Hall Ticket No: | | | | | | | | | | | Course Code: 18CE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations -DEC 2022

GEOTECHNICAL ENGINEERING

(Civil Engineering)

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

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

			Marks	CO	BL
Q.1	i.	Which test is suitable for the field problem where there is a chance of sudden drawdown (that occurs in earth dam or canal embankment)	1M	1	1
	ii.	What do you mean by Liquid Limit	1M	1	1
	iii.	Write the relationship between void ratio and porosity	1M	2	1
	iv.	Define Residual Soils	1M	2	1
	v.	Write short note on organic soils	1M	3	1
	vi.	Write the difference between the consolidation and compaction	1M	3	1
	vii.	If instead of single drainage, the number of drainage faces is increased to two in corresponding soils, the rate of consolidation will be _____	1M	4	1
	viii.	Which of the expression is used to calculate the value of earth pressure for active condition (Ka)?	1M	4	1
	ix.	What do you mean by factor of safety	1M	5	1
	x.	Explain the concept of Mohr – Coulomb Failure	1M	5	1
Q.2(A)		(i) Differentiate between 'residual' and 'transported' soils. (II) What do you mean by Liquid Limit? Explain.	10M	1	2
		OR			
Q.2(B)		A sample of saturated soil has a water content of 35%. The specific gravity of solids is 2.65. Determine its void ratio, porosity, saturated unit weight, and dry unit weight.	10M	1	3
Q.3(A)		Compute the total, effective, and pore pressure at a depth of 15 m below the bottom of a lake 6 m deep. The bottom of the lake consists of soft clay with a thickness of more than 15 m. The average water content of the clay is 40% and the specific gravity of soils may be assumed to be 2.65.	10M	2	3
		OR			

Q.3(B)	The discharge of water collected from a constant head permeameter in a period of 15 minutes is 500 ml. The internal diameter of the permeameter is 5 cm and the measured difference in head between two gauging points 15 cm vertically apart is 40 cm. Calculate the coefficient of permeability. If the dry weight of the 15 cm long sample is 4.86 N and the specific gravity of the solids is 2.65, calculate the seepage velocity.	10M	2	3
Q.4(A)	What is the mechanism of compaction and explain the factors affecting compaction?	10M	3	3
	OR			
Q.4(B)	(I) Explain the Mohr-Coulomb strength envelope (II) Explain the principle of the direct shear test. What are the advantages of this test?	10M	3	3
Q.5(A)	A cylindrical specimen of a saturated soil fails under an axial stress of 150 kN/m^2 in an unconfined compression test. The failure plane makes an angle of 52° with the horizontal. Calculate the cohesion and angle of internal friction of the soil.	10M	4	2
	OR			
Q.5(B)	(I) Explain the basic differences between a box shear test and a triaxial shear test for soils. (II) Sketch the stress-strain relationship for dense and loose and.	10M	4	2
Q.6(A)	How to find the bearing capacity of soil in field and explain any two methods in-detail	10M	5	3
	OR			
Q.6(B)	In your opinion which is the best equation between (Terzaghi and IS) evaluate the bearing capacity of soil and explain why.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations –DECEMBER 2022

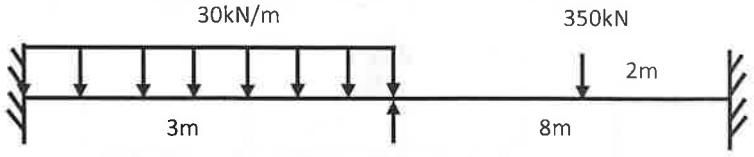
STRUCTURAL ANALYSIS - I

(Civil Engineering)

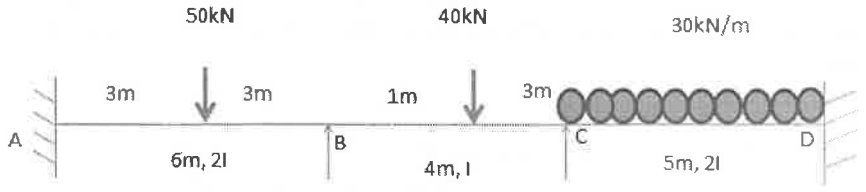
Time: 3Hrs **Max Marks: 60**

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 Part-A or B only

			Marks	CO	BL
Q.1	i.	What are the fixed end moments of a fixed beam subjected to eccentric point load?	1M	1	1
	ii.	Define continuous beam	1M	1	1
	iii.	Write the expression for the distribution factor	1M	1	1
	iv	Mention different methods for the analysis of continuous beams	1M	1	1
	v.	Write the equations for strain energy for axial loading and bending	1M	1	1
	vi	Write the equation of the theorem of three moments	1M	1	1
	vii.	Draw the influence line diagram for SF and BM at a section	1M	4	1
	viii.	Mention the practical applications of influence lines	1M	4	1
	ix.	Differentiate between the cable and arch.	1M	5	1
	x.	What is meant by theoretical arch?	1M	5	1
Q.2(A)		A fixed beam of 5m span supports two point loads of 300kN each at 2m from each end. Find the fixed end moments and draw tne BMD and SFD. Find also the central deflection. Take $I=9*10^8 mm^4$ and $E=200kN/mm^2$.	10M	1	5
		OR			
Q.2(B)		Analyse the continuous beam shown in the figure below and draw SFD and BMD.	10M	1	6

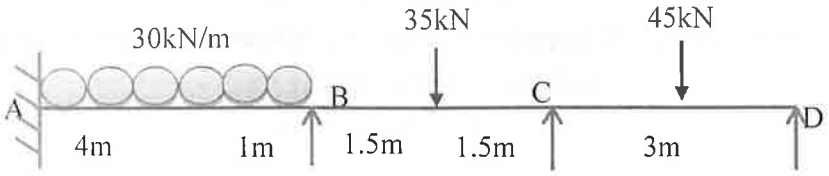


Q.3(A)		Analyse the continuous beam shown below using moment distribution method	10M	2	6



OR

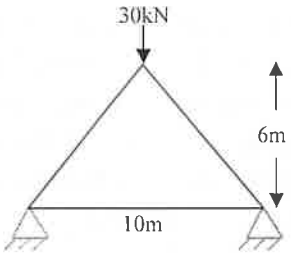
Q.3(B)	Analyse the continuous beam shown in figure by Kani's method	10M	2	5



Q.4(A)	A simply supported beam AB of span L is subjected to a point load at mid span. Find the central deflection using strain energy.	10M	3	3

OR

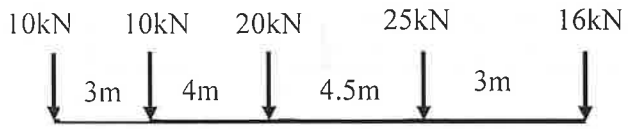
Q.4(B)	Find the horizontal and vertical deflections of the joint C of a pin jointed truss shown below. Area of members are AB=250mm^2 and AC=BC=400mm^2. Take E=2x10^{5}N/mm^2.	10M	3	1



Q.5(A)	Four point loads of 120kN, 160kN, 160kN and 80kN spaced 2m between consecutive loads move on a girder of 20m span, from left to. Calculate (i) the maximum SF and BM at a point 10m from left support and (ii) the value of the Absolute maximum BM.	10M	4	2

OR

Q.5(B)	A system of moving loads shown in the figure below crosses from left to right a girder of 36m span simply supported at its ends. (i) Determine the maximum BM in the girder, (ii) Absolute maximum bending moment.	10M	4	4



Q.6(A)	A two hinged parabolic arch of span 20m has a central rise of 3m and subjected to a UDL of 25kN/m over a distance of 8m from the left span. Find horizontal thrust, reactions at supports and maximum bending moment.	10M	5	4

OR

Q.6(B)	A three-hinged circular arch of span 20m has a rise of 4m. The arch is loaded with a point load of 30kN at a horizontal distance of 6m from left support. Determine the reactions at the supports and bending moment under the load.	10M	5	6

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations – DEC'2022

WATER RESOURCES AND IRRIGATION

(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 Part-A or B only

			Marks	CO	BL
Q.1	i.	Define Water Holding Capacity.	1M	1	1
	ii.	Define Gross Irrigation Requirement	1M	1	1
	iii.	Give an example of a fixed module outlet of a canal.	1M	2	1
	iv	What is a Low Gravity Dam?	1M	4	1
	v.	What is Silt Ejector?	1M	2	1
	vi	What is Aqueduct?	1M	3	1
	vii.	What is Trap Efficiency?	1M	3	1
	viii.	What is the Density current in reservoir sedimentation?	1M	3	1
	ix.	Define the load factor of a hydropower plant.	1M	5	1
	x.	Write an example of an Impulse Turbine.	1M	5	1
Q.2(A)		Discuss various types of irrigation methods used in the field	10M	1	1
		OR1			
Q.2(B)		(i) What do you understand by land reclamation?	2M	1	1
		(ii) What are the causes of waterlogging?	8M	1	1
Q.3(A)		Why canal fall is necessary?	2M	2	2
		What are the various types of canal falls used in practice? Draw and give brief details.	8M	2	1
		OR			
Q.3(B)		Design a canal to carry a discharge of 60 cumecs using Lacey's theory. Take the silt factor as 1.1	10M	2	5
Q.4(A)		Draw a neat sketch of a barrage, label the components, and discuss each of them.	10M	3	2
		OR			
Q.4(B)		(i) Draw a neat sketch and explain the process of reservoir sedimentation.	2M	3	1
		(ii) What are the silt control measures in reservoirs?	8M	3	1
Q.5(A)		Draw neat sketches and describe various types of spillways	10M	4	1
		OR			
Q.5(B)		What are the different ways earthen dams can fail? Explain in detail.	10M	4	1

Q.6(A)	What are the main components of a Hydropower Plant? Discuss in along with a neat sketch.	10M	5	1

OR

Q.6(B)	A common load is shared by two Hydel stations; one being a base load station with 30MW installed capacity and the other being a stand-by station with 35MW capacity. The yearly output of the standby station is 10×10^6 kWh and that of the base load plant is 110×10^6 kWh. The peak load taken by the standby station is 14MW and this station works for 2700 hours during a year. The base load station takes a peak of 18MW. Find out: (i) Annual load factors for both stations, (ii) Plant use factors for both stations, (iii) Capacity factors for both stations	10M	5	5

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CE405

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year I Semester (R18) Supplementary End Semester Examinations – DEC'2022

AIR POLLUTION AND SOLID WASTE 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 Part-A or B only

			Marks	CO	BL
Q.1	i.	Define air pollutants and give an example.	1M	1	1
	ii.	How does air pollution impact the ancient monuments?	1M	1	3
	iii.	Define the principle of the gravity settling chamber.	1M	2	1
	iv	What is adsorption? Give an example for an adsorbent.	1M	2	1
	v.	What are the factors influencing on MSW characteristics?	1M	3	1
	vi	How does solid waste management contribute to environmental protection?	1M	3	4
	vii.	Why the hazardous waste management is important?	1M	4	1
	viii.	What is hazardous waste?	1M	4	2
	ix.	What are the consequences of C&D waste on the environment?	1M	5	1
	x.	What are the sources of E-waste?	1M	5	2
Q.2(A)		Explain the sources and sinks of air pollution in an industrial city.	10M	1	5
		OR			
Q.2(B)		How the dispersion does help to sothe air pollution? Explain factors to be considered during pollution dispersion in atmosphere?	10M	1	4
Q.3(A)		Why the air pollution control acts are required? Explain the air pollution control policy of India.	10M	2	5
		OR			
Q.3(B)		What is the importance of stack height? Explain operation and working principle of venturi scrubber?	10M	2	1
Q.4(A)		Name the factors affecting the quantity of MSW generation? Explain the characteristics of MSW.	10M	3	2
		OR			
Q.4(B)		How to control the flies/rodents in the landfills? Explain the design and construction of a landfill?	10M	3	3
Q.5(A)		How to identify the waste is hazardous? Explain the process of collecting and transportation of hazardous waste.	10M	4	1
		OR			
Q.5(B)		Explain the processing and disposal of hazardous wastes?	10M	4	2
Q.6(A)		Discuss about the various factors to be considered while using construction and demolition wastes in developmental projects.	10M	5	6
		OR			
Q.6(B)		What is an E-waste? Write a note on waste minimization and processing of E-waste.	10M	5	1

