Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CE111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Regular & Supplementary End Semester Examinations –JAN 2023

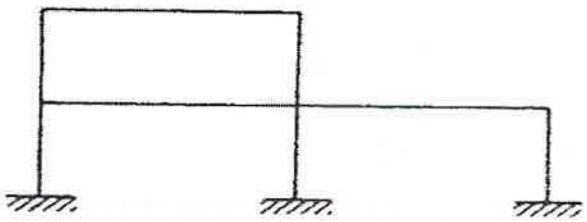
STRUCTURAL ANALYSIS - I

(Civil Engineering)

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

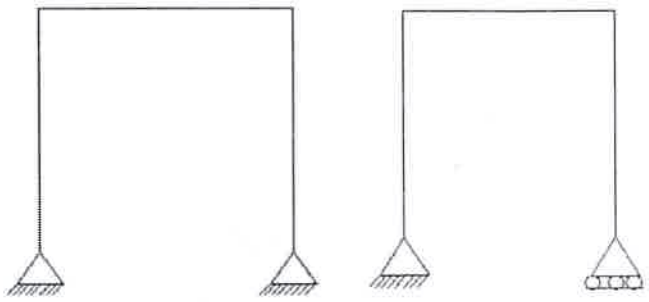
Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either A or B only

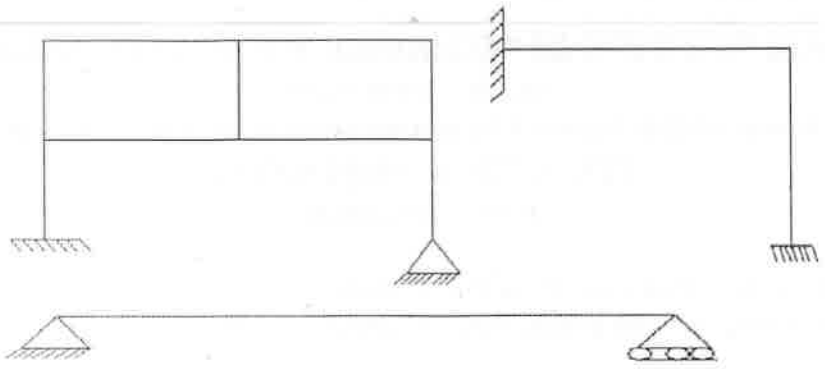
			Marks	CO	BL
Q.1	i.	Give the mathematical expression for the degree of static indeterminacy of rigid jointed plane frames.	1M	1	1
	ii.	Define static indeterminacy.	1M	1	2
	iii.	What are determinate structures?	1M	2	2
	iv	What is the sum of the distribution factors?	1M	2	2
	v.	What do you mean by plastic capacity of a structure?	1M	3	1
	vi	Determine the total indeterminacy of the structure shown	1M	3	1



	vii.	Define Shape Factor.	1M	4	2
	viii.	Differentiate between stiffness and flexibility.	1M	4	2
	ix.	Give the mathematical expression for the degree of internal indeterminacy of a continuous beam.	1M	5	2
	x.	Define distribution factor and carry over factor in moment distribution method.	1M	5	1

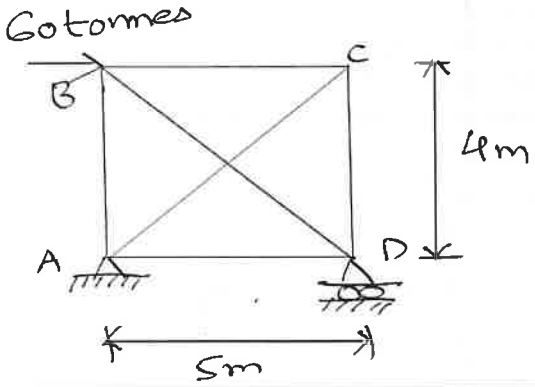
Q.2(A)	Determine the static indeterminacy of the following structures.		2M+ 2M+ 2M+ 2M+ 2M= 10M	1	5



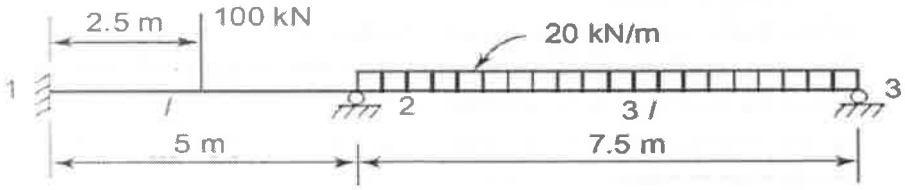


OR

Q.2(B) Analyze the truss and as shown in the figure below. E=2000t/cm^2. The area of cross-section of all the members is 10cm^2. 10M 1 5

