1	2
	iii.	How will you adjust the "Stroke length" of a shaper?	1M	2	2
	iv	What are the abrasives used in grinding wheel?	1M	2	1
	v.	Why unconventional methods of machining are needed?	1M	3	2
	vi	Name some of the tool material used in EDM.	1M	3	1
	vii.	List out economic considerations in machining	1M	4	1
	viii	Write on the some of the programming languages used for NC machine tools.	1M	4	1
	ix.	What is the basic instrument in metrology?	1M	5	1
	x.	Why it is necessary to give a tolerance on an engineering dimension?	1M	5	2
Q.2(A)		Draw the merchant circle diagram and derive the expressions to show the relationships among the different forces acting on the cutting tool during metal cutting process.	10M	1	3
		OR			
Q.2(B)		The following equation for tool life is given for a turning operation, $VT^{0.13} f^{0.77} d^{0.37} = C$, A 70-minute tool life was obtained while cutting at V = 35 m/min, f = 0.3 mm/rev and d = 2 mm. Determine the change in tool life, if the cutting speed, feed and depth of cut are increased by 20 % individually and also taken together.	10M	1	3
Q.3(A)		What factors govern the classification of lathes? Describe in brief the various types of lathes you know.	10M	2	2
		OR			
Q.3(B)		How do you classify cylindrical grinders? What is the difference "Plain" & "Universal" cylindrical grinders?	10M	2	1
Q.4(A)		Discuss in detail about the AJM process variables that influence the rate material removal and accuracy in the machining.	10M	3	2
		OR			
Q.4(B)		What are the specific advantages of using chemical machining over electro chemical machining? Give some of the practical applications of chemical machining process.	10M	3	1
Q.5(A)		Derive the expression to determine the cost of single turning operation.	10M	4	3
		OR			
Q.5(B)		List the main components of a NC machine tool and explain their functions.	10M	4	2
Q.6(A)		Sketch a micrometer and explain its working.	10M	5	1
		OR			
Q.6(B)		With a neat diagram explain different types of fit.	10M	5	2

***** END*****

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

Question Paper Code: 20ME11↑

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

HEAT TRANSFER

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

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.	What is critical radius of insulation	1M	1	1
	ii.	State Nusselt Number	1M	1	1
	iii.	Why do we wear woollen clothes in winter	1M	2	2
	iv.	What is mean by overall heat transfer coefficient	1M	2	
	v.	Analyze and find the effectiveness-NTU equation of a parallel flow heat exchanger when the heat capacity rates of hot and cold fluid are same.	1M	3	2
	vi	Why counter flow heat exchanger is preferred over parallel flow heat exchanger with same heat transfer rate,	1M	3	2
	vii.	surface with a temperature of 500K is exposed to irradiation of 400W/m^2. The emissivity and reflectivity of the surface are 0.5 and 0.2, respectively. Evaluate the radiosity of the surface per unit area.	1M	4	2
	viii.	A person prefers to sit by a fire during the cold winter months. Which mode of heat transfer gives him with the most heat?	1M	4	2
	ix.	Difference between mass transport and mass transfer?	1M	5	2
	x.	In the analogy between heat and mass transfer, what is a mechanism of heat transfer that does not have an analogous counterpart in mass transfer, and why?	1M	5	3
Q.2(A)		What do you mean by critical thickness of insulation? State its importance. Derive an expression for critical radius of insulation for sphere of thermal conductivity k and outside heat transfer coefficient of h.	10M	1	3
		OR			
Q.2(B)		A long carbon steel fin of length 40 cm and diameter 10 mm (k = 40 W/mK) is attached to wall which is maintained at fixed temperature of 200°C. The fin is exposed to the surrounding temperature of 30°C. The heat transfer co-efficient is 10 W/m^{2}K. Determine (i) Temperature at the end of the fin. (ii) Heat transfer rate from the fin (iii) Fin efficiency	10M	1	4
Q.3(A)		Water flows through a circular pipe with a diameter of 0.05 m and a length of 6 m at a velocity of 0.8 m/s. The pipe wall is maintained at a constant temperature of 90°C, and the water enters the pipe at a temperature of 25°C. Find the exit temperature of the water and rate of heat transfer. For laminar flow with constant surface temperature: Nu= 4.36 (Re < 2300) For turbulent flow (Re>2300): $Nu=0.023\ Re^{0.8}Pr^{0.33}$ Assume following properties of water at the mean temperature: Thermal conductivity, k=0.026 W/mK, dynamic viscosity, $\nu = 1.8\times10^{-5}$ m^2/s Specific heat, Cp=4.18 KJ/kgK	10M	2	4
		OR			
Q.3(B)		Oil flows steadily through a horizontal pipe with an inner diameter of 0.08 m and a length of 6 m. The pipe surface is maintained at a constant temperature of 150°C. The oil enters the pipe at a mean	10M	2	3

temperature of of 30°C and a mass flow rate of 0.3kg/s. The properties of oil are as follows: Density:ρ =850 kg/m^3, Specific heat capacity: C_p=2100 J/kgK, Thermal conductivity: k=0.13 W/mK, Dynamic viscosity: μ=0.02 Pa s.

Use the following equation to calculate the heat transfer coefficient $Nu = 0.03\,\mathrm{Re}^{0.8}\,\mathrm{Pr}^{0.4}$. Find the rate of heat transfer

Q.4(A)	A counter-flow double-pipe heat exchanger is to heat water from 20°C to 80°C at a rate of 1.2 kg/s. The heating is to be accomplished by hot water available at 160°C at a mass flow rate of 2 kg/s. The inner tube is thin-walled and has a diameter of 1.5 cm. If the overall heat transfer coefficient of the heat exchanger is 640 W/m^2°C, determine the length of the heat exchanger required to achieve the desired heating. If the heat exchanger is parallel flow heat exchanger, what will be the desired length of the heat exchanger?	10M	3	4
	OR			
Q.4(B)	Analyze the heat transfer process in a double pipe counter flow heat exchanger and derive the following effectiveness-NTU equation $$\epsilon = \frac{1-\exp[-\mathrm{NTU}(1-\mathrm{C})]}{1-\mathrm{C}\exp[-\mathrm{NTU}(1-\mathrm{C})]}$$ Where **NTU** is number of transfer units and **C** is the ratio of minimum and maximum heat capacity rates.	10M	3	4
Q.5(A)	Evaluate the radiation heat transfer between two large parallel pl shield. Assume the emissivity and surface area of the two plates shields are equal.	10M	4	
	OR			
Q.5(B)	A thin aluminum sheet with an emissivity of 0.1 on both sides is placed between two very large parallel plates that are maintained at uniform temperatures of 800 K and 500 K and have emissivities 0.2 and 0.7, respectively. Evaluate the net rate of radiation heat transfer between the two plates per unit surface area of the plates and compare the result to that without the shield.	10M	4	4
Q.6(A)	Determine the diffusion rate of water from the bottom of a test tube of 25mm diameter and 35mm long into dry air at 25°C. Take diffusion co-efficient of water in air is 0.28×10^{-4} m^2/s.	10M	5	3
	OR			
Q.6(B)	A vessel contains a binary mixture of O_2 and N_2 with partial pressures in the ratio 0.21 and 0.79 at 20°C. If the total pressure of the mixture is 1.1 bar, calculate the following. (i)Molar concentrations, (ii) Mass densities, (iii) Mass fractions, and (iv) Molar fractions of each species.	10M	5	3

***** END*****

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

Question Paper Code: 20ME406

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

FUNDAMENTALS OF AUTOMOTIVE ENGINEERING

(Mechanical Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Define VVT.	1M	1	1
	ii.	What is the function of spark plug in automobiles?	1M	1	1
	iii.	Name few materials used in making of catalytic converters.	1M	2	2
	iv	What are emission norms?	1M	2	1
	v.	Name different type of shafts used in gear box.	1M	3	2
	vi	What is the primary function of steering in automobile?	1M	3	1
	vii.	What is Caster angle?	1M	4	1
	viii	What is the main function of propeller shaft?	1M	4	1
	ix.	Name two various forms of natural gas.	1M	5	2
	x.	What is the benefit of bio-ethanol?	1M	5	1
Q.2(A)		Draw the layout of an automobile and explain the various components.	10M	1	2
		OR			
Q.2(B)		Explain difference between two stroke and four stroke engines.	10M	1	2
Q.3(A)		Illustrate the working principle of WGT and VGT.	10M	2	2
		OR			
Q.3(B)		What is three-way catalytic converter? Explain its working principle with appropriate sketch.	10M	2	2
Q.4(A)		Explain the function of propeller shaft with neat sketch.	10M	3	2
		OR			
Q.4(B)		State the function of differential unit. Explain the function of differential unit	10M	3	2
Q.5(A)		Explain hydraulic brake system with neat sketch. Describe types of front axle of an automobile.	10M	4	2
		OR			
Q.5(B)		How do wheels and axle work? Describe the types of axles.	10M	4	2
Q.6(A)		What is Natural Gas? Explain the use of liquefied petroleum gas and discuss its applications.	10M	5	2
		OR			
Q.6(B)		Discuss the alternative source of energy sources. Explain briefly about engine modification required in automobiles.	10M	5	2