*** END***

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

Question Paper Code: 18ENG102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations DEC 2022

ENGLISH COMMUNICATION: READING AND WRITING

(Common to All)

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

			Marks	CO	Bl
Q.1	i.	Skimming is reading rapidly in order to get a general overview of the material. (True/False)	1M	1	1
	ii.	Scanning is reading rapidly in order to find specific facts. (True/False)	1M	1	2
	iii.	How do you identify the main idea of a reading text/passage?	1M	1	4
	iv	What do you understand by Cause-Effect ?	1M	1	4
	v.	How do you understand the discourse markers in the given passage ?	1M	2	3
	vi	What a (*pitiless)* man you are! (Fill with appropriate synonym)	1M	2	3
	vii.	Write antonym for the word *'Virtuous"*	1M	1	1
	viii	What is a Topic sentence?	1M	5	2
	ix.	How do you apply the background knowledge to predict the content?	1M	3	2
	x.	What are the ways to draw inferences for the given paragraph?	1M	4	3

Q.2(A) **(i)Write the synonyms for the following words.** 10M 1 3

Shattered
Fascinating
Intermittent
Substandard
Cheerful

ii) Write the antonyms for the following words.

Wicked
Boring
Tough
Candid
Ingenious

OR

Q.2(B) Explain various reading strategies in detail. 10 M 2 2

Q.3(A) Match the following words to form the collocations. 10M 2 3

1	look up	a problem
2	solve	a word in a dictionary
3	cheer	to meeting
4	look forward	Somebody up
5	keep	financial records

OR

Q.3(B) **Read the following passage and answer the questions.** 10M 1 1

At this stage of civilization, when many nations are brought in to close and vital contact for good and evil, it is essential, as never before, that their gross ignorance of one another should be diminished, that they should begin to understand a little of one another's historical experience and resulting mentality. It is the fault of the English to expect the people of other countries to react as they do, to political and international situations. Our genuine goodwill and good intentions are often brought to nothing, because we expect other people to be like us. This would be corrected if we knew the history, not necessarily in detail but in broad outlines, of the social and political conditions which have given to each nation its present character.

Questions

1. What do you mean by 'Mentality' of a nation according to the passage?
2. The character of a nation is the result of its.....
3. What is the need for a greater understanding between nations?
4. What is the general expectation of people about others?
5. According to the author the countrymen should be.....

Q.4(A) Match the words in Column A with their synonyms in Column B 10M 4 3

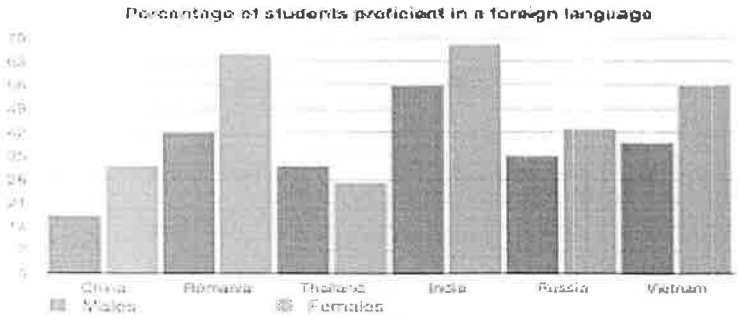
Number	A	B
I	Extensive	Splendid
Ii	Fantastic	Stunning
Iii	Enchanting	Large
Iv	Cordial	Tiny
v	Miniature	Kind

OR

Q.4(B) Develop the following hints into a readable passage and give a suitable title. 10M 5 4

RobertBruce ---defeated ----finds himself in a hopeless situation ---- tempted to give up the struggle ---chance up a spider ----observes how the spider keeps trying to reach its web ----nine times it fails to climb up the thread ----succeeds in the tenth attempt ---- Robert Bruce gets inspired ---- he tries again and succeeds ---reclaims his kingdom

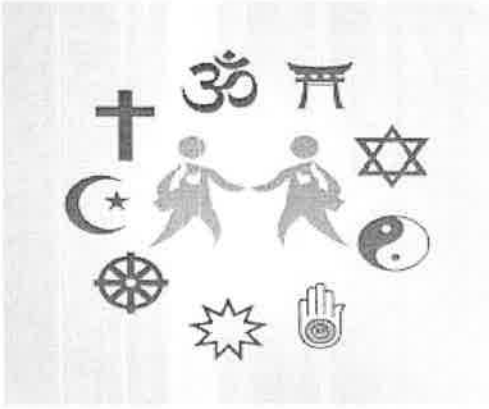
Q.5(A) Study the given graph and write your interpretation in not more than 150 w 10M 3 2



OR

Q.5(B) Write a cause –effect essay about the reasons for cities becoming overcrowded 10M 2 1

Q.6(A) Write a description of the picture given below. Include enough details so that the reader can visualize it. 10M 3 3



OR

Q.6(B) **Social Media brings more harm than good.** 10M 3 3
Do you agree with the statement? Write your response in not more than 150 – 200 words.

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (r18) Supplementary End Semester Examinations – DEC 2022

POWER SYSTEMS – I (GENERATION, TRANSMISSION, AND DISTRIBUTION)

(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

			Marks	CO	BL
Q.1	i.	What is meant by load factor?	1M	1	1
	ii.	Define: Feeder and distributor.	1M	1	1
	iii.	What are the advantages of using bundled conductors?	1M	2	1
	iv	What is the effect of leading load power factor on voltage regulation of a short transmission line?	1M	2	1
	v.	What is meant by characteristic impedance of transmission line?	1M	3	1
	vi	Define: Ferranti effect.	1M	3	2
	vii.	What are the disadvantages of corona?	1M	4	1
	viii.	What are the types of line supports used in transmission and distribution systems?	1M	4	1
	ix.	Mention the demerits of HVDC transmission.	1M	5	1
	x.	Draw the P-V characteristics of Solar Panel.	1M	5	1
Q.2(A)		Define commutation? Classify various methods to commutate a SCR. Explain any three methods of commutation with relevant sketches.	10M	1	3
		OR			
Q.2(B)		Discuss the steady-state characteristics of a power transistor. Also, explain how transistor acts as a switch.	10M	1	3
Q.3(A)		With necessary circuit and waveforms, explain the principle of operation of single phase full controlled bridge rectifier feeding R-L-E load and derive the expression for the average output dc voltage.	10M	2	2
		OR			
Q.3(B)		Explain the working of a 3-phase full bridge converter feeding R load with its output voltage waveforms for a firing angle of (a) 300 (b) 600 (c) 900. Also derive the expression for the average output DC voltage	10M	2	3
Q.4(A)		Describe the working principle of Buck-Boost converter with relevant waveforms in CCM and DCM. Also, derive an expression for output voltage the in terms of input voltage and duty cycle.	10M	3	2
		OR			
Q.4(B)		Describe the working principle of flyback converter with relevant waveforms. Also, derive an expression for the output voltage in terms of input voltage and duty cycle.	10M	3	3

Q.5(A)	List out various voltage control methods of an inverter. Explain SPWM used in singe-phase inverter.	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	2
Q.6(A)	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	4
	OR			
Q.6(B)	For a single-phase a.c. voltage regulator feeding a resistive load, draw the waveforms of source voltage, gating signals, output voltage, output current and voltage across SCRs. Describe its working with reference to the waveforms drawn.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Course Code: 18EEE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations -DECEMBER 2022

POWER ELECTRONICS

(EEE)

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

Attempt all the questions. All parts of the question must be answered in one place only.
Question 1 is compulsory. Q2. to Q6. have two choices (A or B). Answer any one.

			Marks	CO	BL
Q.1	i.	Define latching current.	1M	1	1
	ii.	Which is the most effective method of turning ON of an SCR?	1M	1	1
	iii.	In the process of diode based rectification, the alternating input voltage is converted into a) an uncontrolled alternating output voltage b) an uncontrolled direct output voltage c) a controlled alternating output voltage d) a controlled direct output voltage	1M	2	1
	iv	Define firing angle.	1M	2	1
	v.	Choppers are used to control the DC voltage level. a) True b) False	1M	3	1
	vi	What is the formula for output voltage for Boost converter? a) 8D×Vin b) 5D×Vin c) 2D×Vin d) D×Vin	1M	3	2
	vii.	List the various PWM techniques.	1M	4	3
	viii.	List out the various voltage control methods of single-phase inverters.	1M	4	1
	ix.	List some industrial applications of cycloconverter.	1M	5	1
	x.	What is a cycloconverter?	1M	5	1
Q.2(A)		Define commutation. Classify various methods to commutate an SCR. Explain any three methods of commutation with relevant sketches.	10M	1	3
		OR			
Q.2(B)		Discuss the steady-state characteristics of a power transistor. Also, explain how the transistor acts as a switch.	10M	1	3
Q.3(A)		With necessary circuit and waveforms, explain the principle of operation of single phase full controlled bridge rectifier feeding R-L-E load and derive the expression for the average output dc voltage.	10M	2	2
		OR			
Q.3(B)		Explain the working of a 3-phase full bridge converter feeding R load with its output voltage waveforms for a firing angle of (a) 30^0 (b) 60^0 (c) 90^0. Also derive the expression for the average output DC voltage	10M	2	3

Q.4(A)	Describe the working principle of the Buck-Boost converter with relevant waveforms in CCM and DCM. Also, derive an expression for output voltage in terms of input voltage and duty cycle.	10M	3	2
	OR			
Q.4(B)	Describe the working principle of the flyback converter with relevant waveforms. Also, derive an expression for the output voltage in terms of input voltage and duty cycle.	10M	3	3
Q.5(A)	List out various voltage control methods of an inverter. Explain the SPWM used in the singe-phase inverter.	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	2
Q.6(A)	Describe the basic principle of working of a three-phase to three-phase cycloconverter along with the help of a schematic diagram and basic circuit.	10M	5	4
	OR			
Q.6(B)	For a single-phase a.c. voltage regulator feeding a resistive load, draw the waveforms of source voltage, gating signals, output voltage, output current, and vthe oltage across SCRs. Describe its working with reference to the waveforms drawn.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE1111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations – DEC'2022