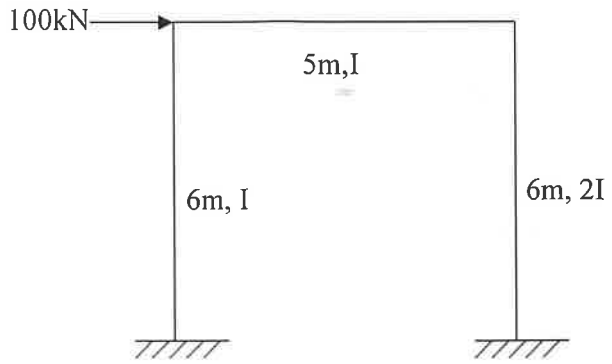


Q.3(A) Analyse the structure as shown in Fig. below using slope deflection method. 10M 2 4

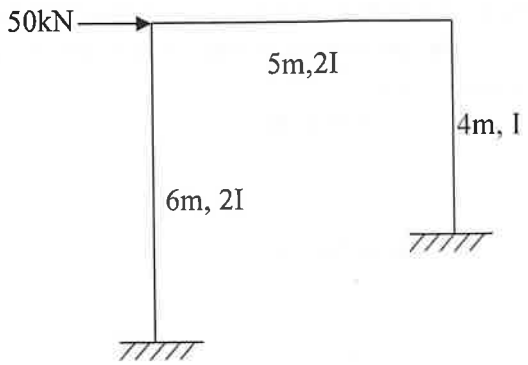


OR

Q.3(B) Analyse the structure shown in the figure below by Moment distribution method. 10M 2 4

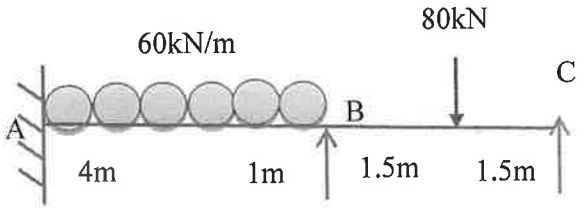


Q.4(A) Analyse the frame shown in the figure by Kani's method by without considering sway. 10M 3 4

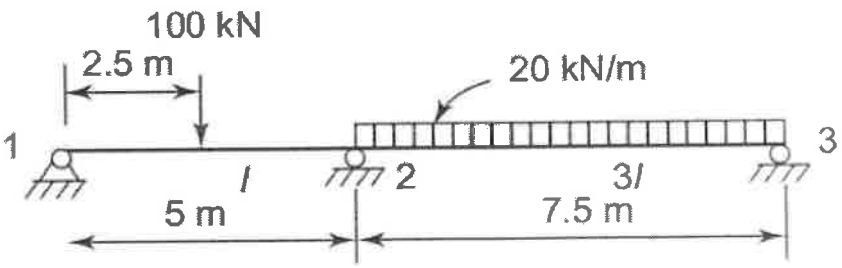


OR

Q.4(B) Analyse the continuous beam shown in Figure by flexibility method. 10M 3 4

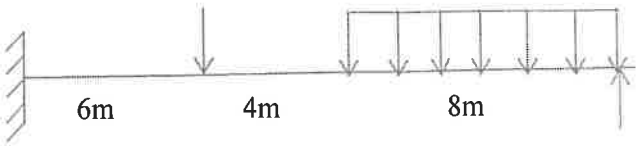


Q.5(A) Analyse the continuous beam shown in Figure by stiffness method 10M 4 4



OR

Q.5(B) Analyze the continuous beam shown in Figure below using moment distribution Method. EI=Constant. 10M 4 4



3EI 2EI

Q.6(A)	Determine the value of ultimate load w_u for a beam which is fixed at both the ends having plastic moment capacity M_p.	10M	5	5

OR

Q.6(B)	Determine the value of ultimate load w_u for a propped cantilever beam of length L having a concentrated load of magnitude W per unit length and having plastic moment capacity is M_p.	10M	5	5

*** END***

Name of the Course Coordinator: Dr. Biraja Prasad Mishra

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

Question Paper Code: 18CE112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year IISemester Regular & Supplementary End Semester Examinations – JAN'2023

TRANSPORTATION ENGINEERING

(Civil Engineering)