*** END***

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

Question Paper Code: 20ECE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

ELECTROMAGNETIC FIELDS AND TRANSMISSION LINES

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	Write the two Maxwell's Equations for Electrostatic filed.	1M	1	1
	ii.	Define the relaxation Time.	1M	1	1
	iii.	For the current density $J=10z\sin^2\phi a_r$ A/m² .Find the current through the cylindrical surface of $r=2, 1\leq z\leq 5$ m.	1M	2	2
	iv	State Ampere's Circuit Law.	1M	2	1
	v.	Write the expression of velocity of EM wave in the medium.	1M	3	1
	vi	Define linear polarization?	1M	3	1
	vii.	Define loading.	1M	4	1
	viii.	At which condition a transmission line is called a distortion-less line?	1M	4	2
	ix.	What is difference between single and double stub?	1M	5	1
	x.	Why S- parameter is used in transmission line.	1M	5	1
Q.2(A)		Derive the expression for Electric field intensity due to infinite charge sheet, where surface charge density is ρ_sC/m², with suitable sketches.	10M	1	3
		OR			
Q.2(B)		Obtain Maxwell's equation from Gauss Law and explain it.	10M	1	3
Q.3(A)		What is magnetic material? Write the types of magnetic material, give suitable example. Draw and explain the BH magnetic curve for Ferromagnetic material.	10M	2	3
		OR			
Q.3(B)		Compare the concepts of scalar and vector magnetic potentials.	10M	2	3
Q.4(A)		Derive attenuation constant, phase constant, intrinsic impedance and velocity of propagation in case of good conductors.	10M	3	3
		OR			
Q.4(B)		In a medium, $E = 20e^{-0.08x}\sin(5\times10^8 t - 5x)\hat{a}_z(V/m)$. Calculate (i) the propagation constant, (ii) the wavelength, (iii) the speed of the wave, and (iv) the skin depth.	10M	3	4
Q.5(A)		Evaluate the Transmission line Equation in terms of Receiving voltages and currents?	10M	4	3
		OR			
Q.5(B)		What is the input impedance of the transmission line? Write the expression of lossless input impedance of the transmission line, and then find the input impedance for transmission line for short and open circuit.	10M	4	3
Q.6(A)		Write short notes on: (i) Z-parameters, and (ii) S-parameters.	10M	5	3
		OR			
Q.6(B)		Find the length and position of stub for the case of parallel single stub matching with normalized load impedance Z_L= (0.3+j 0.5) Ω using smith chart.	10M	5	4

***** END*****

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

Question Paper Code: 20ECE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

ANALOG COMMUNICATION

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	Write the expressions for mean and variance of a random variable.	1M	1	1
	ii.	What is the Central Limit Theorem?	1M	1	1
	iii.	Define noise Factor	1M	2	1
	iv	Compare the various AM modulations in terms of bandwidth.	1M	2	1
	v.	What is the need for Pre-emphasis and De-emphasis.	1M	3	1
	vi	Define modulation index of FM	1M	3	1
	vii.	How aliasing effect can be eliminated?	1M	4	1
	viii.	What are advantages of pulse modulation?	1M	4	1
	ix.	Define entropy of an information	1M	5	1
	x.	What is the need for source coding?	1M	5	1
Q.2(A)		Discuss the properties of autocorrelation and cross correlation.	10M	1	2
		OR			
Q.2(B)		Explain the concept of stationary random process.	10M	1	2
Q.3(A)		A Superheterodyne receiver is tuned to fs =555 kHz. Its local oscillator frequency is 1010 kHz. Calculate the IRR when the antenna of this receiver is connected to a mixer through a tuned circuit whose quality factor is 50.	10M	2	3
		OR			
Q.3(B)		Discuss the noise performance of Conventional AM receiver system with suitable diagram.	10M	2	3
Q.4(A)		A carrier wave of frequency 100 MHz is frequency modulated by a sinusoidal wave of amplitude 20V and frequency 100 kHz. The frequency sensitivity of the modulator is 25 kHz/V. i) Determine the approximate bandwidth of the FM wave using Carson's rule. Analyze the impact of doubling the modulating signal amplitude on the bandwidth of the modulated signal.	10M	3	4
		OR			
Q.4(B)		Explain about Frequency Division Multiplexing (FDM) with suitable block diagram.	10M	3	2
Q.5(A)		Twenty-four voice signals are sampled uniformly and then time division multiplexer PAM/TDM. The highest frequency of each voice signal is 3.4 KHz and sampling rate of f_s = 8kHz. (i) Calculate the transmission bandwidth of TDM channel. (ii) Calculate the sampling interval. (iii) Calculate the time allotted to each channel. (iv) Calculate the pulse rate (signaling rate).	10M	4	3
		OR			

Q.5(B)	With suitable diagram and sketches, explain the modulation and demodulation of PCM signal.	10M	4	. 3
Q.6(A)	i) Explain about information rate and entropy of a signal ii) A scanner converts a black and white document, line-by-line into binary data for transmission. The scanner produces source data comprising symbols representing runs up to six similar image pixel elements with their probability of occurrence as shown below.	10M	5	3

Number of consecutive pixels	1	2	3	4	5	6
Probability of occurrence	0.30	0.10	0.02	0.15	0.40	0.03

Calculate the information rate of the scanner.

OR

Q.6(B) Consider a (6,3) linear block code defined by the generator matrix 10M 5 3

$$\vec{G} = \begin{bmatrix} 1 & 0 & 0 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 0 & 1 \end{bmatrix}$$

(i) Find the parity check matrix, H, of the code in systematic form.
(ii) Find the encoding table for the linear block code.
(iii) What is the minimum distance of the code? How many errors can be detected and corrected.

***** END*****

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

Question Paper Code: 20ECE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

DIGITAL SIGNAL PROCESSING

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	Distinguish between DFT and DTFT.	1M	1	
	ii.	What are the similarities between DIF-FFT and DIT-FFT algorithms.	1M	1	1
	iii.	Write the properties of Chebyshev filter.	1M	2	1
	iv	Why IIR filter is said to be recursive in nature?	1M	2	1
	v.	Distinguish between FIR and IIR Filters.	1M	3	
	vi	What are the desirable characteristics of window.	1M	3	1
	vii.	List two addressing modes used in the TMS320C6713 DSP processor.	1M	4	1
	viii.	What is the role of pipelining in the TMS320C6713 processor?"	1M	4	1
	ix.	What is multirate signal processing.	1M	5	1
	x.	What is the use of anti-imaging filter after up sampling a signal.	1M	5	1
Q.2(A)		Find the output y(n) whose impulse response is h(n)={1,2,} and input signal x(n)={1,2,-1,2,3,-2,-3,-1,1,1,2,-1} by i) Overlap-add method ii) Overlap –save method.	10M	1	3
		OR			
Q.2(B)		Find the 8-point DFT of the real sequence x(n) = {1,1,1,1,1,1,1,1 }using DIF –FFT algorithm.	10M	1	3
Q.3(A)		For the given specifications design an analog Chebyshev filter transfer function that satisfies the constraint. $1/\sqrt{2} \le \lvert H(j\Omega)\rvert \le 1$ for $0 \le \Omega \le 2$ $\lvert H(j\Omega)\rvert \le 0.1$ for $\Omega \ge 4$	10M	2	6
		OR			
Q.3(B)		Obtain Direct form I, Direct form II and cascade realization of the following system function. $y(n) = 0.1y(n-1) + 0.2y(n-2) + 3x(n) + 3.6x(n-1) + 0.6x(n-2)$	10M	2	3
Q.4(A)		Design an ideal high pass filter with frequency response $H(e^{j\omega}) = 1$ for $\pi/4 \le \lvert\omega\rvert \le \pi$ $= 0$ for $\lvert\omega\rvert \le \pi/4$ Given N=11, plot the magnitude response using Hanning Window	10M	3	6
		OR			
Q.4(B)		Determine the lattice form realization of the system $H(z) = 1+2Z^{-1}+3Z^{-2}+4Z^{-3}+5Z^{-4}$	10M	3	4
Q.5(A)		Analyze the architecture of the TMS320C6713 DSP processor. Discuss ho pipelining and addressing modes (linear and circular) optimize its performance in signal processing applications.	10M	4	3
		OR			
Q.5(B)		(i) Explain the VLIW architecture of the DSP processor. (ii) Discuss IEEE single precision and double precision format.	10M	4	2
Q.6(A)		Discuss the Filter Design and Implementation for Sampling rate conversion.	10M	5	2
		OR			
Q.6(B)		Write in brief about applications of multi-rate signal processing.	10M	5	1

***** END*****

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

Question Paper Code: 20ECE403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

BIO-MEDICAL ELECTRONICS

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	State the Physiological Parameters for measurement of Human Body	1M	1	1
	ii.	Recite about the Principle of Accelerator	1M	1	1
	iii.	List out the Bipolar Leads used in ECG.	1M	2	1
	iv	Draw the PQRS waveform pointing all Intervals.	1M	2	1
	v.	Write the mathematical expression of Cardiac Output.	1M	3	1
	vi	Define Packed Cell Volume.	1M	3	1
	vii.	List the basic subsystems used in typical NMR System.	1M	4	1
	viii.	Recite about Plethysmography	1M	4	1
	ix.	Mention the two types of dialysis.	1M	5	1
	x.	Define Fibrillation	1M	5	1
Q.2(A)		Explicate the structure and function of the Central Nervous System (CNS) elaborating on its various components and their respective roles in facilitating neural activity and integration.	10M	1	2
		OR			
Q.2(B)		Illustrate the explanation with comprehensive diagrams of Linear Variable Differential Transformers (LVDTs) in displacement measurement.	10M	1	2
Q.3(A)		Conduct an in-depth exploration of bio-potential electrodes in physiological signal acquisition in biomedical engineering and clinical diagnostics.	10M	2	2
		OR			
Q.3(B)		Categorize in detail about the diagnostic medicine technique for interpreting and recording the electrical activity produced by skeletal muscles with characteristics and Recording methods with diagram.	10M	2	2
Q.4(A)		Demonstrate the technique utilized in Blood Pressure measurements that provide potential complications, and the physiological principles that underpin the accuracy of the measurements.	10M	3	4
		OR			
Q.4(B)		Summarize the different types of methods for Measurement of Blood flow with necessary diagrams.	10M	3	4
Q.5(A)		Elucidate components and their interactions in the imaging with X-ray machine incudes a well labeled block diagram.	10M	4	2
		OR			
Q.5(B)		Discuss about the principle of Medical Imaging technique which is used to locate bone fractures in detail.	10M	4	2
Q.6(A)		Analyze the functioning of a Ventricular Synchronous Demand Pacemaker, detailing its design, operational mechanisms, and feedback systems.	10M	5	4
		OR			
Q.6(B)		Incorporate relevant medical devices to highlight potential hazards and the implications of neglecting safety measures.	10M	5	4