MICROCONTROLLERS AND INTERFACING

(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

			Marks	CO	BL
Q.1	i.	Which makes 8051 as a 8-bit controller?	1M	1	3
	ii.	What is Von Neuman's architecture?	1M	1	1
	iii.	Give one example of 16 bit and 32-bit Microcontroller.	1M	2	1
	iv	What is the function of the T0 pin in 8051?	1M	2	2
	v.	Write down the differences between compiler and assembler.	1M	3	1
	vi	Explain the following instructions. SWAP A	1M	3	3
	vii.	Define linear decoding.	1M	4	1
	viii.	What is the function of Chip select pin?	1M	4	1
	ix.	What is a watchdog timer?	1M	5	1
	x.	Write down one application of USART.	1M	5	2
Q.2(A)		Explain the Architecture of the 8085 microprocessors with a neat, labeled diagram.	10M	1	3
		OR			
Q.2(B)		Explain about bus communication process in 8085 microprocessors.	10M	1	2
Q.3(A)		Explain the Architecture of the 8051 microcontrollers with a neat, labeled diagram.	10M	2	2
		OR			
Q.3(B)		List the SFRs and the operations associated with the following functions in 8051 microcontroller. a. Timer / counter b. various ports	10M	2	2
Q.4(A)		Explain different types of instruction sets used in the 8051 Microcontroller with proper examples.	10M	3	2
		OR			
Q.4(B)		Explain all Addressing Modes of the 8051 Microcontroller with suitable examples.	10M	3	2
Q.5(A)		Draw and explain the interfacing diagram of ADC with 8051 microcontrollers.	10M	4	3
		OR			
Q.5(B)		Design a microcontroller system using 8051. Interface the external ROM of size 4k x 8.	10M	4	3
Q.6(A)		Draw and explain the interfacing diagram of the stepper motor with 8051 microcontrollers and write a program to run the motor in a clockwise direction.	10M	5	3
		OR			
Q.6(B)		Explain the Architecture of the PIC microcontroller with a neat, labeled diagram.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations –DEC'2022

SPECIAL ELECTRICAL MACHINES

(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 A or B only

			Marks	CO	BL
Q.1	i.	State the applications of stepper motor	1M	1	3
	ii.	Enumerate types of stepper motor	1M	1	1
	iii.	Define permanent magnet stepper motor	1M	2	2
	iv	What are the types of driver circuits?	1M	2	2
	v.	What are the essential difference between SRM and stepper motor?	1M	3	1
	vi	What are the advantages of SRM?	1M	3	1
	vii.	Explain the magnetic hysteresis curve with diagram	1M	4	2
	viii.	Name few permanent magnetic materials	1M	4	1
	ix.	What are the applications of PMSM?	1M	5	1
	x.	What are different types of rotors available in PMSM motor?	1M	5	1
Q.2(A)		Draw and explain the drive circuits for stepper motor?	10M	1	3
		OR			
Q.2(B)		Sketch and explain the static and dynamic characteristics of a stepper motor?	10M	1	3
Q.3(A)		Explain the construction and various modes of excitation of VR stepper motor?	10M	2	2
		OR			
Q.3(B)		Explain the construction and various modes of excitation of PM stepper motor?	10M	2	1
Q.4(A)		Explain detail about sensor less control of SRM drive?	10M	3	2
		OR			
Q.4(B)		Describe the various power controller circuits applicable to switched reluctance motor and explain the operation of any one scheme with suitable circuit diagram?	10M	3	2
Q.5(A)		State the magnetic circuit analysis with diagram and torque equation of PM BLDC motor	10M	4	2
		OR			
Q.5(B)		Derive the equation for permeance coefficient of BLDC motor?	10M	4	2
Q.6(A)		Explain the construction and operation of PMSM.	10M	5	2
		OR			
Q.6(B)		Explain in detail torque speed characteristics of permanent magnet synchronous motor	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations – DEC'2022

INDUSTRIAL ELECTRICAL SYSTEMS

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

			Marks	CO	BL
Q.1	i.	Draw the symbol for Fan, Relay, Push button and Lamp	1M	1	1
	ii.	Draw the symbol for variable resistor, continuously variable resistor and variable in step resistor.	1M	1	1
	iii.	Sketch the single diagram for a single phase installation	1M	2	1
	iv	What are the different test conducted for testing of electrical wiring installation?	1M	2	1
	v.	Define the terms Light, lumen and candle power	1M	3	1
	vi	Define depreciation factor.	1M	3	1
	vii.	Enumerate different starting methods of induction motor	1M	4	1
	viii.	Give the classification of circuit breakers.	1M	4	1
	ix.	What are the advantages of Process automation	1M	5	1
	x.	What does sizing of DG means.	1M	5	1
Q.2(A)		With the help of neat sketch explain the working of ELCB	10M	1	2
		OR			
Q.2(B)		Design the schematic and wiring diagram for a circuit in which a bell is to be operated from a 240 V a c supply by means of two push buttons situated at different places. The push buttons are required to be operated at 6 V dc. Use relays with NO contacts.	10M	1	4
Q.3(A)		Draw a neat sketch of the layout of wiring from the supplier's pole to the distribution board of consumer taking single-phase supply, showing the meter, main switch and the distribution board. State briefly the purpose of each of these.	10M	2	2
		OR			
Q.3(B)		When will be three-phase four-wire system is chosen for installation? Explain with the help of single line diagram the installation of three-phase four-wire distribution for single and three-phase load having a common main switch fuse. State the advantages and disadvantage of the system	10M	2	2
Q.4(A)		i. Explain in detail the basic principles of light control ii. Explain in detail types of Lighting Schemes.	10M	3	2
		OR			
Q.4(B)		With the help of neat sketch, explain the construction and operation of CFL	10M	3	2

Q.5(A)	What is an industrial substation and Types of Industrial Substations? With t neat sketch, explain outdoor substation.	10M	4	2
	OR			
Q.5(B)	What are the industrial loads? Explain the starting methods of three phase Induction motor and synchronous motor with the help of neat diagram.	10M	4	2
Q.6(A)	Write a short note on a) DG System, b) UPS System.	10M	5	2
	OR			
Q.6(B)	Explain SCADA system for distribution automation.	10M	5	

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ME110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations – December 2022

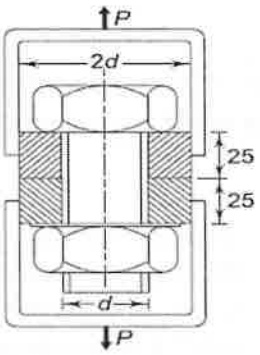
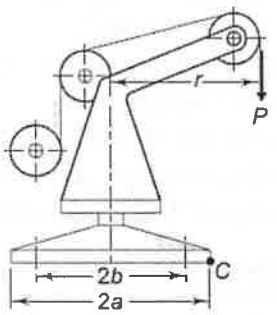
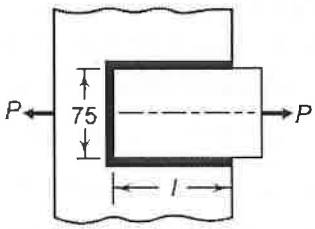
DESIGN OF MACHINE ELEMENTS

(Mechanical Engineering)

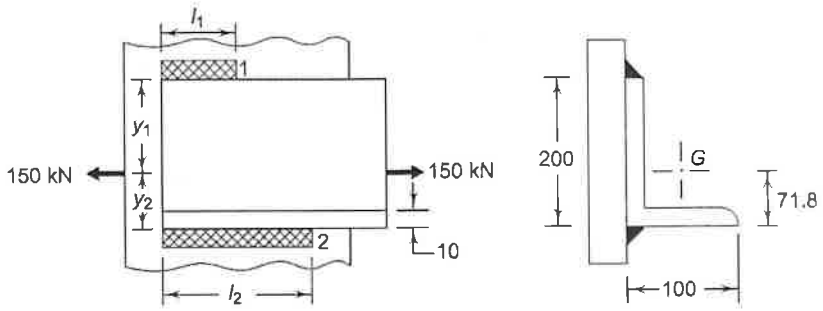
Time: 3Hrs **Max Marks: 60**

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 Part-A or B only

			Marks	CO	BL
Q.1	i.	What is meant by toughness of a material?	1M	1	2
	ii.	What are the 3 types of fits?	1M	1	2
	iii.	What is S–N curve?	1M	2	2
	iv	What is stress concentration?	1M	2	2
	v.	What are different between thread joint and riveted joint?	1M	3	2
	vi	What are the advantages of fine threads?	1M	3	2
	vii.	What is fillet joint?	1M	4	2
	viii.	What are the differences between permanent and temporary joints? Give examples.	1M	4	2
	ix.	Two springs of stiffness 2 N/mm and 3 N/mm are connected in parallel. Find equivalent stiffness.	1M	5	2
	x.	Distinguish between compression spring and extension spring.	1M	5	2
Q.2(A)		What is factor of safety and state important reasons for its usage in design. Also explain, how permissible stresses is estimated while designing machine components made of ductile and brittle materials respectively.	6+4 M	1	
		OR			
Q.2(B)		Design a Cotter joint of socket and spigot type, for connecting two steel rods of equal diameter (d). Each rod is subjected to a tensile force of 50 kN. The permissible stresses for rods, spigot and socket are 66.77 $\frac{N}{mm^2}$ in tension, 133.33 $\frac{N}{mm^2}$ in compression and 33.33 $\frac{N}{mm^2}$ in shear. Similarly, the permissible stresses for cotter pin are 100 $\frac{N}{mm^2}$ in tension and 50 $\frac{N}{mm^2}$ in shear. Specify the main dimensions using neat drawings. (Take empirical proportions, Cotter thickness t = 0.31*d; Spigot collar diameter d_3=1.5d; Socket collar diameter d_4= 2.4d; thickness of spigot collar $t_1 = 0.45d$).	10M	1	3
Q.3(A)		The load on a bolt consists of an axial pull of 10 kN together with a transverse shear force of 5 kN. Find the diameter of bolt required according to: 1. Maximum principal stress theory; 2. Maximum shear stress theory; 3. Maximum distortion energy theory. Take permissible tensile stress at elastic limit = 100 MPa and Poisson's ratio = 0.3.	10M	2	4
		OR			

Q.3(B)	A rod of a linkage mechanism made of steel 40Cr1 (S_{ut} = 550 N/mm^2) is subjected to a completely reversed axial load of 100 kN. The rod is machined on a lathe and the expected reliability is 95%. There is no stress concentration. Determine the diameter of the rod using a factor of safety of 2 for an infinite life condition.	10M	2	4
Q.4(A)	Two circular plates with (2d) and (d) as outer and inner diameters respectively, are clamped together by means of a bolt as shown in Fig. The bolt is made of plain carbon steel 45C8 (S_{yt} = 380 N/mm^2 and E = 207000 N/mm^2), while the plates are made of aluminium (E = 71000 N/mm^2). The initial pre-load in the bolt is 5 kN and the external force acting on the bolted joint is 10 kN. Determine the size of the bolt, if the factor of safety is 2.5. 	10M	3	4
	OR			
Q.4(B)	A pillar crane, shown in Fig., is fastened to the foundation by means of 16 identical bolts spaced equally on 2 m pitch circle diameter. The diameter of the pillar flange is 2.25 m. Determine the size of the bolts if a load of 50 kN acts at a radius of 7.5 m from the axis of the crane. The maximum permissible tensile stress in the bolt is limited to 75 N/mm^2. 	10M	3	4
Q.5(A)	1. What is welding? Write advantages. 2. A plate, 75 mm wide and 10 mm thick, is joined with another steel plate by means of single transverse and double parallel fillet welds, as shown in Fig. The joint is subjected to a maximum tensile force of 55 kN. The permissible tensile and shear stresses in the weld material are 70 and 50 N/mm^2 respectively. Determine the required length of each parallel fillet weld. 	(4+6) M	4	3
	OR			

Q.5(B)	An ISA 200×100 ×10 angle is welded to a steel plate by means of fillet welds as shown in Fig. 8.17. The angle is subjected to a static force of 150 kN and the permissible shear stress for the weld is 70 N/mm^2. Determine the lengths of weld at the top and bottom.	10M	4	4