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

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

			Marks	CO	BL
Q.1	i.	Define terms speed and density?	1M	1	1
	ii.	What are the various types of intersection?	1M	1	1
	iii.	What is at Grade Intersection?	1M	2	1
	iv	What is vertical alignment of a road?	1M	2	1
	v.	Define camber?	1M	3	1
	vi	What is right of way?	1M	3	1
	vii.	How do you calculate speed of any vehicle?	1M	4	1
	viii.	What is medians?	1M	4	1
	ix.	What is the basic requirement of a highway alignment?	1M	5	1
	x.	What is pavement unevenness?	1M	5	1
Q.2(A)		How do you carried out the engineering surveys for deciding Highway Alignment? What are the salient features of cross-section of a Highway Alignment?	10M	1	3
		OR			
Q.2(B)		Discuss the factors controlling the selection of highway alignment? Explain it with neat sketches?	10M	1	3
Q.3(A)		What are the elements of highway cross-section? Explain in detail with sketches?	10M	2	4
		OR			
Q.3(B)		A state highway passing through a rolling terrain has a horizontal curve of equal to the riling minimum radius. 1. Design all geometric features of this curve, assuming suitable data 2. Specify the minimum setback distance from the centre line of the two-lane highway on the inner side of the curve upto which the building etc. obstructing vision should not be constructed so that Intermediate site distance is available throughout the circular curve. Assume the length of circular curve greater than the sight distance. Assume the design speed of the vehicle as 120 kmph.	10M	2	6
Q.4(A)		The 15 minute-traffic count on cross roads 1 and 2 during peak hour are observed as 178 and 142 vehicles per lane respectively approaching the intersection in the direction of heavier flow. If amber time require are 3 and 2 seconds respectively for two loads based on approach speeds, design the signal timings by trial cycle method. Assume an average time headway of 2.5 seconds during green phase.	10M	3	4
		OR			
Q.4(B)		Explain in detail the various types of signals?	10M	3	5

Q.5(A)	Discuss in detail the seven principles of universal design	10M	4	1
	---OR			
Q.5(B)	What are different Scientific Investigations and Data Collection in road safety?	10M	4	3
Q.6(A)	Explain in detail Runway Orientation	10M	5	2
	OR			
Q.6(B)	Discuss on the Elements of harbor and port planning with sketch.	10M	5	2

*** END***

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

Question Paper Code: 18CE113

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

DESIGN OF CONCRETE STRUCTURES

(Civil Engineering)

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

Attempt all the questions. All parts of the question must be answered in one place only.
All parts of Q.no 1 are compulsory. In Q.no 2 to 6 answer either Part A or Part B only.
Use of IS Code 456 is permitted.

			Marks	CO	BL
Q.1	(i)	Define Characteristic Strength?	1M	1	1
	(ii)	What is the partial safety factor for concrete and steel used in Limit state of serviceability?	1M	1	1
	(iii)	What do you mean by Balanced section?	1M	2	1
	(iv)	What is the maximum diameter of the bar that is provided in slabs?	1M	2	1
	(v)	When is shear reinforcement necessary?	1M	3	1
	(vi)	What is the formula for development length as per IS 456:2000?	1M	3	2
	(vii)	State the differences between one way slab and two way slab.	1M	4	1
	(viii)	What are the critical sections for one way and two way shear in the design of footings?	1M	5	1
	(xi)	Explain the failure modes of long columns and short columns under compression.	1M	5	2
	(x)	What are the different types of footings?	1M	5	1
Q.2(A)		Discuss the difference between limit state method and working state method.	10M	1	2
		OR			
Q.2(B)	(i)	What is the necessity of providing reinforcement in concrete? Why steel is used as reinforcement?	5M	1	1
	(ii)	Define under reinforced, over reinforced and balanced sections in limit state method.	5M	1	1
Q.3(A)		A RCC beam of section 350 mm x 350 mm is reinforced with 4 bars of 16 mm diameter with an effective cover of 50 mm. The beam is simply supported over a span of 5 m. Find the maximum permissible UDL on the beam. Use M 20 grade of concrete and Fe 500 steel.	10M	2	2
		OR			
Q.3(B)		What are the assumptions in the Limit state method of design in flexure?	10M	2	1
Q.4(A)		A RC beam, 300 mm x 450 mm depth in cross section is reinforced with 3 No. 20 mm diameter bars of grade Fe 250 with an effective cover of 50 mm. The ultimate shear at section is 138 KN. Design shear reinforcement using only vertical stirrups without bending any bar for resisting shear. Assume concrete of grade M 20.	10M	3	6
		OR			