***** END*****

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

Question Paper Code: 20ECE404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

ADVANCED DIGITAL SYSTEM DESIGN USING VERILOG HDL

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	What is FSM?	1M	1	1
	ii.	What is Combinational logic Circuit?	1M	1	1
	iii.	Distinguish between task and Function.	1M	2	1
	iv	Recall Continuous Assignment Statements?	1M	2	1
	v.	Differentiate between FPGA and ASIC?	1M	3	1
	vi	What is resource sharing?	1M	3	1
	vii.	What is the role of I/O pads in FPGAs?	1M	4	1
	viii.	What is Anti-Fuse Technology?	1M	4	1
	ix.	List out the types of routing?	1M	5	1
	x.	Define global routing?	1M	5	1
Q.2(A)		Explain about SR and D Flip Flops	10M	1	2
		OR			
Q.2(B)		Design 16x1 MUX using 4x1 mux with its truth table and logic diagram	10M	1	3
Q.3(A)		Design the Verilog code for 4-bit RCA using structural flow.	10M	2	3
		OR			
Q.3(B)		Explain about Lexical conventions in Verilog HDL.	10M	2	2
Q.4(A)		Analyze the architecture of FPGA with neat sketches.	10M	3	3
		OR			
Q.4(B)		Analyze the CLB Architecture of Xilinx 7 Series FPGA.	10M	3	3
Q.5(A)		Summarize the anti-fuse programming technology with neat sketches	10M	4	2
		OR			
Q.5(B)		Outline about fine grain and coarse grain logic blocks with an example.	10M	4	2
Q.6(A)		Summarize about FPGA design flow and distinguish between traditional ASIC or microcontroller design flows?	10M	5	2
		OR			
Q.6(B)		Explain about primary tools and methodologies used for debugging FPGA designs.	10M	5	2

***** END*****

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

Question Paper Code: 20ECE405

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R20) Supplementary End Semester Examinations – June 2025

EMBEDDED SYSTEMS

(ECE)

Time: 3Hrs **Max Marks: 60**

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.	What is an Embedded System?	1M	1	1
	ii.	Name two examples of embedded systems.	1M	1	1
	iii.	What is the difference between task and thread in RTOS?	1M	2	2
	iv.	Define Semaphore.	1M	2	1
	v.	What is the role of the microcontroller in an embedded system?	1M	3	1
	vi.	Discuss the different types of RTOS.	1M	3	1
	vii.	Explain the importance of memory architecture in embedded systems.	1M	4	1
	viii.	What are the key features of ARM-based systems in embedded applications?	1M	4	1
	ix.	What is Co-Synthesis in embedded systems design?	1M	5	1
	x.	Explain hardware/software partitioning with respect to embedded systems.	1M	5	2
Q.2(A)		Discuss the process of embedded system design and its importance in modern electronics.	10M	1	2
		OR			
Q.2(B)		Explain the different embedded processors and their applications.	10M	1	2
Q.3(A)		Describe the different types of Operating Systems used in embedded systems, highlighting their advantages and disadvantages.	10M	2	2
		OR			
Q.3(B)		What are the key tasks in a Real-Time Operating System (RTOS)? Explain with examples.	10M	2	2
Q.4(A)		Explain task communication techniques such as shared memory and message passing. Provide examples for each.	10M	3	3
		OR			
Q.4(B)		How does task synchronization work in embedded systems? Explain with examples of synchronization techniques.	10M	3	3
Q.5(A)		Discuss the ARM system control coprocessor and its role in embedded appli	10M	4	4
		OR			
Q.5(B)		Describe the architecture and features of the ARM MMU. How does it enhance embedded system performance?	10M	4	4
Q.6(A)		Explain Co-Synthesis and its role in embedded systems design. Provide examples of its application.	10M	5	2
		OR			
Q.6(B)		What are the key differences between single-processor and multi-processor embedded systems?	10M	5	2

***** END*****

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

Question Paper Code: 20CSE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

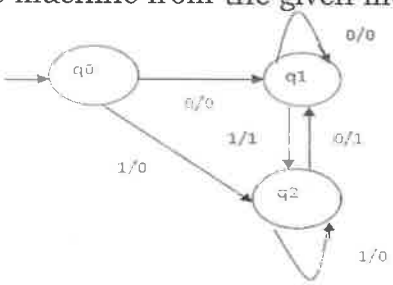
FORMAL LANGUAGES AND AUTOMATA THEORY

(Computer Science & Engineering)

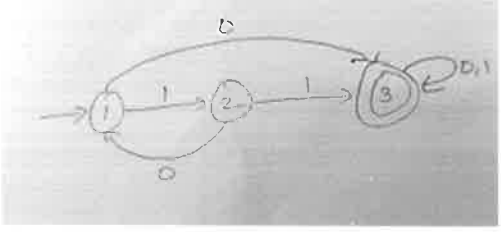
Time: 3Hrs **Max Marks: 60**

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
Q.1	i.	Define Finite Automation.	1M	1	1
	ii.	State the DFA which accepts the all the string ends with 'bb' over the alphabets ∑ = {a,b}.	1M	1	1
	iii.	Find the regular expression for the language containing all the strings with any no. of a's and b's except the null string.	1M	2	1
	iv	State any three closure properties of regular languages.	1M	2	1
	v.	Define regular grammar.	1M	3	1
	vi	What is the CFL for the given grammar? S→ aaA A→S / a	1M	3	1
	vii.	Define CNF.	1M	4	1
	viii	What is Deterministic PDA?	1M	4	1
	ix.	What are the applications of Turing Machine?	1M	5	1
	x.	Define Universal Turing Machine.	1M	5	1
Q.2(A)		Let M = ({q0, q1, q2, q3}, {0,1}, δ, q0, {q2, q3}) be NFA. Where δ (q0, 0) = {q0, q1}, δ (q0, 1) = {q1}, δ (q1, 0) = {q2, q3}, δ (q1, 1) = {q0, q1}, δ (q2, 0) = {q2}, δ (q2, 1) = {q0, q3}, δ (q3, 0) = {q3}, δ (q3, 1) = {q2, q3}. Construct its equivalent DFA.	10M	1	3
		OR			
Q.2(B)		Construct a Moore machine from the given mealy machine.	10M	1	3

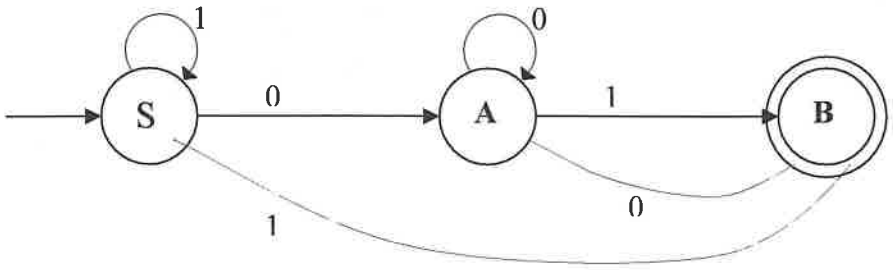


Q.3(A)		Construct the ε-NFA for the given regular expression Using Thompson's construction method. (a+b)*abb and construct equivalent DFA	10M	2	3
		OR			
Q.3(B)		a) Find the regular expression from the FA using Arden's method.	10M	2	2



b) Find whether the languages L={$a^n b^n$, n ≥1} are regular or not.

Q.4(A)	a) Construct Left Linear Grammar from the given Finite Automata	10M	3	3



b) Construct a Finite Automata from the given Left Linear Grammar

$A \rightarrow Ba$

$B \rightarrow Ba/Bb/\varepsilon$

OR

Q.4(B)	Let the production of the grammar be $S \rightarrow 0B$ / $1A$, $A \rightarrow 0$ / $0S$ / $1AA$, $B \rightarrow 1$ / $1S$ / $0BB$ and the string 0110. a. Find the left most derivation and associated derivation tree. b. Find the right most derivation and associated derivation tree. c. Find the G is ambiguous or not.	10M	3	3
Q.5(A)	Consider the Grammar G = ({S,A,B},{a,b}, P, S} as the productions $S \rightarrow AB$ $A \rightarrow BS$ / b $B \rightarrow SA$ / a Convert the grammar into GNF.	10M	4	3

OR

Q.5(B)	Convert the PDA P= ({p, q}, {0,1}, {x, z_0}, δ, q, z_0, Φ) to CFG, if δ is given by $\delta(q, 1, z_0) = \{(q, xz_0)\}$ $\delta(q, 1, x) = \{(q, xx)\}$ $\delta(q, 0, x) = \{(p, x)\}$ $\delta(q, \varepsilon, x) = \{(q, \varepsilon)\}$ $\delta(p, 1, x) = \{(p, \varepsilon)\}$ $\delta(p, 0, z_0) = \{(q, z_0)\}$	10M	4	3
Q.6(A)	Develop a Turing Machine to recognize the language L ={$a^n b^n$; n>0} and test whether the strings "aabb" is accepts or not.	10M	5	3