Q.6(A)	A railway wagon moving at a velocity of 1.5 m/s is brought to rest by a bumper consisting of two helical springs arranged in parallel. The mass of the wagon is 1500 kg. The springs are compressed by 150 mm in bringing the wagon to rest. The spring index can be taken as 6. The springs are made of oil-hardened and tempered steel wire with ultimate tensile strength of 1250 N/mm^2 and modulus of rigidity of 81370 N/mm^2. The permissible shear stress for the spring wire can 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) Solid length; (vi) Free length; (vii) Pitch of the coil;	10M	5	5

OR

Q.6(B)	A semi-elliptic multi-leaf spring is used for the suspension of the rear axle of a truck. It consists of two extra full-length leaves and ten graduated-length leaves including the master leaf. The centre-to-centre distance between the spring eyes is 1.2m. The leaves are made of steel 55Si2Mo90 (S_{yt} = 1500 N/mm^2 and E = 207 000 N/mm^2) and the factor of safety is 2.5. The spring is to be designed for a maximum force of 30 kN. The leaves are pre-stressed so as to equalize stresses in all leaves. Determine (i) the cross-section of leaves; and (ii) the deflection at the end of the spring.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Course Code: 18ME111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations -Dec 2022

MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

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

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

			Marks	CO	BL
Q.1	i.	Give the mathematical expression for the chip thickness ratio.	1M	1	2
	ii.	How helpful is providing cutting fluid during the machining?	1M	1	2
	iii.	What are different indexing methods used in gear cutting?	1M	2	1
	iv	Mention the advantages of high-speed machining.	1M	2	1
	v.	Write the formula for machining time calculation in grinding.	1M	3	2
	vi	What are the specifications of the grinding wheel?	1M	3	1
	vii.	Give the applications of electro-discharge machining (EDM).	1M	4	2
	viii.	What are the pros and cons of laser beam machining (LBM)	1M	4	1
	ix.	Define adaptive control.	1M	5	1
	x.	Write the mathematical expression for the cost of the single pass-turning operation.	1M	5	2
Q.2(A)		i) In detail explain orthogonal cutting and oblique cutting. ii) What are the different types of chips and how are they formed during machining operation?	10M	1	3
		OR			
Q.2(B)		The speed and life relationship for a tool is given by VT1/3= 200 for a given set of conditions and the time taken to change the tool is 6 min. Show that operating at a speed of 75 mom gives higher output than operating at either 110 mpm or 50 mpm, if other conditions remain unchanged.	10M	1	4
Q.3(A)		i) Explain the taper turning by tailstock set-over method with a neat sketch. ii) Differentiate shaper and planer.	10M	2	2
		OR			
Q.3(B)		Find the time required for taking a complete cut on a plate 600 mm × 900 mm. If the cutting speed is 9 m/min the return time to cutting time ratio is 1:4 and the feed is 3 mm. The clearance at each end is 75 mm.	10M	2	3
Q.4(A)		Explain the theory behind the grinding process. Describe the effect of various process parameters on the grinding process	10M	3	3
		OR			
Q.4(B)		Classify the various types of grinding machines and discuss the differences between lapping and honing processes.	10M	3	3

Q.5(A)	With the help of a neat sketch explain the abrasive jet machining process and discuss process parameters.	10M	4	3
	OR			
Q.5(B)	Explain the principle of electron beam machining (EBM) . And mention its process characteristics.	10M	4	2
Q.6(A)	Derive an expression for optimum cutting speed in turning for minimum cost.	10M	5	4
	OR			
Q.6(B)	Derive an expression for optimum cutting speed in turning for maximum production rate and profit rate.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Course Code: 18ME112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations – DEC'2022

HEAT TRANSFER

(ME)

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

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

			Marks	CO	BL
Q.1	i.	Stainless steel pans are usually provided with copper bottoms. Why?	1M	1	2
	ii.	Write down the equation for conduction for heat through a plane wall.	1M	1	1
	iii.	Define fin effectiveness.	1M	2	1
	iv	What are Heisler charts?	1M	2	1
	v.	State Newton's law of convection.	1M	3	1
	vi	What are the dimensionless parameters used for forced convection?	1M	3	1
	vii.	What would happen to the temperature of boiling water if you added energy?	1M	4	2
	viii.	Give the merits of dropwise condensation.	1M	4	1
	ix.	Why we do feel hotter than the outside atmosphere in a parked car with closed windows?	1M	5	2
	x.	What is the purpose of radiation shield?	1M	5	1
Q.2(A)	Derive general heat conduction equation in cylindrical coordinates.		10M	1	3
	OR				
Q.2(B)	A steel pipe of 120mm inner diameter, and 140mm outer diameter with thermal conductivity 55 W/mK is covered with two layers of insulation each having a thickness of 55mm. The thermal conductivity of the first insulation material is 0.05 W/mK and that of the second is 0.11 W/mK. The temperature of the inner tube surface is 240°C and that of the outside surface of the insulation is 60°C. Calculate the loss of heat per metre length of pipe and the interface temperature between the two layers of insulation.		10M	1	3
Q.3(A)	A copper fin (k=396 W/mK) 0.25 cm in diameter protrudes from a wall at 95°C into ambient air at 25°C. The heat transfer coefficient by free convection is equal to 10W/m^{2}K. Calculate the heat loss if (i) the fin is infinitely long, (ii) the fin is 2.5 cm long and the coefficient at the end is the same as around the circumference.		10M	2	3
	OR				
Q.3(B)	A very thick wall is initially at a temperature of 25°C and the wall temperature is suddenly raised to 700°C and remains constant thereafter. Calculate the following. (i) Temperature in a plane at a depth of 300 mm from the surface after 7 hours, (ii) Instantaneous heat flow rate at a depth of 300mm and on the surface after 7 hours, and (iii) Total heat energy after 7 hours. Take thermal conductivity as 0.75 W/mK and thermal diffusivity as 0.002 m^2/hr.		10M	2	3

Q.4(A)	How heat transfer coefficient is calculated in forced convection for laminar flow, turbulent flow and in transition region.	10M	3	3
	OR			
Q.4(B)	A vertical pipe of 12cm outer diameter, 2.5m long, at a surface temperature of 120°C is in a room where the air is at 20°C. Calculate the heat loss per metre length of the pipe.	10M	3	3
Q.5(A)	Briefly discuss the phenomenon of nucleate and film boiling. Explain with a neat diagram the various zones of boiling.	10M	4	3
	OR			
Q.5(B)	In a double pipe counter flow heat exchanger, 10000 kg/hr of an oil having a specific heat of 2095 J/kgK is cooled from 80°C to 50°C by 8000kg/hr of water entering at 25°C. Determine the heat exchanger area for an overall heat transfer co-efficient of 300W/m^2K. Take C_p for water at 4180 J/kgK.	10M	4	3
Q.6(A)	800W/m^2 of radiant energy is inclined upon a surface, out of which 300W/m^2 is absorbed, 100W/m^2 is reflected and the remainder is transmitted through the surface. Calculate the following. (i)Absorptivity, (ii) Reflectivity, and (iii) Transmissivity.	10M	5	3
	OR			
Q.6(B)	Two black square plates of size 1 by 1m are placed parallel to each other at a distance of 0.4m. One plate is maintained at a temperature of 900°C and the other at 400°C. Find the net heat exchange of energy due to radiation between the two plates.	10M	5	3

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ME405

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations –DEC'2022

FINITE ELEMENT METHODS

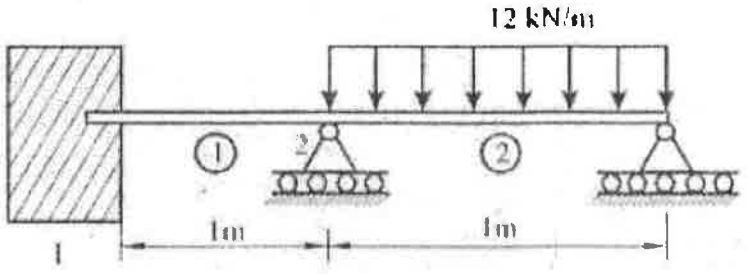
(ME)

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

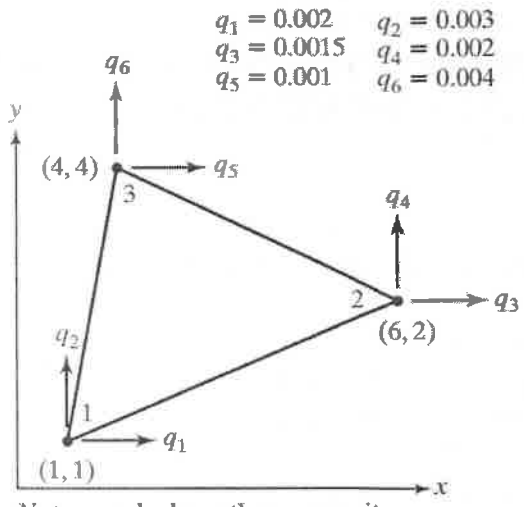
			Marks	CO	BL
Q.1	i.	What is meant by discretization?	1M	1	1
	ii.	Name two software packages in Finite Element Analysis.	1M	1	2
	iii.	How do you define two-dimensional elements?	1M	2	2
	iv	What is a truss?	1M	2	1
	v.	Write advantage of axi-symmetric element	1M	3	1
	vi	What is a CST element?	1M	3	1
	vii.	Specify the two applications of heat transfer	1M	4	2
	viii.	Write one difference between conduction, convection?	1M	4	2
	ix.	What is consistent mass matrix?	1M	5	1
	x.	Define the terms i) frequency and ii) amplitude	1M	5	1

Q.2(A)	What is Finite Element Method? List the Advantages, dis advantages & Applications of FEM.	10M	1	2
	OR			
Q.2(B)	Using Gauss elimination method, solve: $2x - y + 3z = 9$ $x + y + z = 6$ $x - y + z = 2$	10M	1	3
Q.3(A)	Derive the Stiffness Matrix of 1D Bar Element.	10M	2	3
	OR			
Q.3(B)	For the beam and loading shown in the figure, determine (i) the slopes at 2 and 3 and (ii) the vertical deflection at the midpoint of the distributed load.	10M	2	4



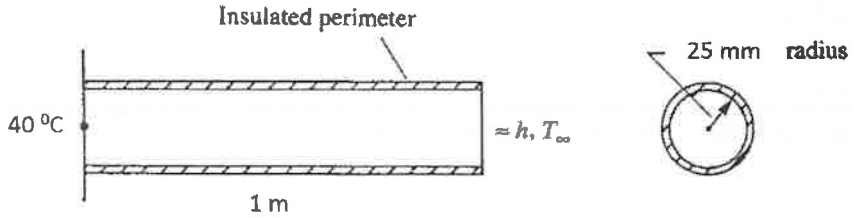
Q.4(A)	Derive an Expression for Jacobian Matrix for a three noded CST element.	10M	3	3
	OR			

Q.4(B)	For the triangular element shown in the figure, obtain the strain-displacement relation matrix **B** and determine the strains in x, y, xy	10M	3	4

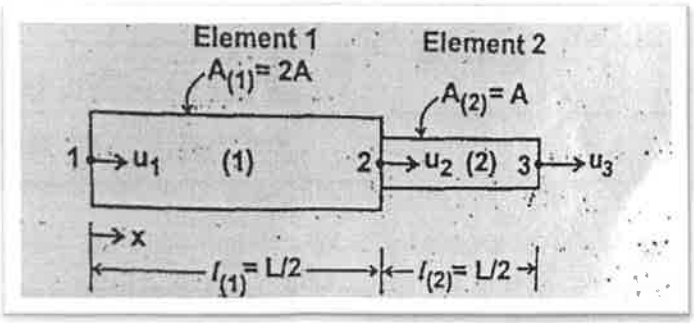


Note: **q** and **x** have the same units.