Q.4(B)	Design a longitudinal reinforcement for rectangular beam section of width 350 mm and effective depth 500 mm, subjected to an ultimate moment of 180 KN-m, ultimate shear force of 30 KN and ultimate torsional moment of 10 KN-m. Use concrete M20 and steel 415.	10M	3	6
Q.5(A)	Design a reinforced concrete slab for room measuring 3 m x 4 m interior dimension. The slab is simply supported and is discontinuous on all four edges, with corners held down. The slab carries a super imposed load of 3 kN/m^2 inclusive of floor finishes. Use M20 mix grade and Fe 415 steel.	10M	4	6
	OR			
Q.5(B)	Design a dog-legged stair for a building in which the vertical distance between the floors is 3.6 m. The stair hall measures 2.5 m x 5m. The live load is taken as 2500 N/m^2 Use M20 grade and Fe 415 steel bars. Create a bar bending schedule for the design with neat sketch.	10M	4	6
Q.6(A)	Design the reinforcement of a column of size 450mmx450mm, subjected to a factored axial load of 1200kN. Use M20 concrete and Fe415 steel. Sketch the reinforcement details.	10M	5	6
	OR			
Q.6(B)	Design a square footing for an axially loaded column of size 300 mm × 300 mm carrying 600 kN load. Use M 20 concrete and Fe 415 steel. Safe bearing capacity of soil is 180 KN/m^2. Sketch the details of reinforcement.	10M	5	6

***** END*****

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

Question Paper Code: 18EEE112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations –JAN'2023

AI TOOLS, TECHNIQUES AND APPLICATIONS

(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.	Artificial Intelligence is the process that does not allow computers to learn and make decisions like humans (True/False).	1M	1	1
	ii.	Differentiate the supervised and unsupervised learning algorithm.	1M	1	1
	iii.	Which is best programming language for chatbot development?	1M	2	1
	iv.	What is a WhatsApp chatbot?	1M	2	1
	v.	List the types of filters used in image processing	1M	3	1
	vi.	Define noise.	1M	3	1
	vii.	What Are the Softmax and ReLU Functions?	1M	4	1
	viii.	Mention the use of the Max-Pooling layer.	1M	4	1
	ix.	Which neural network is suitable for smart agriculture?	1M	5	1
	x.	Explain the behaviour of cloning in autonomous driving?	1M	5	1
Q.2(A)		Solve the Wumpus World Environment problem with a neat diagram?	10M	1	4
		OR			
Q.2(B)		Explain the following uninformed search strategies with examples. a) Breadth First Search b) Depth First Search	10M	1	2
Q.3(A)		What are the elements and best practices needed to design a chatbot?	10M	2	2
		OR			
Q.3(B)		Explain the Natural Language Understanding (phases/modules) with a block diagram.	10M	2	3
Q.4(A)		Explain the application of image processing in optical character recognition (OCR) in detail	10M	3	2
		OR			
Q.4(B)		Explain the major task of image processing levels in image processing.	10M	3	3
Q.5(A)		Summarize the role of activation functions in a neural network with a diagram	10M	4	2
		OR			
Q.5(B)		Explain the architecture of the Convolutional Neural Network (CNN).	10M	4	3
Q.6(A)		Explain smart agriculture using deep learning.	10M	5	3
		OR			
Q.6(B)		Explain the AI approaches for smart city applications	10M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code:18EEE113

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech II Year II Semester (R18) Supplementary End Semester Examinations –JAN'2023

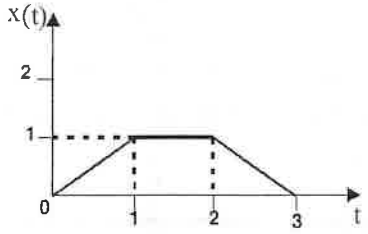
SIGNALS AND SYSTEMS

(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.	Define even and odd signals.	1M	1	1
	ii.	Consider the signal x (t) shown below. Plot x (3t).	1M	1	2



	iii.	What is condition of causality of LTI system?	1M	2	1
	iv	What is natural response of a system?	1M	2	1
	v.	What are the differences between DIT and DIF algorithms?	1M	3	1
	vi	Find z-transform and ROC for a finite sequence $x(n) = \{1, 2, 3, 2\}$.	1M	3	2
	vii.	The Laplace transform of a unit ramp function starting at $t = a$ is------	1M	4	1
	viii.	State frequency shifting property of Laplace transform.	1M	4	1
	ix.	What is the use of Anti-Aliasing Filter?	1M	5	1
	x.	What is the transfer function of zero-order hold?	1M	5	1

Q.2(A)	Check whether the system $y(t) = x(t+2)-x(-t)$ is i) static or dynamic ii) linear or non-linear iii) causal or non-causal and iv) time variant or time invariant.	10M	1	2
	OR			
Q.2(B)	(i) Find whether signal $x(t) = e^{j(3t+\pi/3)}$ is energy signal, power signal, neither energy or nor power signal.	7M	1	3
	(ii) Define Causal and non-causal and anti-causal signals.	3M	1	3
Q.3(A)	Find the convolution of $x_1(t) = e^{-at}u(t)$ and $x_2(t)=e^{-bt}u(t)$, (i) when $a \neq b$ and (ii) when $a = b$.	10M	2	3
	OR			
Q.3(B)	Find the response of $y(n) + y(n-1) - 2y(n-2) = u(n-1) + 2u(n-2)$ due to $y(-1) = 0.5; y(n) = 0.25$.		2	3