OR

Q.6(B)	Explain in detail about MPCP with example.	10M	5	2

***** END*****

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

Question Paper Code: 20CSE112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MACHINE LEARNING

(Computer Science & Engineering)

Time: 3Hrs **Max Marks: 60**

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.		Questions	Marks	CO	BL
Q.1	i.	What are the advantages of semi-supervised algorithms?	1M	1	1
	ii.	What is correlation?	1M	1	1
	iii.	What is k in k-means clustering algorithm?	1M	2	1
	iv	What are the types of Hierarchical Clustering algorithm?	1M	2	1
	v.	What is the purpose of linear regression?	1M	3	1
	vi	Is multilayer perceptron is classifier or clustering algorithm?	1M	3	1
	vii.	What are two clustering indices?	1M	4	1
	viii	What is confusion matrix?	1M	4	1
	ix.	What is the purpose of stemming and lemmatization?	1M	5	1
	x.	Define term document matrix.	1M	5	1
Q.2(A)		Explain in detail about 2-class classification and multi class-classification with examples.	10M	1	2
		OR			
Q.2(B)		Illustrate in detail about Supervised, unsupervised and semi-supervised learning algorithms with examples.	10M	1	2
Q.3(A)		Cluster the following eight points (with (x, y) representing locations) into three clusters: A1(2, 10), A2(2, 5), A3(8, 4), A4(5, 8), A5(7, 5), A6(6, 4), A7(1, 2), A8(4, 9). Initial cluster centers are: A1(2, 10), A4(5, 8) and A7(1, 2). The distance is in L1 norm (Manhattan distance). Use K-Means Algorithm to find the three cluster centers after the second iteration.	10M	2	4
		OR			
Q.3(B)		Explain in detail about DBSCAN clustering algorithm with figures.	10M	2	2
Q.4(A)		Compare univariate regression with multivariate regression with suitable examples.	10M	3	3
		OR			
Q.4(B)		Illustrate in detail about the working mechanism of support vector machine with a neat diagram along with its advantages.	10M	3	2
Q.5(A)		Explain in detail about the concept of confusion matrix. Explain FP, FN with example. What are accuracy, precision and recall?	10M	4	2
		OR			
Q.5(B)		Explain in detail about various types of cross validation techniques with relevant examples.	10M	4	2
Q.6(A)		Explain Singular value decomposition for matrix factorization and rank reduction.	10M	5	2
		OR			
Q.6(B)		Explain in detail about the concept of topic modeling with suitable examples.	10M	5	2

***** END*****

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

Question Paper Code: 20CSE111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

COMPUTER NETWORKS

(Computer Science & Engineering)

Time: 3Hrs **Max Marks: 60**

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.	What are the five components of data communications system?	1M	1	1
	ii.	List the common topologies available for LAN.	1M	1	1
	iii.	What are the limitations of bridges?	1M	2	1
	iv	Define character stuffing.	1M	2	1
	v.	What is the role of VCI?	1M	3	1
	vi	Sketch the classless addressing structure.	1M	3	2
	vii.	How would you compare Network ID and Host ID?	1M	4	2
	viii	List the performance problems in computer networks.	1M	4	1
	ix.	Rephrase the meaning for DNS.	1M	5	2
	x.	How would you compare IMAP and POP3?	1M	5	1
Q.2(A)		Explain the various network topologies with neat sketch.	10M	1	2
		OR			
Q.2(B)		Examine the types of Guided transmission media with neat sketch.	10M	1	3
Q.3(A)		Explain Stop-n-Wait protocol and Go Back-n-ARQ with a neat sketch.	10M	2	2
		OR			
Q.3(B)		Discuss in detail about bit-oriented Protocols (HDLC).	10M	2	3
Q.4(A)		Explain the Steps of Dijkstra's shortest path algorithm to determine the shortest path between two nodes with an example.	10M	3	3
		OR			
Q.4(B)		Summarize OSPF and BGP protocols with an example.	10M	3	2
Q.5(A)		Illustrate the connection-oriented transmission requires three phases in transport layer.	10M	4	3
		OR			
Q.5(B)		Illustrate how communication is done at the transport layer through a simple example and logical connection at the transport layer with a neat sketch.	10M	4	3
Q.6(A)		Describe how SMTP transfers message from one host to another with suitable illustration.	10M	5	3
		OR			
Q.6(B)		What way would you design computer networks in healthcare?	10M	5	3

***** END*****

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

Question Paper Code: 20CSE403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

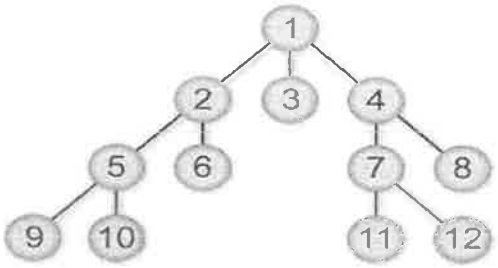
ARTIFICIAL INTELLIGENCE

(Computer Science & Engineering)

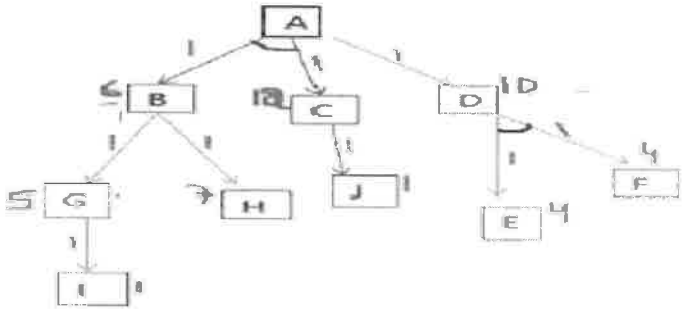
Time: 3Hrs **Max Marks: 60**

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.	Define Artificial Intelligence	1M	1	1
	ii.	Differentiate AI and Non-AI techniques	1M	1	2
	iii.	What is problem state space in search strategy?	1M	2	1
	iv.	List the limitations of Depth First Search.	1M	2	1
	v.	Mention the disadvantages of generate and test algorithm.	1M	3	1
	vi.	Compare A* with AO* algorithm.	1M	3	2
	vii.	What are the logical connectives of propositional logic?	1M	4	1
	viii.	State Modus ponens Inference rule.	1M	4	1
	ix.	What is membership function?	1M	5	1
	x.	Define marginal probability with an example.	1M	5	1
Q.2(A)		Discuss in detail, the various applications of Artificial Intelligence.	10M	1	2
		OR			
Q.2(B)		Analyse the PEAS (Performance, Environment, Actuators, Sensors) components for any 2 AI applications.	10M	1	4
Q.3(A)		Explain how the searching is done when the agent has only partial information or observation about the environment.	10M	2	2
		OR			
Q.3(B)		Apply Breadth First Search strategy to the graph given below. Assume '1' as the starting state and '12' as the goal state.	10M	2	3



Q.4(A)		Solve the following graph using AO* algorithm:	10M	3	4



	OR			
Q.4(B)	Explain the steps involved in searching a graph using AO* algorithm and highlight its merits and de-merits.	10M	3	2
Q.5(A)	Consider the following Knowledge Base: 1.The humidity is high or the sky is cloudy. 2.If the sky is cloudy, then it will rain. 3.If the humidity is high, then it is hot. 4.It is not hot. **Goal:** It will rain. Use propositional logic and apply resolution method to prove that the goal is derivable from the given knowledge base.	10M	4	3
	OR			
Q.5(B)	Narrate the resolution process in First Order Logic with suitable example.	10M	4	2
Q.6(A)	Consider that you are planning to build a house. Discuss how hierarchical planning can be made to reach the goal state. Draw the plan graph and highlight its benefits.	10M	5	3
	OR			
Q.6(B)	Discuss the architecture of fuzzy logic system with a neat sketch.	10M	5	2

***** END*****

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

Question Paper Code: 20CSE404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

WEB TECHNOLOGIES

(Computer Science & Engineering)

Time: 3Hrs **Max Marks: 60**

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.	Define web server.	1M	1	1
	ii.	What is the difference between HTML & XHTML?	1M	1	1
	iii.	State the difference between client-side programming and server-side programming.	1M	2	2
	iv	Define Number Object in JavaScript.	1M	2	1
	v.	What are Servlets?	1M	3	1
	vi	Define URL rewriting.	1M	3	1
	vii.	What is XM?	1M	4	1
	viii	List out the phases of JSP Lifecycle	1M	4	1
	ix.	Define WSDL.	1M	5	1
	x.	List out the advantages of web service.	1M	5	1
Q.2(A)		Explain in detail about HTTP Request and HTTP Response methods.	10M	1	2
		OR			
Q.2(B)		Briefly explain in detail about TCP/IP and UDP protocols.	10M	1	2
Q.3(A)		List and describe the CSS border style properties in detail with example.	10M	2	2
		OR			
Q.3(B)		Write a JavaScript program to find the factorial of a given number.	10M	2	3
Q.4(A)		Explain in detail about DOM Event Handling mechanism with suitable examples.	10M	3	2
		OR			
Q.4(B)		Describe about the Servlet Life Cycle.	10M	3	2
Q.5(A)		Discuss about XMLHttpRequest method with suitable examples.	10M	4	3
		OR			
Q.5(B)		Explain in detail about JSTL tags with suitable examples.	10M	4	2
Q.6(A)		Discuss the various aspects of JAX-RPC.	10M	5	3
		OR			
Q.6(B)		Write a complete query application for book database using Servlets with JDBC connectivity.	10M	5	3