Q.5(A)	i) what are the modes of heat transfer? Briefly discuss about them. ii) Explain the types boundary conditions in heat Transfer Problems	10M	4	3
	OR			
Q.5(B)	Determine the temperature distribution along the length of the rod shown in Figure with an insulated perimeter. The temperature at the left end is a constant 40 ^{0}C and the free-stream temperature is -10 ^{0}C. Let h =55 W/ (m^2.^{0}C) and K_{xx} = 35 W/ (m. ^{0}C). The value of h is 55 W/ (m. ^{0}C) and the value of K_{xx} is 35 W/(m. ^{0}C).	10M	4	4



Q.6(A)	Derive the expression for element mass matrix for one dimensional bar element.	10M	5	3
	OR			
Q.6(B)	Find the natural frequencies of longitudinal vibration of the unconstrained stepped bar shown in below figure.	10M	5	4



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Hall Ticket No: | | | | | | | | | | | Course Code: 18 ME 426

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year & I Semester (R18) Supplementary End Semester Examinations -DEC'2022

DESIGN THINKING & PRODUCT INNOVATION

(Mechanical Engineering)

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

Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

			Marks	CO	BL
Q.1	i.	What is innovation?	1M	1	1
	ii.	What is a prototype?	1M	1	1
	iii.	Name two product manufacturing processes.	1M	2	1
	iv	How is design thinking different from traditional approaches of product design?	1M	2	1
	v.	State the role of teamwork indecision-making.	1M	3	1
	vi	Draw a simple flow chart for decision-making in product design.	1M	3	1
	vii.	State one business strategy of the Adani Group of companies.	1M	4	1
	viii.	Suggest an advertisement tagline for the Make in India lemonade (lemon juice) campaign.	1M	4	1
	ix.	Suggest a product alternative to plastic for packaging milk.	1M	5	1
	x.	State the importance of Make in India Campaign.	1M	5	1
Q.2(A)		List some of the important events in the history of modern design.	10M	1	2
		OR			
Q.2(B)		What are the steps involved in designing a product?	10M	1	2
Q.3(A)		Describe the role of 3D printer in designing a new product.	10M	2	4
		OR			
Q.3(B)		Describe two conventional and two unconventional methods of product developments and manufacturing.	10M	2	4
Q.4(A)		Design and draw a sketch of a pen holder that can be used as a mobile phone holder/stand.	10M	3	5
		OR			
Q.4(B)		What are the challenges that are faced in designing a product?	10M	3	2

Q.5(A)	An Indian Startup company is planning to launch a made in India smartphone. Make a strategic route map or plan to beat Chinese dominant market in terms of design, features, cost, after services, and marketing, etc.	10M	4	4
	OR			
Q.5(B)	An Indian Startup company is planning to launch a "Carbonated Lemonade Drink". Make a strategic plan to beat the existing multinational soft drink companies in terms of product design, packaging, cost, tag line, advertisement campaigns etc.	10M	4	4
Q.6(A)	Develop a strategic road map (plan) to reduce usage of plastics in India.	10M	5	4
	OR			
Q.6(B)	Develop a strategic road map (plan) to reduce pollution of rivers in India.	10M	5	4

*** END***

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

Question Paper Code: 18ECE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

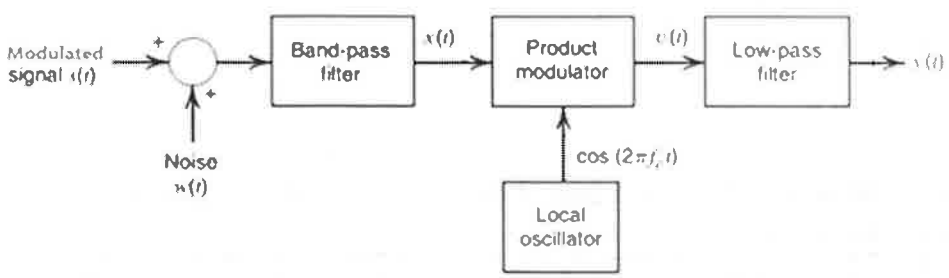
B.Tech III Year I Semester (R18) Supplementary End Semester Examinations – Dec' 2022

ANALOG AND DIGITAL COMMUNICATIONS

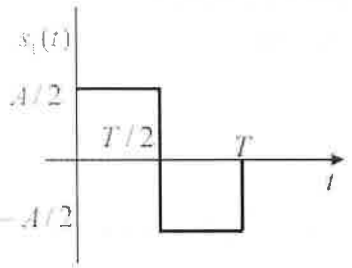
(ECE)

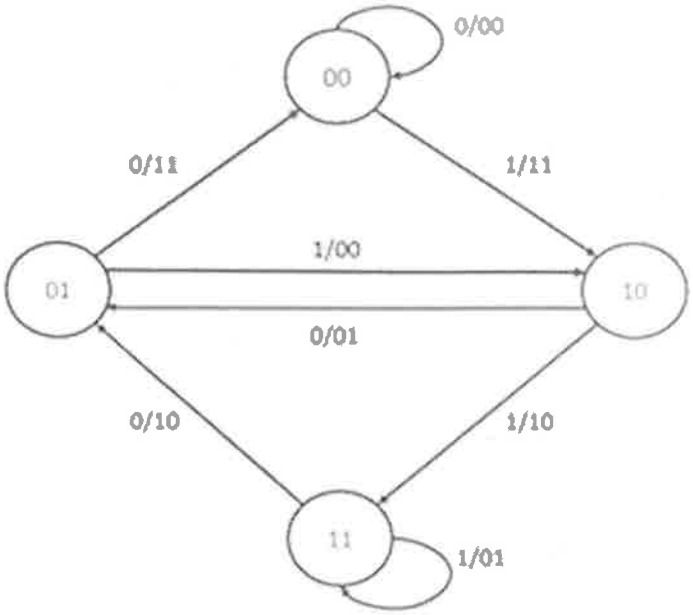
Time: 3Hrs **Max Marks: 60**

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 Part A or Part B only

Q.No.		Question	Marks	CO	BL
Q.1	i.	Define Figure of Merit in noise analysis of communication system	1M	CO1	BL1
	ii.	What is pre-emphasis and de-emphasis?	1M	CO1	BL1
	iii.	What is the maximum power efficiency of DSB-FC AM modulation system?	1M	CO2	BL1
	iv	Write down the time domain mathematical expression of SSB-SC modulation system.	1M	CO2	BL1
	v.	List the analog pulse modulation system	1M	CO3	BL1
	vi	What is aliasing?	1M	CO3	BL1
	vii.	Write the expression of impulse response of matched filter.	1M	CO4	BL1
	viii.	Define Coherent and Non cohernoncoherentn	1M	CO4	BL1
	ix.	What are types of equalizers?	1M	CO5	BL1
	x.	Define equalizer and its purpose	1M	CO5	BL1
Q.2(A)		The following model shown in Figure Q1 is used in an AM receiver. By **analyzing** the model: 1. Identify the receiver type (coherent or non-coherent) 2. Assuming DSB-SC AM wave is received, sketch the power spectral density of the bandpass filter 3. Estimate the output, v(t), at the output of product modulator 4. Discuss the bandwidth requirement of the low pass filter 5. Determine the Figure of Merit and comment on it. 	10M	CO1	BL3

OR

Q.2(B)	With relevant sketches and expressions, discuss the effect of noise in FM system.	10M	CO1	BL2
Q.3(A)	i. Explain the concept of Frequency Division Multiplexing with suitable block diagram. ii. Consider an amplitude modulated communication system with the frequencies ranging from 550 kHz to 1650 kHz. The bandwidth allotted to any broadcasting station 10 kHz including guard band. Determine the number of broadcasting stations that can be multiplexed in such communication systems.	10M	CO2	BL3
	OR			
Q.3(B)	i) 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. Determine the approximate bandwidth of the FM wave using Carson's rule. ii) A single tone FM signal is given by: $\varphi_{FM}(t) = 10[\cos(2\pi 10^6 t) + 8\sin(2\pi 10^3 t)]$. Determine the following: i. The carrier frequency, f_c. ii. The modulation index, β iii. The peak frequency deviation, $\triangle f$ iv. The bandwidth of $\varphi_{FM}(t)$	10M	CO2	BL3
Q.4(A)	Describe in detail the PCM technique with focus on the sampling rate, and signal to quantization noise ratio.	10M	CO3	BL2
	OR			
Q.4(B)	Explain the transmitter and receiver section of Delta modulation. What are the noises that occur in delta modulation? How it is rectified?	10M	CO3	BL2
Q.5(A)	(a) Find the data rate of QPSK modulation technique if signal bandwidth is 200kHz and number of bits needed for sampling pattern are 3. (b) Plot the matched filter output as a function of time. 	10M	CO4	BL4
	OR			
Q.5(B)	Explore the BPSK modulator and demodulator diagram with suitable signal representation at end of each blocks.	10M	CO4	BL2
Q.6(A)	i) Consider the state transition diagram for convolutional coding. assuming the initial state to be 00. Let the received code sequence across a noiseless channel be 11 01 00 10 10 11 00. By a simple inspection of the state diagram, what is the decoded input bit sequence?	10M	CO5	BL4



ii) What is the Hamming distance between the received sequence and coded output sequence corresponding to the decoded state sequence?

OR

Q.6(B) Discuss about 10M CO5 BL2

i) Linear equalization

ii) Adaptive equalization

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations –Dec 2022

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.	When an LTI system is said to be stable?	1M	1	1
	ii.	What is the energy of a power signal?	1M	1	1
	iii.	Define the symmetry property of twiddle factor.	1M	2	1
	iv.	Write the frequency shifting property of DTFT.	1M	2	2
	v.	What is invertible system?	1M	3	1
	vi.	What is mixed phase transfer function?	1M	3	1
	vii.	What is warping effect?	1M	4	1
	viii.	Write the transfer function of the Butterworth filter.	1M	4	1
	ix.	Write the difference between floating point and fixed point DSP.	1M	5	2
	x.	What is pipelining?	1M	5	1
Q.2(A)		Determine the system $y(n)=x(n^2)$ is (i) Static or dynamic (ii) Linear or nonlinear (iii) Time-invariant or variant (iv) Causal or non-causal	10M	1	2
		OR			
Q.2(B)		(i) Find the convolution between the following signals using graphical method $x(n)=\{4, 2, -4, 1\}$ and $h(n)=\{1, -1, 2, 1\}$	10M	1	3
Q.3(A)		(i) Discuss the differences between DIT and DIF algorithms. (ii) Find the DFT of the following sequence using FFT algorithm $x(n)=\{1,1,3,4,1,1,1,0\}$	2+8=10M	2	2
		OR			
Q.3(B)		(i) Find the z-transform of the following function $x(n)=[3(3)^n-4(2)^n]u(n)$ for ROC $\|z\|>3$ (ii) Find the circular convolution of the two sequences using concentric circle as well as matrix multiplication method $x_1(n)=\{1, 2, 2, 1\}$ and $x_2(n)=\{1, 2, 3, 1\}$	5M+5M	2	2
Q.4(A)		Obtain the Direct form I, Direct form II, cascade and parallel form realization of the IIR system . $y(n)=-0.1y(n-1)+0.2y(n-2)+3x(n)+3.6x(n-1)+0.6x(n-2)$	10M	3	3
		OR			
Q.4(B)		Describe the different types of linear phase transfer function	10M	3	2