Q.4(A)	Find the DFT of a sequence $x(n) = \{1,2,3,2,1,2,3,2\}$ using DIF algorithm.	10M	3	3
	OR			
Q.4(B)	Determine the trigonometric Fourier series representation for the full wave rectified sine wave shown in Fig.1.	10M	3	3

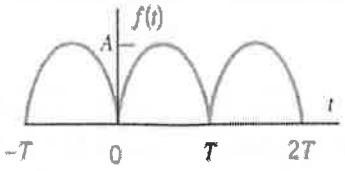


Fig.1

Q.5(A)	(i) Find the Laplace of $x(t) = \sin(\omega t + \theta)u(t)$. (ii) Find the inverse Laplace transform of $X(s) = \frac{2s+1}{(s+1)(s^2+2s+1)}$.	10M	4	3
	OR			
Q.5(B)	(i) Determine the z-transform of $x(n) = r^n(sin\omega_o n)u(n)$. (ii) Find the inverse z-transform of the function $X(Z) = \frac{8z-9}{(z^2-5z+6)}$, ROC: $\lvert z\rvert > 3$.	10M	4	3
Q.6(A)	Explain in detail about reconstruction of signal.	10M	5	2
	OR			
Q.6(B)	Explain in detail about Sampling and Aliasing.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE114

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech. III Year II Semester (R18) Supplementary End Semester Examinations –JAN'2023

POWER SYSTEMS – II (ANALYSIS)

(Electrical and Electronics Engineering)

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

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

			Marks	CO	BL
Q.1	i.	The graph of a power system network contains total 4 nodes and total number of elements are 8. What are the number of twigs and links in that network?	1M	1	2
	ii.	The diagonal elements of Y_{bus} matrix is called ..... and the off diagonal elements are called	1M	1	1
	iii.	Define flat start for Gauss-Seidel load flow algorithm considering the network contains slack bus, PV bus and load bus.	1M	2	1
	iv	State the advantages of Newton Raphson Load Flow method over Gauss Seidel Load Flow method.	1M	2	1
	v.	State the importance of short circuit analysis.	1M	3	1
	vi	Define the fault level.	1M	3	1
	vii.	Draw the phasor diagram of positive, negative, zero sequence component of voltages of three phase unbalanced voltage phasors.	1M	4	1
	viii.	The negative sequence currents are present in all ..... Faults.	1M	4	1
	ix.	Write down the swing equation.	1M	5	1
	x.	Classify the power system stability.	1M	5	1
Q.2(A)	(I)	Derive the expression for Ybus matrix using singular transformation method.	6M	1	2
	(II)	Calculate the bus incidence matrix for the network shown in fig. 1. Bus '0' is the reference bus.	4M	1	3

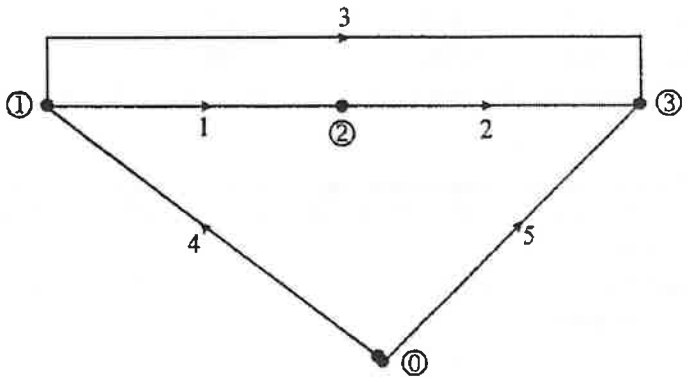
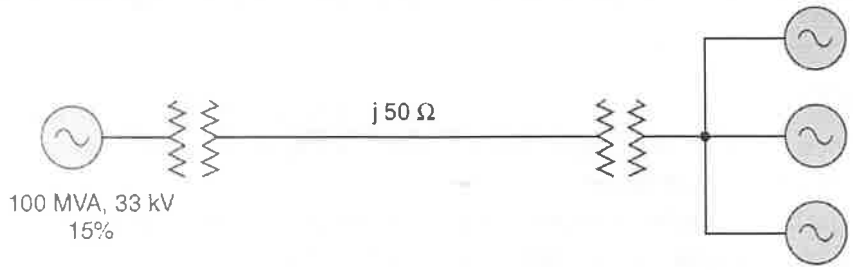