***** END*****

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

Question Paper Code: 20CST108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

AUTOMATA THEORY AND COMPILER DESIGN

(Computer Science & Technology)

Time: 3Hrs **Max Marks: 60**

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.	Define Finite Automata.	1M	1	1
	ii.	Design an NFA with $\sum = \{0, 1\}$ accepts all string in which the third symbol from the right end is always 0.	1M	1	2
	iii.	What is ambiguous grammar?	1M	2	1
	iv	Consider the grammar- $S \rightarrow bB / aA$ $A \rightarrow b / bS / aAA$ $B \rightarrow a / aS / bBB$ For the string w = bbaababa, Find the Left Most Derivation.	1M	2	2
	v.	List out the Language processors.	1M	3	1
	vi	Differentiate Compiler and Interpreter.	1M	3	1
	vii.	Write the rules for left factoring of the grammar.	1M	4	1
	viii	What are all the four actions in shift reduce parser?	1M	4	1
	ix.	Write the rules for identifying the leaders.	1M	5	1
	x.	Define peephole optimization.	1M	5	1
Q.2(A)		Find the DFA for the following regular expression (a/b)*abb	10M	1	3
		OR			
Q.2(B)		i) Design an NFA with $\sum = \{0, 1\}$ accepts all string in which the third symbol from the right end is always 0. ii) Design DFA with $\sum = \{0, 1\}$ accepts odd number of 0's and even number of 1's.	5M	1	3
Q.3(A)		i) Show that the following grammar $E \rightarrow E + E / E * E /$ id is Ambiguous Grammar.	5M	1	3
		ii) Consider the following grammar- $S \rightarrow aB / bA$ $S \rightarrow aS / bAA / a$ $B \rightarrow bS / aBB / b$ Find the left most derivation and right most derivation for the input string w = aaabbabbba.	5M	2	3
		OR			
Q.3(B)		Design a TM to compute the proper subtraction of two unary numbers. The proper subtraction function f is defined as follows $f(m,n)= \begin{cases} m-n & if\ m > n \\ 0 & otherwise \end{cases}$	10M	2	3
Q.4(A)		What are the phases of the compiler? Explain the phases in detail. Write down the output of each phase for the expression a := b + c * 60.	10M	3	3
		OR			
Q.4(B)		Explain the Recognition of the tokens with examples.	10M	3	2
Q.5(A)		Check Whether the following grammar is LL(1) or not. S - > (L) | a L -> L , S | S and show whether the following string will be accepted or not. (a,(a,(a,a)))	10M	4	3
		OR			

Q.5(B)	Check whether the following grammar is SLR(1) or not. S->L=R S->R L->*R L->id R->L	10M	4	3
Q.6(A)	Explain in detail about the issues in the design of code generator.	10M	5	2
	OR			
Q.6(B)	Explain about peephole optimization with examples.	10M	5	2

***** END*****

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

Question Paper Code: 20CST109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

AI TOOLS, TECHNIQUES AND APPLICATIONS

(Computer Science & Technology)

Time: 3Hrs **Max Marks: 60**

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.	What is Artificial Intelligence?	1M	1	1
	ii.	Differentiate Supervised and Unsupervised Learning techniques.	1M	1	2
	iii.	Write the steps in K-Means Clustering algorithm.	1M	2	1
	iv	List the applications of Unsupervised Learning.	1M	2	1
	v.	Define Single Layer perceptron.	1M	3	1
	vi	State the purpose of Confusion Matrix.	1M	3	2
	vii.	What is Term frequency?	1M	4	1
	viii	Mention the use of Semantic Analysis.	1M	4	1
	ix.	Specify the types of Image Enhancement?	1M	5	2
	x.	Define Deep Neural Network.	1M	5	1
Q.2(A)		How does the Hypothesis testing works? Describe Null and alternate hypothesis with example.	10M	1	3
		OR			
Q.2(B)		How Ridge Regression helps to handle the problem of Multicolliniarity in Linear regression	10M	1	3
Q.3(A)		What do you mean by Reinforcement Learning, explain practical applications of Reinforcement Learning?	10M	2	2
		OR			
Q.3(B)		Apply K-means clustering algorithm on the following data points {(170,60), (160,55), (180,75), (150,50), (175,65), (190,85)} with K=2 and form the clusters with initial centroids {(170,60), (160,55)}.	10M	2	3
Q.4(A)		Describe Logistic Regression model for Classification.	10M	3	2
		OR			
Q.4(B)		Calculate the following performance evaluation metrics to validate the classifier model using the following Confusion matrix a) Accuracy b) Error rate c) Precision d) Recall e)F1_score	10M	3	3

		Actual Values	
		Positive	**Negative**
Predicted Values	**Positiv**	56	6
	Negativ	5	33

Q.5(A)		Distinguish between Term Frequency (TF) and Inverse Document Frequency (IDF) in detail.	10M	4	3
		OR			
Q.5(B)		Describe Latent Semantic Analysis (LSA) in Natural Language Processing.	10M	4	2
Q.6(A)		Explain about Gaussian filter and median filter to remove the image noise.	10M	5	3
		OR			
Q.6(B)		Specify the utilization of Convolution Neural Network (CNN) in image processing?	10M	5	2

***** END*****

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

Question Paper Code: 20CST110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

SOFTWARE ENGINEERING

(Computer Science & Technology)

Time: 3Hrs **Max Marks: 60**

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 two deficiencies in waterfall model. Which process model do you suggest to overcome each deficiency?	1M	1	1
	ii.	What are the various software development life cycle (SDLC) phases?	1M	1	2
	iii.	Give the use case diagram for online shopping which should provide provisions for registering customers and allow for online payment.	1M	2	2
	iv	List the characteristics of good software requirement sections (SRS)	1M	2	2
	v.	What are the various types of system testing?	1M	3	3
	vi	What are the common approaches in debugging?	1M	3	1
	vii.	Define metrics. What are the types of metrics?	1M	4	3
	viii	What is Risk and explain the risk management process	1M	4	4
	ix.	List any 4 categories of CASE tools.	1M	5	4
	x.	Define software re-engineering.	1M	5	5
Q.2(A)		Explain the different types of software, their characteristics in detail with practical applications.	10M	1	2
		OR			
Q.2(B)		Discuss in detail about any one evolutional model with example.	10M	1	2
Q.3(A)		Discuss in detail about Requirement Engineering Process.	10M	2	2
		OR			
Q.3(B)		Explain the design principle of software Engineering.	10M	2	2
Q.4(A)		Discuss Functional testing in detail with its types.	10M	3	2
		OR			
Q.4(B)		Explain in detail about Debugging Process with examples.	10M	3	2
Q.5(A)		Discuss on the various software cost estimation techniques.	10M	4	3
		OR			
Q.5(B)		Explain about Risk management in detail.	10M	4	3
Q.6(A)		Explain briefly about identifying 'Software Trends'.	10M	5	2
		OR			
Q.6(B)		Explain in detail about various emergency Trends in Software Engineering.	10M	5	2

***** END*****

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

Question Paper Code: 20CST401

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

INTRODUCTION TO MACHINE LEARNING

(Computer Science & Technology)

Time: 3Hrs **Max Marks: 60**

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 issues in machine learning algorithms.	1M	1	1
	ii.	Define is well posed learning problem with example.	1M	1	1
	iii.	Compare the biological neural networks and artificial neural network.	1M	2	2
	iv	What is meant by activation function?	1M	2	1
	v.	State the role of radial basis functions in RBF networks.	1M	3	1
	vi	Name any two techniques for dimensionality reduction	1M	3	1
	vii.	How does SVM handle outliers in the training data?	1M	4	1
	viii	What is the main goal of the optimization process in the SVM algorithm?	1M	4	1
	ix.	Define Evolutionary Learning	1M	5	1
	x.	How can Genetic Algorithms be used in optimization problems?	1M	5	1
Q.2(A)		Demonstrate how concept learning is applied in the context of searching.	10M	1	3
		OR			
Q.2(B)		Summarize the key steps involved in the Candidate Elimination Algorithm?	10M	1	2
Q.3(A)		Explain the basic concept of a perceptron and provide a straightforward example?	10M	2	2
		OR			
Q.3(B)		Explain the concept of Linear Regression in Machine Learning and provide a basic example to illustrate how it works?	10M	2	2
Q.4(A)		How does interpolation work in the context of Radial Basis Function Networks? Provide an example to illustrate the interpolation process.	10M	3	3
		OR			
Q.4(B)		Compare and contrast Linear Discriminant Analysis (LDA) and Principal Component Analysis (PCA) techniques for dimensionality reduction.	10M	3	4
Q.5(A)		Explain three popular types of kernels used in SVMs?	10M	4	2
		OR			
Q.5(B)		Examine the strengths and weaknesses of SVM as a machine learning algorithm.	10M	4	3
Q.6(A)		Define Evolutionary Learning and explain how it is inspired by biological evolution.	10M	5	2
		OR			
Q.6(B)		Consider a problem where the goal is to optimize a travelling salesman problem. How would you represent solutions as individuals in the population, and which genetic operators would you choose for this optimization problem? Justify your choices.	10M	5	3

***** END*****

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

Question Paper Code: 20CST403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

PRINCIPLES OF CYBER SECURITY

(Computer Science & Technology)