Q.5(A)	Design a digital Chebyshev IIR filter using the Bilinear Transformation with T=1 satisfying the constraint $0.8 \le \left\|H\left(e^{j\omega}\right)\right\| \le 1 \text{ for } 0 \le \omega \le 0.2\pi$ $\left\|H\left(e^{j\omega}\right)\right\| \le 0.2 \text{ for } 0.6\pi \le \omega \le \pi$	10M	4	3
	OR			
Q.5(B)	Design a LPF using rectangular window for the desired frequency response of a low pass filter given by $\omega_c = \pi/2$ rad/sec, and take M =7. Find the values of $h(n)$. Also plot the magnitude response.	10M	4	2
Q.6(A)	(i) Describe the Harvard architecture of DSP processor. (ii) Describe the architecture of TMS320C6713 floating point processor.	10M	5	2
	OR			
Q.6(B)	Discuss the two applications of DSP with suitable examples.	10M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

AI TOOLS, TECHNIQUES AND APPLICATIONS

(Electronics & Communication 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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	How does an unsupervised learning algorithm differ from supervised learning algorithms?	1M	1	2
	ii.	Define Machine Learning?	1M	1	1
	iii.	Define Logic?	1M	1	1
	iv	What are the two components of NLP?	1M	2	1
	v.	What is NLP in the cloud?	1M	2	1
	vi	What is pixel?	1M	3	1
	vii.	What is the first and foremost step in Image Processing?	1M	3	1
	viii.	What is the expanded form of JPEG?	1M	3	1
	ix.	How to reduce the error in cost function?	1M	4	3
	x.	What is forward propagation?	1M	4	1
Q.2(A)		How to solve the Wumpus World Environment problem? Illustrate with neat diagram.	10M	1	3
		OR			
Q.2(B)		Illustrate an algorithm for detecting anomalies in given dataset.	10M	1	2
Q.3(A)		Explain the Natural Language Understanding (phases/modules) with block diagram.	10M	2	2
		OR			
Q.3(B)		Define Chatbot. Discuss the elements and best practices needed to design a chatbot?	10M	2	3
Q.4(A)		Explain briefly about spatial domain enhancement.	10M	3	2
		OR			
Q.4(B)		Briefly elaborate about Frequency domain enhancement.	10M	3	4
Q.5(A)		What is deep learning? Explain its uses and application and history.	10M	4	2
		OR			
Q.5(B)		Analyze the Recurrent Neural Network (RNN) architecture.	10M	4	4
Q.6(A)		Discuss about the smart agriculture using AI.	10M	5	2
		OR			
Q.6(B)		Explain the AI approaches for smart city applications.	10M	5	2

*** END***

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

Question Paper Code: 18ECE403

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester Supplementary End Semester Examinations –Dec' 2022

(Regulations: R18)

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 Part-A or B only

Q.No.		Question	Marks	CO	BL
Q.1	i.	Classify Physiological Systems in Human body.	1M	1	2
	ii.	Compare Sensor and actuator	1M	1	4
	iii.	Examine Bioelectric potential.	1M	2	4
	iv	Draw the graph of Depolarization and Repolarization.	1M	2	4
	v.	TV stand for _____	1M	3	2
	vi	IRV stands for _____	1M	3	2
	vii.	Distinguish between stationary anode X-ray tube and rotating anode X-ray tube.	1M	4	4
	viii.	What for radio-isotopes are used in medical practice and in what way?	1M	4	2
	ix.	What is the need for using a cardiac pacemaker?	1M	5	2
	x.	Draw the schematic diagram of a d.c. defibrillator.	1M	5	4
Q.2(A)		What is need for a biomedical instrument system? With a neat sketch explain significant of each basic component in it.	10M	1	2
		OR			
Q.2(B)		Draw a typical ECG Signal and mark its amplitude and time. Briefly explain working of human respiratory system with neat sketch.	10M	1	4
Q.3(A)		Write short note on (1) Skin surface Electrode (2) Needle electrode	10M	2	2
		OR			
Q.3(B)		What is polarization? Explain how does depolarization and repolarization occur in a cell?	10M	2	4
Q.4(A)		What are the direct methods of measuring blood pressure? Draw a typical set up of a pressure measuring system by direct method.	10M	3	2
		OR			
Q.4(B)		Discuss in detail about Impedance plethysmography.	10M	3	2
Q.5(A)		What are X-rays and what are their properties? Explain the basis of radiology with the help of a diagram.	10M	4	2
		OR			
Q.5(B)		Explain the principle of constructing 3-D ultrasound images.	10M	4	2
Q.6(A)		Discuss in detail about Pacemakers.	10M	5	2
		OR			
Q.6(B)		Discuss in detail about various safety accepts should be followed in bio medical instruments.	10M	5	2

*** END***

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

Question Paper Code: 18ECE405

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester Supplementary End Semester Examinations –Dec' 2022

(Regulations: R18)

NETWORKS AND TRANSMISSION LINES

(ECE)

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

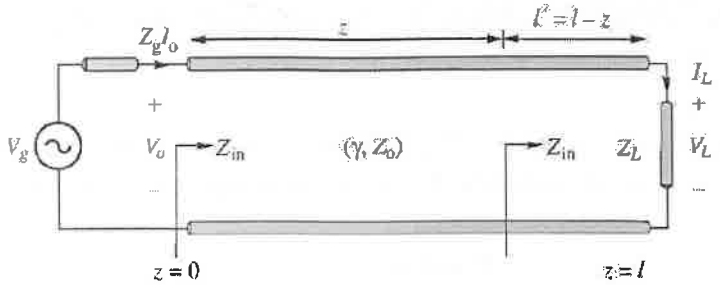
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	What is lattice network?	1M	1	1
	ii.	Define network elements.	1M	1	1
	iii.	Write the relation between nepers and decibels	1M	2	1
	iv	What are the disadvantages of constant k filters? How can we address those?	1M	2	1
	v.	Define attenuator.	1M	3	1
	vi	Write the decibels measure equation of attenuation.	1M	3	1
	vii.	What is a transmission line?	1M	4	1
	viii.	Circuit theory is valid when size of the circuit is much less than wavelength. (True or False)	1M	4	1
	ix.	Write the upper and lower bounds for VSWR and reflection coefficient.	1M	5	2
	x.	What is the condition for a distortion less line?	1M	5	1
Q.2(A)		Derive the expression of ITERATIVE IMPEDANCE of T- Network.	10M	1	3
		OR			
Q.2(B)		Derive the characteristic impedance of symmetric T- network in the pass and stop bands.	10M	1	3
Q.3(A)		Explain the designing steps of constant k-low pass filter using both π and T-sections.	10M	2	2
		OR			
Q.3(B)		Design a high pass filter having a cut-off frequency of 2 kHz with a load resistance of 500 Ω.	10M	2	4
Q.4(A)		Derived design equations for bridged-T attenuator with suitable network.	10M	3	3
		OR			
Q.4(B)		Design a T-pad attenuator to give an attenuation of 80dB and to work in a line of 300Ω impedance.	10M	3	4
Q.5(A)		Draw the distributed model of a transmission line and explain the voltage and current solutions of transmission line.	10M	4	3
		OR			

Q.5(B) The voltage and current in a transmission line of the circuit shown below are given as, 10M 4 4

$$V(z,t) = Re\{(10e^{-(0.01+j10)z} + 1e^{(0.01+j10)z})e^{jwt}\}\ and$$

$$I(z,t) = Re\left\{\left(10e^{-(0.01+j10)z} - 1e^{(0.01+j10)z}\right)\frac{e^{jwt}}{50}\right\}.$$



Using the concept of transmission line Calculate:

(i) Propagation constant (ii) Characteristic impedance (iii) Input impedance seen at the source end of transmission line,

(iv) Load impedance

(v) Internal impedance of the source

(iv) Source voltage

Q.6(A) a) Explain how standing waves are produced? How can standing waves be eliminated? 5M 5 2

b) A transmission line with VSWR of 10 and characteristic impedance 50 Ω is terminated with a load impedance Z_L. Find the reflection coefficient 5M

OR

Q.6(B) Locate the following on the smith chart: Consider the normalizing impedance as 100Ω. 10M 5 3

(a) 50+J75 (b) 10+j0 Ω (c) 0+j80 Ω (d) Γ= $0.3\angle 60^{o}$ (e) Constant VSWR circle for ρ = 2 (f) Minimum resistance point constant VSWR circle for ρ = 2.

*** END***

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

Question Paper Code: 18ECE402

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester Supplementary End Semester Examinations –Dec' 2022

(Regulations: R18)

PATTERN RECOGNITION AND ITS APPLICATION

(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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	What does classifier mean?	1M	1	1
	ii.	What is distance metric?	1M	1	1
	iii.	What feature improves the accuracy of PR.	1M	2	1
	iv	What is Dendrogram?	1M	2	2
	v.	What is the application of string based classification?	1M	3	2
	vi	Structural pattern recognition is suitable for which data.	1M	3	1
	vii.	What is the effect of missing data in pattern recognition system?	1M	4	2
	viii.	Define Histogram used in pattern recognition?	1M	4	1
	ix.	What is the application of PR when data is digit?	1M	5	1
	x.	How to detect boundaries of fuzzy classes?	1M	5	1
Q.2(A)		Explain in detail about the statistical and structural pattern recognition and also discuss the difference features extraction process between them?	10M	1	1
		OR			
Q.2(B)		Describe each block or stage of pattern recognition system?	10M	1	2,4
Q.3(A)		Write briefly about taxonomy of clustering?		2	1, 2
		OR			
Q.3(B)		Data X is collected from experiments as: X = [8 12 13 17 18 27, 33, 36]. Cluster the above data according to Hierarchical clustering and write all the procedure? Also draw the dendrogram?	10M	2	1,3
Q.4(A)		Explain in detail about grammar, application modes, types and productions?	10M	3	2
		OR			
Q.4(B)		What is string edit distance? Where we use it. Explain with suitable example.	10M	3	1,2
Q.5(A)		Explain how entropy minimization is useful in feature selection?	10M	4	1
		OR			
Q.5(B)		Explain the pre-processing steps in feature selection?	10M	4	1,2
Q.6(A)		Explain all the steps follows in Handwritten digital recognition application?	10M	5	1
		OR			
Q.6(B)		Write Genetic algorithm and write suitable example?	10M	5	1, 2

*** END***

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

Question Paper Code: 18CSE109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