Fig. 1

OR

Q.2(B)	A 150 MVA, 33 kV 3-phase generator has a sub transient reactance of 15%. The generator is connected to the motors through a transmission line and transformers as shown in Fig. below. The motors have rated inputs of 30 MVA, 20 MVA and 50 MVA at 30 kV with 20% sub transient reactance. The 3-phase transformers are rated at 110 MVA, 32 kV, Δ/110 kV Y with leakage reactance 8%. The line has a reactance of 50 ohms. Selecting the generator rating as the base quantities in the generator circuit, determine the base quantities in other parts of the system and evaluate the corresponding per unit values.	10M	1	3



Q.3(A)	Explain clearly the computational procedure for load flow solution using Newton-Raphson method, considering the generator reactive power limit.	10M	2	2

OR

Q.3(B)	The following is the system data for a load flow solution: The line admittances:	10M	2	3

Bus code	*Admittance*
1–2	2–*j*8.0
1–3	1–*j*4.0
2–3	0.666–*j* 2.664
2–4	1–*j*4.0
3–4	2–*j*8.0

The schedule of active and reactive powers:

Bus code	*P*	*Q*	*V*	*Remarks*
1	–	–	1.06	Slack
2	0.5	0.2	1 + *j*0.0	*PQ*
3	0.4	0.3	1 + *j*0.0	*PQ*
4	0.3	0.1	1 + *j*0.0	*PQ*

Determine the voltages at the end of first iteration using Gauss-Seidel method.

Q.4(A)	(i) Derive the modified Zbus matrix, when the element is added between existing bus and new bus. (ii) Derive the modified Zbus matrix, when the element is added between reference bus and new bus.	6M 4M	3	2

OR

Q.4(B)	Form the Zbus matrix for the data given for the network using Zbus building algorithm.	10M	3	3

Bus code	Impedance (pu)
1-2	j0.8
1-3	j0.4
2-3	j0.4
0-1	j0.2
0-2	j0.4

Q.5(A)	A 25 MVA, 13.2 kV alternator with solidly grounded neutral has a subtransient reactance of 0.25 p.u. The negative and zero sequence reactances are 0.35 and 0.1 p.u. respectively. Determine the fault current and the line-to-line voltage at the fault when a line-to-line fault occurs at the terminals of an unloaded alternator. Neglect resistance.	10M	4	3
	OR			
Q.5(B)	Derive the expression for sequence component of current and voltages in L-G fault without fault impedance.	10M	4	2
Q.6(A)	Write down the step by step algorithm for solution of swing equation.	10M	5	2
	OR			
Q.6(B)	Discuss briefly the methods to improve the stability.	10M	5	2

*** END***

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

Question Paper Code:18EEE407

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech. II Year II Semester (R18) Supplementary End Semester Examinations –JAN'2023

ELECTRICAL DRIVES AND CONTROL

(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 are null state and active state in SVM?	1M	1	1
	ii.	Define the term modulation index.	1M	1	1
	iii.	Write the power invariant form of Park's transformation.	1M	2	1
	iv	What is the limitation of v/f control?	1M	2	1
	v.	Explain the term pull out torque with respect to synchronous motor.	1M	3	1
	vi	How the operation of synchronous motor shifts from motoring to regenerative braking?	1M	3	1
	vii.	Why trapezoidal PMAC motor is also known as brushless DC motor?	1M	4	1
	viii.	What is the criterion for maximum torque in a PMSM drive?	1M	4	1
	ix.	Mention the basic blocks in DSP.	1M	5	1
	x.	Why rotor position sensor is essential for the operation of Switched Reluctance Motor?	1M	5	1
Q.2(A)		Illustrate Selected Harmonic Elimination with reference to the reduction of 5th and 7th harmonics and control of fundamental voltage.	10M	1	2
		OR			
Q.2(B)		With neat diagrams, explain the construction and working principle of diode clamped multilevel inverter.	10M	1	2
Q.3(A)		Explain the operation of induction motor when direct method of vector control is adopted.	10M	2	2
		OR			
Q.3(B)		Consider a wye-connected squirrel-cage induction motor with the following ratings and parameters: 400V, 50 Hz, 4 – pole, 1370 rpm, R_s=2 Ω, R_r'=3 Ω, X_s= X_r'=3.5 Ω Motor is controlled by a voltage source inverter at constant V/f ratio. Inverter allows frequency variation from 10 to 50 Hz. Calculate approximate values of the following: i) Speed for a frequency of 30 Hz and 80% of full – load torque. ii) Frequency for a speed of 1000 rpm and full – load torque iii) Torque for a frequency of 40 Hz and speed of 1100 rpm iv) If the motor is running at regenerative braking mode, calculate a) and b) above.	10M	2	3