Time: 3Hrs **Max Marks: 60**

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.	Find the value of ϕ (19)	1M	1	1
	ii.	State Euclidian algorithm	1M	1	1
	iii.	Define Brute force search?	1M	2	1
	iv	Write is the principle of public key cryptography?	1M	2	1
	v.	What is Secure Hash algorithm?	1M	3	1
	vi	Expand MAC	1M	3	1
	vii.	Define Cyber stalking	1M	4	1
	viii	Differentiate between Active attacks and Passive Attacks	1M	4	1
	ix.	What is security policy in cyber security?	1M	5	1
	x.	What is meant by DOS attack?	1M	5	1
Q.2(A)		Compute Fermat's theorem with example, prove Fermat's theorem using p=5 and a=2.	10M	1	3
		OR			
Q.2(B)		State the Chinese Remainder Theorem and find X for the given set of congruent equations X≡2 mod 3, X≡3 mod 5 and X≡2 mod 7.	10M	1	3
Q.3(A)		Perform decryption and encryption using RSA algorithm with p=3, q=11, e=7 and N=5.	10M	2	3
		OR			
Q.3(B)		Discuss the various principles involved in private and public key cryptography.	10M	2	2
Q.4(A)		What is Message Authentication code? How message authentication code works?	10M	3	2
		OR			
Q.4(B)		Describe Digital Signature Algorithm.	10M	3	3
Q.5(A)		Explain the Classification of Cyber Crimes in detail.	10M	4	2
		OR			
Q.5(B)		What is cybercafé? Analyze why the Cyber criminals prefer cybercafés to carry out their activities.	10M	4	4
Q.6(A)		Compare and classify the difference between Keyloggers and Spywares in detail	10M	5	4
		OR			
Q.6(B)		Explain the needs of Security policies in detail.	10M	5	2

***** END*****

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

Question Paper Code: 20HUM3M03

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MOOC: E-BUSINESS

(Common to CST and CSE-AI)

Time: 3Hrs **Max Marks: 60**

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

Q.No		Question	Marks	CO	BL
Q.1	i.	What is meant by e-business?	1M	1	1
	ii.	State any one feature of traditional business models.	1M	1	1
	iii.	Define an information system with a short example.	1M	2	1
	iv.	List any two types of business information systems.	1M	2	1
	v.	What do you mean by e-procurement in e-business?	1M	3	1
	vi	Define Customer Relationship Management in brief.	1M	3	1
	vii.	Mention one key role of hardware in e-business infrastructure.	1M	4	1
	viii.	What is the purpose of a digital signature in online transactions?	1M	4	1
	ix.	Expand RFID and mention one of its uses.	1M	5	1
	x.	What is the basic function of a recommender system?	1M	5	1
Q.2(A)		Explain the types of e-business transactions with examples.	10M	1	2
		OR			
Q.2(B)		Describe how brick-and-mortar companies can use online platforms to grow their business with examples.	10M	1	2
Q.3(A)		Explain how business information systems help in decision-making with examples.	10M	2	2
		OR			
Q.3(B)		Explain the types of business information systems and their roles in organizations.	10M	2	2
Q.4(A)		Explain the traditional procurement process in e-procurement.	10M	3	2
		OR			
Q.4(B)		Explain how supply chain processes are improved using e-business tools.	10M	3	2
Q.5(A)		Discuss the role of the Internet and web technologies in supporting e infrastructure.	10M	4	2
		OR			
Q.5(B)		Explain security categories and terminologies used in e-business.	10M	4	2
Q.6(A)		Explain the fundamentals and applications of RFID in supply chain management.	10M	5	2
		OR			
Q.6(B)		Explain the working and applications of recommender systems in e-business with examples.	10M	5	2

***** END*****

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

Question Paper Code: 20CAI110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

COMPUTER NETWORKS

(CSE – Artificial Intelligence)

Time: 3Hrs **Max Marks: 60**

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
Q.1	i.	List out the different types of network topologies.	1M	1	1
	ii.	Draw TCP/IP protocol suite.	1M	1	1
	iii.	Give an example for single bit and multiple bit error.	1M	2	1
	iv.	List out the various Random-access Protocols in MAC.	1M	2	1
	v.	Mention the network layer functions.	1M	3	1
	vi.	Define QoS.	1M	3	1
	vii.	Name the protocol available in Transport layer.	1M	4	1
	viii	What is 3-way handshaking process?	1M	4	1
	ix.	Define client server Programming.	1M	5	1
	x.	Which IP address act as for local host address?	1M	5	2
Q.2(A)		How to send the information from one host to another host via all layers in OSI model? Explain with all data formats.	10M	1	2
		OR			
Q.2(B)		What is the need of switching technique? List out the various switching techniques and explain the circuit switching with an example.	10M	1	2
Q.3(A)		List out various error detection techniques. Explain the way to identify the errors using checksum.	10M	2	3
		OR			
Q.3(B)		Differentiate all ARQ 1) stop and wait 2) Goback N 3) selective repeat.	10M	2	4
Q.4(A)		Why routing algorithm is important? Explain distance vector routing algorithm with an example.	10M	3	2
		OR			
Q.4(B)		Explain the various types of congestion control with neat diagram.	10M	3	2
Q.5(A)		Why transport layer is important in OSI protocol suite? Explain the transmission layer inter communication system with neat diagram.	10M	4	3
		OR			
Q.5 (B)		Explain in details about the Performance problems in computer networks, Network performance measurement	10M	4	2
Q.6(A)		List out the protocols used in application layer and explain any four protocols with an example	10M	5	2
		OR			
Q.6(B)		Explain the way of connecting client server programming with an example	10M	5	2

***** END*****

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

Question Paper Code: 20CAI112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MACHINE LEARNING

(CSE – Artificial Intelligence)

Time: 3Hrs **Max Marks: 60**

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.	Define VC dimension.	1M	1	1
	ii.	How Test set differ from Validation set?	1M	1	2
	iii.	Suppose I have 10,000 emails in my mailbox out of which 200 are spams. The spam detection system detects 150 emails as spams, out of which 50 are actually spam. Create Confusion Matrix?	1M	2	2
	iv.	What do you mean by imbalanced dataset?	1M	2	1
	v.	List out the default splitting criteria for ID3 and CART.	1M	3	2
	vi.	Write the equation for calculating Entropy for an attribute.	1M	3	1
	vii.	Consider two data points two-dimension A (5,8) and B (8,9) calculate city block distance.	1M	4	2
	viii	How will you interpret silhouette scores of a clustering algorithm?	1M	4	2
	ix.	Depict the concept of voting in ensemble learning?	1M	5	1
	x.	When zero transfer occur in transfer learning?	1M	5	3
Q.2(A)		Describe the following terms with an example: (a) Hypothesis Space (b) Version Space (c) Instance space (d) VC Dimension.	10M	1	2
		OR			
Q.2(B)	i)	Describe the role of vectors in Machine Learning.	5M	1	2
	ii)	Draw a block diagram to understand different steps involved in machine learning process	5M		
Q.3(A)		Explain the significance of the following terms in Machine Learning: (a) Confusion matrix (b) AUC- ROC Curve (c) Sensitivity (d) Specificity	10M	2	2
		OR			
Q.3(B)		Answer the following question:	3M	2	2
	i)	Discuss Bias-Variance trade-off with the help of a neat diagram.	3M	2	2
	ii)	What are the two major problems associated with the above question.			
	iii)	Describe any two methods to overcome bias-variance dilemma.	4M	2	2
Q.4(A)		Consider the following dataset and answer the questions below:	10M	3	3

Name	Hair Length	Weight	Age	Class
Homer	Short	Over	<40	M
Marge	Long	Healthy	<40	F
Bart	Short	Healthy	<40	M
Lisa	Long	Healthy	<40	F
Maggie	Short	Healthy	<40	F
Abe	Short	Over	>40	M
Salma	Long	Healthy	>40	F
Otto	Long	Over	<40	M
Krusty	Long	Over	>40	M
Comic	Short	Healthy	>40	?

a) Draw Decision Tree by using Gini index for selecting the attributes.
b) Predict the class label for the following input: (Comic, Short, Healthy, >40)

OR

Q.4(B)	Explain different validation techniques in detail.	10M	3	2
Q.5(A)	As part of Data analysis, we have to form clusters with the following 8 points (with (x, y) representing location) into three clusters. A1(2,9), A2(5,8), A3(4,3), A4(8,3), A5(3,5), A6(7,9) A7(1,6) and A8(9,4). You can use any distance function (Ex: Manhattan distance). Given initial cluster centres as A1 and A4 and A8. Use K-Means algorithm and form three clusters after two rounds of execution.	10M	4	3

OR

Q.5 (B)	i). Write down Expectation-Maximization algorithm and explain its significance. (4 Marks)	5M	4	2
	ii). Explain the following terms with respect to DBSCAN, explain the following: (6 Marks) a. Core point b. Border Point c. Density-Reachable points	5M	4	2
Q.6 (A)	Differentiate between Transfer learning and federated learning	10M	5	4

OR

Q.6 (B)	Discuss the role of weak learners in AdaBoost algorithm and explain how these techniques handle misclassification and iteratively improve model performance.	10M	5	2

***** END*****

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

Question Paper Code: 20CAI111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

DATABASE MANAGEMENT SYSTEMS

(CSE-Artificial Intelligence)