FORMAL LANGUAGE 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

Q.No		Question	Marks	CO	BL
Q.1	i.	Give the Formal Definition of DFA.	1M	1	1
	ii.	What are Kleene Closure and Positive Closure?	1M	1	1
	iii.	For the Grammar {S->As/a, A->SbA/SS/ba} show LMD for the string aabbaaa.	1M	2	2
	iv	List the Rules of CNF and GNF.	1M	2	1
	v.	What are the components of Turing Machine?	1M	3	1
	vi	Define Regular Grammar.	1M	3	1
	vii.	Compare between RLG and LLG.	1M	4	2
	viii.	Name the formal definition of Linear Bounded Automata.	1M	4	1
	ix.	What is Post Correspondence Problem?	1M	5	1
	x.	Show an example of undecidable problem.	1M	5	1
Q.2(A)	a)	Design a DFA which accepts all the strings with even number of 0's and odd number of 1's over alphabet {0,1}.	5M	1	6
	b)	Explain the operations on Strings and Languages.	5M	1	2
		OR			
Q.2(B)		Construct a DFA for the Regular Expression (0+1)*(00+11)(0+1)*.	10M	1	6
Q.3(A)	a)	Prove that the following grammar is ambiguous for the string 000111 S→0Y/01 X→0XY/0 Y→XY1/1	5M	2	5
	b)	Show that L={$a^n b^n c^n$ |n>=1} is not a context free language.	5M	2	2
		OR			
Q.3(B)		Construct a Greibach Normal Form equivalent to the following CFG S->AA/0 A->SS/1	10M	2	6
Q.4(A)	a)	Explain about Halting Problem of Turing Machine.	5M	3	2
	b)	Explain about the Computational Model of Turing Machine.	5M	3	2
		OR			
Q.4(B)		Construct a Turing Machine for the Regular Expression (a+b)*(aa+bb)(a+b)*	10M	3	6
Q.5(A)		Construct LLG and RLG for the Regular Expression (0+1)*00(0+1)*	10M	4	6
		OR			
Q.5(B)		Explain about the equivalence of Linear Bounded Automata and Context Sensitive Grammar with example.	10M	4	2

Q.6(A)	Define Post Correspondence Problem. Explain in brief about PCP with an example.	10M	5	2
	OR			
Q.6(B)	Explain in detail about Decidability and Undecidability Problems	10M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

COMPUTER ORGANIZATION AND ARCHITECTURE

(Computer Science and 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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	List out two examples of R-type instructions.	1M	1	1
	ii.	What is the relationship between the relative performance and execution time	1M	1	1
	iii.	Convert 132.264 into Normalized floating point representation	1M	2	2
	iv	What are the standards used for representing alphabets and numbers?	1M	2	1
	v.	Define branch prediction?	1M	3	1
	vi	Enumerate the various pipeline stages in a MIPS processor.	1M	3	1
	vii.	Mention the drawbacks of Coarse grained Multithreading.	1M	4	1
	viii.	List the various types of Flynn's classification?	1M	4	1
	ix.	Mention the advantages of Direct Mapped Cache.	1M	5	1
	x.	Differentiate SRAM from DRAM	1M	5	2
Q.2(A)		Explain the various Instruction formats available in MIPS architecture, give atleast one instruction examples for each type.	10M	1	2
		OR			
Q.2(B)		Explain any four types of addressing modes of any latest CISC processor with suitable example?	10M	1	2
Q.3(A)		Represent the following decimal numbers in IEEE 754 Single Precision Floating Point Numbers (32 bits) and Double Precision Floating Point Numbers (64 bits) (a) 37.05295 (b) 0.0101234	10M	2	3
		OR			
Q.3(B)		Explain the Booth's Multiplication Algorithm with the help of a flowchart. Multiply 11 x -11 using Booth's Multiplier.	10M	2	2
Q.4(A)		Explain the basic MIPS implementation of the instruction set.	10M	3	2
		OR			
Q.4(B)		Define hazard? Explain in detail about various types of hazard with suitable example.	10M	3	2

Q.5(A)	With neat sketch, explain the concept of Instruction level parallelism	10M	4	2
	OR			
Q.5(B)	Illustrate the concepts of hardware Multithreading with neat sketches.	10M	4	2
Q.6(A)	Explain in detail about memory hierarchy with neat sketch.	10M	5	2
	OR			
Q.6(B)	Explain briefly about the DMA controller with neat diagram.	10M	5	2

*** END***

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

Question Paper Code: 18CSE112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

SOFTWARE ENGINEERING

(Computer Science & Engineering)

Time: 3 Hrs **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.	Which of the software engineering paradigms would be most effective? Why?	1M	1	1
	ii.	Define Software Engineering.	1M	1	1
	iii.	Define data dictionary.	1M	2	1
	iv	Define the objective of Feasibility study.	1M	2	1
	v.	List the three Golden rules in UID.	1M	3	1
	vi	What is the need for modularity?	1M	3	1
	vii.	Distinguish between Alpha and Beta testing.	1M	4	4
	viii.	Define Stress testing.	1M	4	1
	ix.	Define Six Sigma.	1M	5	1
	x.	Differentiate software quality control and software quality assurance.	1M	5	4
Q.2(A)		(a) Define SDLC (b) Explain any one SDLC Model in detail.	10M	1	2
		OR			
Q.2(B)		Define Agile Software Engineering. List the different Principles of Agile Software Engineering	10M	1	2
Q.3(A)		Explain in detail about various activities of requirement Engineering Process	10M	2	2
		OR			
Q.3(B)		What is Software Requirement Specification (SRS)? Explain in Detail.	10M	2	3
Q.4(A)		Explain and implement the following diagram with an example. (a) class diagram (b) object diagram	5M 5M	3	2
		OR			
Q.4(B)		Explain in detail about User Interface Design Process model	10M	3	2
Q.5(A)		Explain the various testing strategies for conventional software.	10M	4	2
		OR			
Q.5(B)		Explain in detail about white box testing. Explain in detail about Black box testing.	5M 5M	4	2
Q.6(A)		Explain in detail about Software Reliability.	10M	5	2
		OR			
Q.6(B)		Explain in detail about the Statistical Software Quality Assurance?	10M	5	2

*** END***

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

Question Paper Code: 18CSU402

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

MOBILE COMPUTING

(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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	What is all supplementary service in GSM?	1	1	1
	ii.	Write the characteristic of communication device can exhibit?	1	1	1
	iii.	Define HLR.	1	2	1
	iv	Difference between HLR and VLR.	1	2	1
	v.	Define mobile IP.	1	3	1
	vi	What are the uses of GRE?	1	3	1
	vii.	Define fast retransmit.	1	4	1
	viii.	Mention the advantage of snooping TCP?	1	4	1
	ix.	What is the abbreviation of WTLS?	1	5	1
	x.	Write the features of Bluetooth.	1	5	1
Q.2(A)		Explain different security services in GSM with neat diagram?	10	1	2
		OR			
Q.2(B)		Discuss briefly different types of handovers in GSM?	10	1	6
Q.3(A)		Compare between SDMA/TDMA/FDMA and CDMA	10	2	5
		OR			
Q.3(B)		Briefly explain CDMA with example?	10	2	2
Q.4(A)		Briefly explain agent registration.	10	3	2
		OR			
Q.4(B)		Explain briefly about DHCP.	10	3	2
Q.5(A)		Explain briefly indirect TCP and Snooping TCP with neat diagram?	10	4	2
		OR			
Q.5(B)		What is meant by congestion and explain how it is controlled?	10	4	2
Q.6(A)		Explain about WDP.	10	5	2
		OR			
Q.6(B)		Briefly elaborate Bluetooth security components and protocols.	10	5	6

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE404

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

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.	Lit out the any two differences between web client and web server.	1M	1	1
	ii.	Define HTML.	1M	1	1
	iii.	What is Cascading Style Sheets? List out the various types.	1M	2	1
	iv	Define Debuggers.	1M	2	1
	v.	What do you mean by document node?	1M	3	1
	vi	What is Event Listener?	1M	3	1
	vii.	What is Ajax?	1M	4	1
	viii.	Define XSLT.	1M	4	1
	ix.	What is meant by WSDL?	1M	5	1
	x.	What is SOAP?	1M	5	1
Q.2(A)		Demonstrate in detail about structure of HTTP request message.	10M	1	2
		OR			
Q.2(B)		Explain in detail List creation using HTML with example programs.	10M	1	5
Q.3(A)		Develop the HTML program Cascading style sheet with examples.	10M	2	3
		OR			
Q.3(B)		Discuss JavaScript Built-in objects in detail with suitable examples.	10M	2	6
Q.4(A)		Distinguish in detail about document tree in detail.	10M	3	4
		OR			
Q.4(B)		Elaborate in detail about Java Servlets- Architecture with examples.	10M	3	6
Q.5(A)		Explain in detail Ajax with examples.	10M	4	5
		OR			
Q.5(B)		Elaborate in detail about XSLT with examples.	10M	4	6
Q.6(A)		Explain the SOAP elements in detail.	10M	5	5
		OR			
Q.6(B)		Develop the servlet program to display a 'welcome' message on the client system.	10M	5	3

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18BIO101

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year I Semester (R18) Supplementary End Semester Examinations – December 2022

LIFE SCIENCE FOR ENGINEERS

(Common to All)

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

			Marks	CO	BL
Q.1	i.	_____ is also known as the Powerhouse of the cell.	1M	1	1
	ii.	What are Photoautotrophs? Give an example.	1M	1	1
	iii.	Haemoglobin binds 4 O_2 molecules. True or False	1M	2	1
	iv	Why are enzymes known as biocatalysts?	1M	2	1
	v.	_____ and _____ sum up for Metabolism.	1M	3	1
	vi	Name the three structural class of neurons	1M	3	1
	vii.	What is an allele?	1M	4	1
	viii.	Where can we find DNA inside the cell?	1M	4	1
	ix.	How would you relate K_{eq} to standard free energy?	1M	5	1
	x.	Name the Energy Currency in cellular process?	1M	5	1
Q.2(A)	Draw and explain the animal cell structure.		10M	1	5
	OR				
Q.2(B)	Compare the functioning of Bird and Aeroplane.		10M	1	5
Q.3(A)	What are proteins and discuss in detail their structure and function correlation		10M	2	6
	OR				
Q.3(B)	Explain the formation and functions of Starch and Cellulose.		10M	2	5
Q.4(A)	Explain the TCA of cellular respiration with a neat diagram.		10M	3	5
	OR				
Q.4(B)	Discuss the neuromuscular junction (NMJ) with a neat illustration.		10M	3	6
Q.5(A)	Explain the process of DNA Replication and Transcription in detail.		10M	4	5
	OR				
Q.5(B)	(i) Elaborate the working principle of biosensor and biochip?		5M	4	6
	(ii) Distinguish the differences between Mitotic and Meiotic cell division.		5M	4	4
Q.6(A)	Discuss the mechanism of photosynthesis with neat diagram.		10M	5	6
	OR				
Q.6(B)	(i) Why are ATPs called as the Energy currency of the cell? Justify		6M	5	4
	(ii) what are endergonic and exergonic reactions and give examples		4M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST109

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

FORMAL LANGUAGES AUTOMATA 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 State Machine (FSM).	1M	1	1
	ii.	What is ambiguous Grammar?	1M	1	1
	iii.	Define Lookahead	1M	2	1
	iv	Write the difference between LR(0) and SLR(1)	1M	2	1
	v.	Define Flow of Control Check.	1M	3	1
	vi	Define Type conversion.	1M	3	1
	vii.	What is constant folding?	1M	4	1
	viii.	What is Common Sub expression Elimination?	1M	4	1
	ix.	Differentiate Abstract Syntax Tree and DAG representations of intermediate code	1M	5	1
	x.	Explain the role of code generator in a compiler	1M	5	1
Q.2(A)		Define Automata Theory. State its importance. Compare DFA and NFA with suitable example.	10M	1	2
		OR			
Q.2(B)		What is Context Free Grammar? Draw the Leftmost and Rightmost Derivation tree for the given CFG and find the yield of the respective tree structure. S →aAS | aSS |ε, A → SbA | ba	10M	1	3
Q.3(A)		Check the given input string "aabab" is suitable for parsing by CLR (1) $S \rightarrow AA$ $A \rightarrow aA\|b$	10M	2	4
		OR			
Q.3(B)		What is intermediate code Representation? Explain Quadruple, Triple and Indirect Triple with the help of an example.	10M	2	3
Q.4(A)		Discuss in detail on Types and declarations. Give appropriate examples for Type Expressions and type system.	10M	3	3
		OR			
Q.4(B)		Differentiate Type 3, Type 2, Type 1 and Type 0 grammar with appropriate examples.	10M	3	3
Q.5(A)		Construct LLG and RLG for the Regular Expression (0+1)*00(0+1)*	10M	4	2
		OR			