Q.4(A)	Explain the two methods of vector control for synchronous motor drives.	10M	3	2
	OR			
Q.4(B)	A 500 kW, 3 – phase, 3.3 kV, 50 Hz, 0.8 (lagging) power factor, 4 pole, star – connected synchronous motor has following parameters: X_s=15 Ω, R_s=0 Ω. Rated field current is 10 A. Calculate: (i) Armature current and power factor at half the rated torque and rated field current. (ii) Field current to get unity power factor at the rated torque (iii) Torque for unity power factor operation at field current of 12.5 A	10M	3	3
Q.5(A)	(i) Compare the BLDC and PMSM Drives. What are the different types of rotors in a Permanent magnet motor drive?	5M	4	2
	(ii) Explain flux weakening in PMSM motors.	5M	4	2
	OR			
Q.5(B)	Discuss the closed-loop speed control of PMSM drives.	10M	4	2
Q.6(A)	Explain the implementation of DSP based motion control.	10M	5	2
	OR			
Q.6(B)	(i) What are the advantages of SRM drive over other AC motor drives?	5M	5	2
	(ii) Explain the process of regenerative braking of SRM drives with relevant expressions.	5M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code:18EEE409

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech. II Year II Semester (R18) Supplementary End Semester Examinations –Jan 2023

ELECTRICAL MEASURENTS & INSTRUMENTATION

(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.	Define Measurement.	1M	1	1
	ii.	Classify Instruments into three types.	1M	1	2
	iii.	What are the main advantages and disadvantages of PMMC instruments?	1M	2	1
	iv	Why an electrodynamometer type instrument is called a Universal instrument?	1M	2	1
	v.	What is creeping in Energy Meter?	1M	3	1
	vi	Define Nominal Ratio of CT & PT	1M	3	1
	vii.	Which parameter is measured using Maxwell Bridge?	1M	4	1
	viii.	What will happen in a current transformer, if the secondary circuit is accidentally opened while the primary winding is energized?	1M	4	1
	ix.	List the advantages of digital storage cathode ray tube.	1M	5	1
	x.	What are the essential parts of the ramp type DVM?	1M	5	1
Q.2(A)		Derive the expression for the deflection of a spring controlled permanent magnet moving coil instrument.	10M	1	2
		OR			
Q.2(B)		Derive the expression for the deflection of a spring controlled Electro dynamo meter.	10M	1	2
Q.3(A)		With a phasor diagram derive equation for transformation ratio and phase angle of CT.	10M	2	2
		OR			
Q.3(B)		Explain with a neat diagram the working of a Three phase induction type energy meter.	10M	2	2
Q.4(A)		Explain the principle of working of a Kelvin's double bridge for measurement of unknown low resistances. Explain how the effects of contact resistance and resistance of leads are eliminated.	10M	3	2
		OR			
Q.4(B)		Describe the working of a Schering bridge for measurement of capacitance and dissipation factor. Derive relevant equations under balanced condition.	10M	3	2

Q.5(A)	With a neat sketch, describe the operating principle and the working of working of a Successive approximation type DVM.	10M	4	2
	OR			
Q.5(B)	Draw the block diagram of a digital storage-type oscilloscope and explain the working of each block. How does the digital oscilloscope differ from the conventional analog storage oscilloscope?	10M	4	2
Q.6(A)	Explain the working principle of a linear variable differential transformer (LVDT).	10M	5	2
	OR			
Q.6(B)	What are thermistors? Explain the working, construction and applications of thermistors.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18EEE4M06C

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) MOOCS Supplementary End Semester Examinations – JAN 2023

DESIGN OF POWER ELECTRONICS CONVERTERS

(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 of the given device is the fastest switching device a. MOSFET b. Triode c. BJT d. JEFT	1M	1	1
	ii.	Which of the following modulation strategy will be most suitable for designing a single-phase inverter? a. Unipolar PWM b. Bipolar PWM c. Square wave modulation d. Any method, it doesn't make any difference	1M	1	1
	iii.	What are the different types of gate driver circuit ?	1M	2	1
	iv	State PWM and types in it	1M	2	1
	v.	From the datasheet (IRFP90N20DPbF) the $dv/\,dt$ limit for the body diode is obtained as ..... V/ns.	1M	3	1
	vi	What are the different types of snubber circuit?	1M	3	2
	vii.	What are the power losses in power converters	1M	4	3
	viii.	Classify the cooling types and models	1M	4	1
	ix.	Define copper traces	1M	5	1
	x.	The main reason/s for EMI in power electronic converter is/are: (a) High power levels (b) Switched voltages (c) Switched currents (d) Long cables	1M	5	1
Q.2(A)		Discuss the importance of bipolar PWM and unipolar PWM with waveforms	10M	1	3
		OR			
Q.2(B)		Define power diodes? Explain the different types of power diodes	10M	1	3
Q.3(A)		Draw the block diagram of gate driver circuit and mention types involved in it	10M	2	2
		OR			
Q.3(B)		What is bootstrapping in power electronics?	10M	2	3