Time: 3Hrs **Max Marks: 60**

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.		Questions	Marks	CO	BL
Q.1	i.	Give an example for one to one and one to many relationships.	1M	1	1
	ii.	Define data dictionary.	1M	1	1
	iii.	Differentiate Primary Key and Unique.	1M	2	2
	iv.	What is trigger?	1M	2	1
	v.	Define multivalued attribute.	1M	3	1
	vi.	Mention the Armstrong's axioms rule.	1M	3	1
	vii.	How would you describe the concept of hashing?	1M	4	1
	viii	What is the dirty-read problem?	1M	4	1
	ix.	Define Malware.	1M	5	1
	x.	List out recovery techniques in DBMS.	1M	5	1
Q.2(A)		i) What is DBMS. Explain the advantages of DBMS over traditional file system?	5M	1	2
		ii) With a neat sketch, illustrate the following a. Network model b. Hierarchical model	5M	1	2
		OR			
Q.2(B)		Define an entity and relationship. Design ER diagram for a Library management system.	10M	1	3
Q.3(A)		Consider the employee database, employee(empname,street, city) works(empname,companyname,s alary) company(companyname, city) manages(empname, management) Give an expression in the relational algebra for each request. (a) Find the names of all employees who work for First Bank Corporation. (b) Find the names, street addresses and cities of residence of all employees who work for First Bank Corporation and earn more than 200000 per annum. (c) Find the names of all employees in this database who live in the same city as the company for which they work. (d) Find the names of all employees who earn more than every employees of small Bank Corporation.	10M	2	4
		OR			
Q.3(B)		Explain about triggers and stored procedures with example.	10M	2	2
Q.4(A)		Analyse insertion, deletion and modification anomalies with suitable examples.	10M	3	4
		OR			

Q.4(B)	Define multivalued dependency. Explain 4NF in detail with an example	10M	3	2
Q.5(A)	Illustrate about static and dynamic hashing in file organization.	10M	4	2
	OR			
Q.5 (B)	S1: r1(X);r3(Y);r3(X);r2(Y);r2(Z); w3(Y);w2(Z);r1(Z);w1(X);w1(Z) S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z); r2(Z); w3(Y); w1(X); w2(Z); w1(Z) Analyze which one of the schedules is conflict-serializable?	10M	4	4
Q.6(A)	Discuss CAP theorem in detail.	10M	5	2
	OR			
Q.6(B)	Explain about recovery technique based on immediate update.	10M	5	2

***** END*****

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

Question Paper Code: 20CAI403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

WEB TECHNOLOGIES

(CSE – Artificial Intelligence)

Time: 3Hrs **Max Marks: 60**

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.	Give acronym of www and its role in the internet.	1M	1	2
	ii.	Classify the tag used to group multiple blocks on a webpage in HTML.	1M	1	2
	iii.	State how var is used to declare a variable in JavaScript.	1M	2	2
	iv.	Define DOM and its importance.	1M	2	2
	v.	Interpret the function of a Servlet and illustrate its primary purpose.	1M	3	3
	vi	Illustrate init() method in the servlet lifecycle do?	1M	3	3
	vii.	Illustrate the purpose of XML in web development.	1M	4	3
	viii.	Apply regular expressions in PHP to solve common pattern-matching tasks	1M	4	3
	ix.	Examine and report on the two main types of web services.	1M	5	3
	x.	State what AJAX stands for and its main use.	1M	5	3
Q.2(A)		Explain the different methods of applying CSS to HTML documents: inline CSS, internal CSS, and external CSS.	10M	1	2
		OR			
Q.2(B)		Explain how HTML lists and images can be used.	10M	1	2
Q.3(A)		Categorize the various Exception handling in JavaScript with an example.	10M	2	2
		OR			
Q.3(B)		i) Implement a JavaScript program to sort elements in an array. ii) Implement a JavaScript program to check whether the given number is prime or not.	5M 5M	2	2
Q.4(A)		Illustrate the Servlet Life Cycle with diagram.	10M	3	3
		OR			
Q.4(B)		Given a scenario, determine how would you use cookies to manage sessions in a web application.	10M	3	3
Q.5(A)		Develop a PHP application that inserts three values supplied throu; html form into MySQL database table.	10M	4	3
		OR			
Q.5(B)		Write a sample XML document for storing book details, including title, author, and publication year.	10M	4	3
Q.6(A)		Apply your knowledge to construct a database-driven web service using SOAP.	10M	5	3
		OR			
Q.6(B)		Relate SOAP and REST in terms of web services.	10M	5	3

***** END*****

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

Question Paper Code: 20CSD110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

DATABASE MANAGEMENT SYSTEM

(CSE – Data Science)

Time: 3Hrs **Max Marks: 60**

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.	Write the components of E-R model?	1M	1	1
	ii.	What are the different types of relationships in the DBMS?	1M	1	1
	iii.	What is meant by Relational Schema?	1M	2	1
	iv	Define Primary key and Foreign key?	1M	2	1
	v.	What is the condition for 1NF in normalization?	1M	3	2
	vi	Name the anomalies of schema refinement?	1M	3	1
	vii.	Define hash tables?	1M	4	5
	viii.	What is meant by roll back in transaction processing?	1M	4	5
	ix.	Define Malware in database security?	1M	5	2
	x.	Define exploiting software vulnerabilities?	1M	5	1
Q.2(A)		a) Give the differentiation between database and the file system? b) Explain the disadvantages of DBMS?	10M	1	2
		OR			
Q.2(B)		a) Explain the Three Level Architecture of Database? b) Explain the applications of database management system?	10M	1	2
Q.3(A)		Differentiate between candidate key, super key, composite key, primary key and foreign key?	10M	2	2
		OR			
Q.3(B)		Differentiate between strong entity and weak entity and also Explain about (a)Union (b)Projection (c)Selection (d)Intersection	10M	2	2
Q.4(A)		Define normalization and what its need is and also explain the advantages and disadvantages?	10M	3	3
		OR			
Q.4(B)		Explain how database design meets the requirement of the users with high performance?	10M	3	3
Q.5(A)		a) Explain the problems with concurrent execution in detail? b) Explain about the operations of B-tree?	10M	4	2
		OR			
Q.5(B)		Give an example of transaction processing where the schedule is conflict as well as view serializable?	10M	4	3
Q.6(A)		Outline the typical risks and difficulties associated with data security?	10M	5	2
		OR			
Q.6(B)		Using an example, describe the CAP theorem in NOSQL?	10M	5	2

***** END*****

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

Question Paper Code: 20CSD112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

MACHINE LEARNING

(CSE – Data Science)

Time: 3Hrs **Max Marks: 60**

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.	What are the steps in designing a machine learning problem?	1M	1	1
	ii.	List any two important machine learning libraries in python.	1M	1	1
	iii.	Define maximum likelihood estimation (MLE).	1M	2	1
	iv	List different forms of learning.	1M	2	1
	v.	Compare linear regression model and logistic regression model.	1M	3	1
	vi	List out the advantages of SVM.	1M	3	1
	vii.	What are tensors?	1M	4	1
	viii	How can data be loaded into TensorFlow?	1M	4	1
	ix.	What is the use of constant memory?	1M	5	1
	x.	What is the advantage of shared memory in CUDA?	1M	5	1
Q.2(A)		Explain the steps required for selecting the right machine learning algorithm.	10M	1	2
		OR			
Q.2(B)		What is machine learning? Explain how supervised learning is difficult from unsupervised learning.	10M	1	2
Q.3(A)		Explain data preprocessing and techniques used for data preprocessing.	10M	2	2
		OR			
Q.3(B)		What is dimensionality in data set? Explain high dimensionality problem in machine learning.	10M	2	2
Q.4(A)		Build the structure of a decision tree with an example.	10M	3	5
		OR			
Q.4(B)		Explain logistic regression with suitable example.	10M	3	2
Q.5(A)		What are the different versions of the cloud? Explain in detail.	10M	4	2
		OR			
Q.5(B)		What are the methods that can be used to handle overfitting in TensorFlow? Explain.	10M	4	2
Q.6(A)		What are warps, threads, thread blocks, and grids? Describe their relationships/hierarchy.	10M	5	3
		OR			
Q.6(B)		Explain the various library function of CUDA used in machine learning.	10M	5	2

***** END*****

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

Question Paper Code: 20CSD111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

DATA VISUALIZATION

(CSE-Data Science)

Time: 3Hrs **Max Marks: 60**

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.	What coordinate systems are used for in data visualization?	1M	1	1
	ii.	What is the main purpose of data visualization?	1M	1	1
	iii.	Why do we use color scales in visualizations?	1M	2	1
	iv	How does Microsoft Power Bi differ from Tableau in terms of installation?	1M	2	1
	v.	What does visualizing uncertainty mean in the context of data visualization?	1M	3	2
	vi	Why should we avoid redundant coding in visualizations?	1M	3	1
	vii.	How does the principle of proportional link apply to color coding?	1M	4	2
	viii.	Why is it important to balance data and context in visualizations?	1M	4	1
	ix.	What is the significance of telling a story in data visualization?	1M	5	2
	x.	How do you create a dashboard for a dataset in Tableau?	1M	5	2
Q.2(A)		Explain the significance of mapping data onto aesthetics in data visualization.	10M	1	2
		OR			
Q.2(B)		Explain the steps involved in creating a simple bar chart on sales forecasts using Tableau.	10M	1	2
Q.3(A)		Compare the features of Tableau and Power Bi in visualizing trends, using flight prices as an example.	10M	2	2
		OR			
Q.3(B)		List and explain three fundamental use cases of data visualization and draw the violin plotand density plot with an example?	10M	2	2
Q.4(A)		Visualize individual time series using scatter plot and bar chart and why do we need scatter plot. Explain with an example.	10M	3	3
		OR			
Q.4(B)		Explain the importance of visualizing associations in data analytics.	10M	3	2
Q.5(A)		Discuss the common pitfalls associated with the use of color in charts.	10M	4	2
		OR			
Q.5(B)		Explain the steps involved in creating a simple Plot a histogram with Tableau and Power Bi for the housing dataset in California.	10M	4	2
Q.6(A)		Explain in detail about most used image formats, and explain the steps involved in Practice story telling for adult income dataset.	10M	5	3
		OR			
Q.6(B)		Compare the process of creating a dashboard for the COVID-19 dataset in Tableau and Power Bi.	10M	5	2