Q.5(B)	Discuss in detail about Principal Sources of Optimization.	10M	4	3
Q.6(A)	Discuss in detail on Global Data Flow Analysis with appropriate example.	10M	5	3

OR

Q.6(B)	Write in detail about Code Generation Algorithms.	10M	5	2

***** END*****

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

Question Paper Code: 1c

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December –2022

Computer Organization and Architecture

(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 Part-A or B only

Q.No.		Question	Marks	CO	BL
Q.1	i.	Define data Redundancy.	1M	1	2
	ii.	What is the instruction to add two numbers with carry?	1M	1	1
	iii.	Convert 0.25 to binary.	1M	2	1
	iv	Represent - $(17.71)_{10}$ in single precision format	1M	2	1
	v.	Mention the purpose of Program counter Register?	1M	3	1
	vi	How many types of pipeline hazards are there what are they?	1M	3	1
	vii.	Define Instruction Level Parallelism (ILP)?	1M	4	1
	viii	List drawback of executing multi threads?	1M	4	1
	ix.	What is meant by Temporal locality and Spatial locality?	1M	5	1
	x.	Which memory has fast access with CPU ? Why?	1M	5	1
Q.2(A)		Describe the Internal model block diagram of CISC type processor and Explain each block in detailed?	10M	1	2
		OR			
Q.2(B)		i) Elaborate the various Arithmetic and data transfer instructions in MIPS Assembly language.	6 M	1	2
		ii) Discuss the procedure to convert gray code into BCD format and also draw the flow chart?	4M	1	3
Q.3(A)		Illustrate the restoring and Non-restoring division algorithm for floating point numbers with a Suitable flow chart and example.	10M	2	3
		OR			
Q.3(B)		Discuss about various Data compression methods with an example?	10M	2	3
Q.4(A)		Discuss about types of dependencies and discuss with example programs?	10M	3	2
		OR			
Q.4(B)		How Hazards are eliminated during execution of Data instruction? Illustrate with examples in brief?	10M	3	3
Q.5(A)		Discuss about ILP scheduling techniques in detailed?	10M	4	4
		OR			
Q.5(B)		What is mean by Implicit Multithreading and Explicit multithreading? Discuss with examples in brief?	10M	4	2

Q.6(A)	Discuss about pipeline cache access and non blocking cache optimization technique in brief?	10M	5	3
	OR			
Q.6(B)	Discuss about complier controlled perfecting optimization technique in brief?	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST108

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

COMPUTER NETWORKS

(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 Computer Network?	1M	1	2
	ii.	Define Addressing	1M	1	2
	iii.	What are the responsibilities of data link layer?	1M	2	2
	iv	What are the functions of MAC?	1M	2	1
	v.	Give the functions of network layer	1M	3	
	vi	What is routing?	1M	3	2
	vii.	The transport layer creates the connection between source and destination. What are the three events involved in the connection?	1M	4	2
	viii.	Define Congestion and give the types of congestion control mechanisms.	1M	4	2
	ix.	Write down the three types of WWW documents	1M	5	1
	x.	Mention the function of SMTP	1M	5	2
Q.2(A)		Explain the ISO-OSI model of computer network with a neat diagram.	10M	1	2
		OR			
Q.2(B)		Write in detail on various types of transmission media, highlighting their merits and demerits	10M	1	2
Q.3(A)		A series of 8-bit message blocks 11100110 transmitted across a data link using a CRC for error detection. A generator polynomial of X^4+X^3+1 is to be used. Illustrate the following: (i) CRC Generation Process (ii) CRC Checking Process	10M	2	4
		OR			
Q.3(B)		Explain CSMA/CD and CSMA/CA algorithm in detail?	10M	2	2
Q.4(A)		Explain in detail about distance vector routing algorithm?	10M	3	2
		OR			
Q.4(B)		Explain the operation of IGMP in detail?	10M	3	2
Q.5(A)		Illustrate and explain UDP and its packet format?	10M	4	3
		OR			
Q.5(B)		Explain TCP Congestion control techniques in detail?	10M	4	2
Q.6(A)		Discuss FTP in detail	10M	5	2
		OR			
Q.6(B)		Discuss about the fundamentals of Electronic Mail and the architecture of Email System?	10M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST110

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	How does an unsupervised learning algorithm differ from supervised learning algorithms?	1M	1	2
	ii.	Define Machine Learning?	1M	1	1
	iii.	Define Logic?	1M	1	1
	iv	What are the two components of NLP?	1M	2	1
	v.	What is NLP in the cloud?	1M	2	1
	vi	What is pixel?	1M	3	1
	vii.	What is the first and foremost step in Image Processing?	1M	3	1
	viii.	What is the expanded form of JPEG?	1M	3	1
	ix.	How to reduce the error in cost function?	1M	4	3
	x.	What is forward propagation?	1M	4	1
Q.2(A)		How to solve the Wumpus World Environment problem? Illustrate with neat diagram.	10M	1	3
		OR			
Q.2(B)		Illustrate an algorithm for detecting anomalies in given dataset.	10M	1	2
Q.3(A)		Explain the Natural Language Understanding (phases/modules) with block diagram.	10M	2	2
		OR			
Q.3(B)		Define Chatbot. Discuss the elements and best practices needed to design a chatbot?	10M	2	3
Q.4(A)		Explain briefly about spatial domain enhancement.	10M	3	2
		OR			
Q.4(B)		Briefly elaborate about Frequency domain enhancement.	10M	3	4
Q.5(A)		What is deep learning? Explain its uses and application and history.	10M	4	2
		OR			
Q.5(B)		Analyze the Recurrent Neural Network (RNN) architecture.	10M	4	4
Q.6(A)		Discuss about the smart agriculture using AI.	10M	5	2
		OR			
Q.6(B)		Explain the AI approaches for smart city applications.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST402

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary End Semester Examinations, December – 2022

MOBILE COMPUTING

(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		Questions	Marks	CO	BL
Q.1	i.	What are the types of handover in GSM?	1M	1	1
	ii.	How radio interface works with GSM?	1M	1	1
	iii.	Differentiate between CDMA and TDMA?	1M	2	1
	iv	What is near terminal problem?	1M	2	1
	v.	Describe Mobile IP optimization?	1M	3	1
	vi	State the agent discovery?	1M	3	1
	vii.	Give any two advantages of selective retransmission?	1M	4	1
	viii.	What is fast recovery of Mobile TCP?	1M	4	1
	ix.	Describe Bluetooth?	1M	5	1
	x.	List features of WML?	1M	5	1
Q.2(A)		Deliberate about novel applications and limitations of Mobile Computing?	10M	1	2
		OR			
Q.2(B)		Describe the mobility management in GSM?	10M	1	2
Q.3(A)		Explain the role of RTS and CTS & write about implementation of MAC in hidden and exposed terminals near for terminals?	10M	2	2
		OR			
Q.3(B)		Explain in detail about SDMA and FDMA?	10M	2	2
Q.4(A)		Explain the goals, assumptions and requirements of Mobile IP?	10M	3	2
		OR			
Q.4(B)		Describe in detail about Dynamic Host Configuration Protocol?	10M	3	2
Q.5(A)		Write about Transaction oriented TCP?	10M	4	2
		OR			
Q.5(B)		Compare Traditional, Indirect, Snooping and Mobile TCP in all aspects?	10M	4	2
Q.6(A)		Explain the parameters of transactions and session protocols of WAP?	10M	5	2
		OR			
Q.6(B)		Describe WAP model and WAP gateway in detail.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ENG3M03

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary (MOOCS) End Semester Examinations – DEC'2022

SOFT SKILL DEVELOPMENT

(Common to ALL)

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.1(A)	Explain Verbal and Non-Verbal Communication.	12M
	OR	
Q.1(B)	Explain Active Listening and its importance.	12M
Q.2(A)	Illustrate the barriers involved in working as a team	12M
	OR	
Q.2(B)	Discuss Motivation and its types	12M
Q.3(A)	Define the Stages involved in Effective Presentations	12M
	OR	
Q.3(B)	What is the objective of conducting GD in the Interview Process? Discuss Dos and Don'ts in Group discussion and their Benefits	12M
Q.4(A)	What are the different skills required in handling an interview?	12M
	OR	
Q.4(B)	) Difference between CV and Resume. Prepare your own CV for Applying to ABC Company	12M
Q.5(A)	Explain Email Etiquette and Write an Email to Appling for the Software Engineering position at XYZ Company.	12M
	OR	
Q.5(B)	Write short notes on (a)Email Etiquette (b) Grooming Etiquette	12M

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18HUM3M02

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) (MOOCs) Supplementary End Semester Examinations – DEC'2022

ETHICS IN ENGINEERING PRACTICE

(Common to ALL)

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

			Marks	CO	BL
Q.1	i.	Morality	1M	1	1
	ii.	Culture	1M	1	1
	iii.	Pragmatism	1M	2	1
	iv	Meta-ethics	1M	2	1
	v.	Job insecurity	1M	3	1
	vi	Privacy	1M	3	1
	vii.	Glass ceiling	1M	4	1
	viii.	Utilitarian theory	1M	4	1
	ix.	Employer	1M	5	1
	x.	Work place	1M	5	1
Q.2(A)	Discuss various components of ethics.		10M	1	3
	OR				
Q.2(B)	Define "Code of Ethics". How does it help Organizational progress?		10M	1	2
Q.3(A)	Discuss gender equality. And explain work-life balance and ethics.		10M	2	2
	OR				
Q.3(B)	Have you faced any ethical problems in your life? Explain with examples?		10M	2	3
Q.4(A)	Discuss Glass Ceiling?		10M	3	3
	OR				
Q.4(B)	Elucidate the need of ethics in the field of education.		10M	3	5
Q.5(A)	Explain the role of ethics in the field of engineering education.		10M	4	3
	OR				
Q.5(B)	How will Management ethics contribute to a business organization.		10M	4	4
Q.6(A)	Elucidate the ethical impacts of the internet on a society		10M	5	5
	OR				
Q.6(B)	Describe the role of the internet in information and communication.		10M	5	6

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ENG3M02

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year I Semester (R18) Supplementary (MOOCS) End Semester Examinations – DEC'2022

DEVELOPING SOFT SKILLS AND PERSONALITY

(Common to all)

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

Attempt all the questions. All parts of the question must be answered in one place only.

Q.1(A)	Explain in detail on active listening and its importance.	12M
	OR	
Q.1(B)	What are the ways to develop soft skills?	12M
Q.2(A)	Why is Goal-setting important? Explain in detail.	12M
	OR	
Q.2(B)	Explain the importance of planning.	12M
Q.3(A)	Explain various components of Non-verbal Communication for successful careers	12M
	OR	
Q.3(B)	Explain the importance of time management in developing personality.	12M
Q.4(A)	What is the importance of motivation in achieving things?	12M
	OR	
Q.4(B)	Why is it important to improve optimism in oneself?	12M
Q.5(A)	Discuss the importance of Listening skills and the barriers to effective Listening	12M
	OR	
Q.5(B)	Explain different ways to understand human perception.	12M

*** END***