*** END***

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

Question Paper Code: 20CSD404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

WEB TECHNOLOGIES

(CSE – Data Science)

Time: 3Hrs **Max Marks: 60**

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.	What are the various style sheets?	1M	1	1
	ii.	Define Tags. What are the two different types of tags?	1M	1	1
	iii.	What is the purpose of the finally block in exception handling	1M	2	1
	iv.	What does JSON stand for?	1M	2	1
	v.	What is a cookie in web development?	1M	3	1
	vi	How does a server use cookies to track users?	1M	3	1
	vii.	How do you declare a variable in PHP?	1M	4	1
	viii	What is the purpose of the fwrite() function?	1M	4	2
	ix.	What is a database-driven web service?	1M	5	1
	x.	What does AJAX stand for, and what is its primary purpose?	1M	5	1
Q.2(A)		Explain the architecture of the client-server model. How does communication occur between a client and a server?	10M	1	2
		OR			
Q.2(B)		Explain the role of media queries in responsive web design. Provide examples.	10M	1	4
Q.3(A)		Explain JSON structure and its uses in web development. Write a program to convert a JSON string into a JavaScript object and access its properties.	10M	2	4
		OR			
Q.3(B)		Write a JavaScript program to create, append, and remove elements dynamically using the DOM?	10M	2	3
Q.4(A)		Write a Java program to establish a connection with a MySQL database, retrieve all records from a table, and display them.	10M	3	4
		OR			
Q.4(B)		Write a JSP program to create a registration form and store the submitted data into a database using JDBC.	10M	3	4
Q.5(A)		Explain the different types of XML parsers with examples.	10M	4	2
		OR			
Q.5(B)		Explain array functions in PHP. Write a program to sort an array in ascending and descending order.	10M	4	4
Q.6(A)		Write an AJAX-based JavaScript program to fetch data from an API and display it dynamically on a webpage	10M	5	4
		OR			
Q.6(B)		What are callback methods in AJAX? Write a program to demonstrate the use of a callback to handle an asynchronous operation.	10M	5	4

***** END*****

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

Question Paper Code: 20CSC112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

SOFTWARE ENGINEERING

(CSE – Cyber Security)

Time: 3Hrs **Max Marks: 60**

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.	What is software engineering?	1M	1	1
	ii.	Differentiate between Prototyping model and RAD model.	1M	1	1
	iii.	What is software requirement analysis?	1M	2	1
	iv	Explain software Prototyping.	1M	2	1
	v.	Describe Software Reliability.	1M	3	1
	vi	Define Functional Testing.	1M	3	1
	vii.	What Software Metrics?	1M	4	1
	viii.	Describe Cost Estimation.	1M	4	1
	ix.	What Analyzing security requirements?	1M	5	1
	x.	Describe Security Risk Analysis.	1M	5	1
Q.2(A)		Explain in detail about Linear Sequential model with a suitable block diagram.	10M	1	3
		OR			
Q.2(B)		What is Evolutionary model and explain it with a suitable block diagram?	10M	1	4
Q.3(A)		Discuss various concepts in Software Requirement Analysis.	10M	2	4
		OR			
Q.3(B)		Explain in detail about Software Prototyping.	10M	2	4
Q.4(A)		Explain Reliability Models in detail.	10M	3	4
		OR			
Q.4(B)		Describe Unit testing, Integration and System testing in detail.	10M	3	3
Q.5(A)		Explain Software Metrics and Project Planning in detail.	10M	4	4
		OR			
Q.5(B)		Explain Static, Single and Multivariate models in detail.	10M	4	3
Q.6(A)		Explain Security and Privacy in an Online World in detail.	10M	5	3
		OR			
Q.6(B)		Explain in detail about Security Risk Analysis.	10M	5	3

***** END*****

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

Question Paper Code: 20CSC111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

COMPUTER NETWORKS

(CSE-Cyber Security)

Time: 3Hrs **Max Marks: 60**

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.	What is meant by Communication?	1M	1	1
	ii.	Illustrate the difference between data & signal.	1M	1	1
	iii.	List out any one disadvantages of Bluetooth.	1M	2	2
	iv	Give the IPV4 address format.	1M	2	1
	v.	Name the Intradomain and interdomain protocols	1M	3	2
	vi	Define Multicasting.	1M	3	1
	vii.	Define RED.	1M	4	1
	viii	What is meant by UDP?	1M	4	2
	ix.	What is meant by DNS?	1M	5	1
	x.	Why Firewall is needed?	1M	5	1
Q.2(A)		Explain in detail about OSI model with neat diagram?	10M	1	2
		OR			
Q.2(B)		Explain in detail about Error detection & Correction code with neat example.	10M	1	2
Q.3(A)		Explain in detail about Ethernet (802.3).	10M	2	2
		OR			
Q.3(B)		Explain in detail about Internet Protocol with neat diagram.	10M	2	2
Q.4(A)		Explain in detail about Unicasting Routing Algorithm with example.	10M	3	3
		OR			
Q.4(B)		Explain in detail about IPv6 addressing.	10M	3	2
Q.5(A)		Explain in detail about the state transition diagram for flow control wi neat diagram.	10M	4	2
		OR			
Q.5(B)		Explain in detail about DECbit.	10M	4	2
Q.6(A)		Explain in detail about DNS.	10M	5	2
		OR			
Q.6(B)		Explain in detail about Firewalls.	10M	5	2

***** END*****

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

Question Paper Code: 20CSC110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

AUTOMATA THEORY AND COMPILER DESIGN

(CSE – Cyber Security)

Time: 3Hrs **Max Marks: 60**

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.	Define Finite Automata.	1M	1	1
	ii.	Find the ε closure of states q0, q1, q2, q3 and q4 for the given diagram.	1M	1	3
	iii.	What is ambiguous grammar?	1M	2	2
	iv	Consider the grammar- $S \rightarrow bB / aA$ $A \rightarrow b / bS / aAA$ $B \rightarrow a / aS / bBB$ For the string w = bbaababa, Find the Left Most Derivation.	1M	2	3
	v.	List out the Language Processors.	1M	3	1
	vi	Differentiate Compiler and Interpreter.	1M	3	2
	vii.	Write the rules for eliminating Left Recursion.	1M	4	1
	viii.	What are all the four actions in shift reduce parser?	1M	4	1
	ix.	List out the issues in the design of code generator.	1M	5	1
	x.	Define peephole optimization.	1M	5	1
Q.2(A)		Find the DFA for the following regular expression (0/1)*011	10M	1	3
		OR			
Q.2(B)		i) Design an NFA with ∑ = {a, b} accepts all string in which the third symbol from the right end is always a.	5M	1	3
		ii) Design DFA with ∑ = {a, b} accepts even number of a's and even number of b's.	5M	1	3
Q.3(A)		Design PDA to accept the language L={a^n b^n |n>=0} and check the input string W=aaabbb is accepted or not	10M	2	3
		OR			
Q.3(B)		Construct T.M for the language L={0^n1^n2^n } where n>=1	10M	2	3
Q.4(A)		Explain the phases of compiler and how the following statement will be translated into every phase. Position: = initial + rate * 50.	10M	3	3
		OR			
Q.4(B)		Explain in detail about the specifications of the tokens.	10M	3	2
Q.5(A)		Check Whether the following grammar is LL(1) or not. S - > (L) | a L -> L , S | S and show whether the following string will be accepted or not. (a,(a,(a,a)))	10M	4	3
		OR			

Q.5(B)	Construct SLR parsing table for the following grammar: E->E+T E->T T->T*F T->F F->(E) / id	10M	4	3
Q.6(A)	Explain in detail about the issues in the design of code generator.	10M	5	2
	OR			
Q.6(B)	Explain about peephole optimization with examples.	10M	5	2

***** END*****

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

Question Paper Code: 20CSC401

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS INSTITUTION)

B. Tech III Year I Semester (R20) Supplementary End Semester Examinations, June – 2025

BIG DATA ANALYTICS

(CSE-Cyber Security)

Time: 3Hrs **Max Marks: 60**

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.	Define Data Warehouse.	1M	1	1
	ii.	How Hadoop handle the fault- tolerance mechanism.	1M	1	1
	iii.	What is Predictive Analytics?	1M	2	1
	iv	Define Diagnostic Analytics.	1M	2	1
	v.	Expand HDFS.	1M	3	1
	vi	Expand YARN.	1M	3	1
	vii.	List any two Input Classes for Map Reduce	1M	4	1
	viii.	What is the role of Input Split function?	1M	4	1
	ix.	Define Text Analysis.	1M	5	1
	x.	Define data analytic stack.	1M	5	1
Q.2(A)		Explain the Holistic view of a Big Data System. State the Limitations of Existing Data Analytics Architecture.	10M	1	2
		OR			
Q.2(B)		Explain a) Classification Techniques in data mining. b) Clustering Techniques in Data Mining.	10M	1	2
Q.3(A)		What are Big Data Analytics? Why Big Data Analytics important? Different types of Big Data Analytics.	10M	2	3
		OR			
Q.3(B)		Define the key roles for successful analytic project and explain in detail.	10M	2	2
Q.4(A)		List and explain various features of Hadoop.	10M	3	2
		OR			
Q.4(B)		Write and explain the working of Name node and Data Node.	10M	3	3
Q.5(A)		Write in detail about Map Reduce API.	10M	4	3
		OR			
Q.5(B)		Discuss various Primitive Data types and I/O formats for Map Reduce program.	10M	4	2
Q.6(A)		Describe briefly Data Loading. Explain Data Analysis.	10M	5	2
		OR			
Q.6(B)		Explain key components of Analytic Stack.	10M	5	2

***** END*****