Q.4(A)	Define snubber circuit with circuit diagram and its importance of RC and RCD types.	10M	3	2
	OR			
Q.4(B)	Explain the thermal modelling of power converter with neat diagram	10M	3	3
Q.5(A)	A buck converter needs to be designed with input voltage Vin= 100 V and switching frequency, fs = 50 kHz. The MOSFET IRFP90N20DPbF is chosen for the design. A gate driver IC and gate resistor need to be chosen for the MOSFET. A voltage of VG = 15 V is chosen to be applied for the gate drive circuit. a. Calculate the power required to drive the MOSFET, Pgate ..... W). b. Using the same value of RG as used by manufacturer to measure turn ON/OFF times, calculate Ig–pk ..... (A). c.If Ig–pk needs to be limited to 2 A, what should be the value of RG	10M	4	3
	OR			
Q.5(B)	Explain briefly conducted EMI and radiated EMI	10M	4	2
Q.6(A)	State the differences between hole mounting and surface mounting	10M	5	4
	OR			
Q.6(B)	Explain briefly about the conducted EMI	10M	5	4

*** END***

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

Course Code: 18ME113

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations -JAN'2023

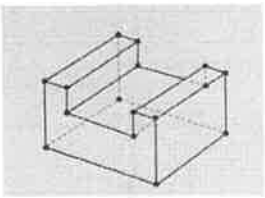
CAD/CAM

(Mechanical Engineering)

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

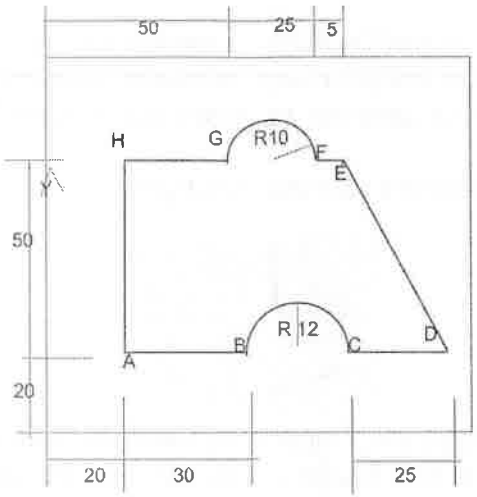
Attempt all the questions. All parts of the question must be answered in one place only.
In Q.no 1 to 5 answer either Part A or Part B only. Q.no 6 which is a case study is compulsory.

			Marks	CO	Bl.
Q.1	i.	List the applications of CAD/CAM in manufacturing.	1M	1	1
	ii.	What is the major limitation associated with magnetic tape?	1M	1	1
	iii.	List the difference between geometry and topology with a neat sketch.	1M	2	1
	iv	Verify Euler law for the part shown in Figure	1M	2	2



	v.	What are the major advantages of automations in industries?	1M	3	1
	vi	Which feature of CNC machine allow the machine operator to set the zero point at any position on the machine table?	1M	3	1
	vii.	What is the significance of qualified tools in CNC machine?	1M	4	1
	viii.	What is automatic pallet changer?	1M	4	1
	ix.	Write the function of G00 and G03 code commonly used in CNC part programing.	1M	5	1
	x.	What is meant by absolute coordinate system and incremental coordinate system?	1M	5	1
Q.2(A)		Elaborate various stages in design process of a component.	10M	1	2
		OR			
Q.2(B)		Explain raster scan technique and random scan technique with a suitable diagram.	10M	1	2
Q.3(A)		Explain the different design approaches in assembly modelling. Also elaborate the benefits of the assembly modelling.	10M	2	2
		OR			
Q.3(B)		Explain the different types of geometric tolerance used in CAD drawing with suitable diagram.	10M	2	2
Q.4(A)		Explain three basic type of motion control system used in numeric control system?	10M	3	2
		OR			
Q.4(B)		Discuss in detail about the manual, semi-automated and automated production machines with a suitable diagram. Also, list the parameters to measure performance of manufacturing system.	10M	3	2

Q.5(A)	Explain different types of CNC machining centers.	10M	4	2
	OR			
Q.5(B)	Explain various work holding devices used in a CNC machine.	10M	4	2
Q.6(A)	What do you understand by canned cycle? Explain the various codes associated to canned cycle in machining.	10M	5	2
	OR			
Q.6(B)	Write a complete CNC part program to machine the given geometry as shown in Figure. Assume suitable data if necessary. All dimensions are in mm.	10M	5	3



*** END***

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

Question Paper Code: 18ME114

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

THERMAL ENGINEERING

(Mechanical Engineering)

Time: 3Hrs | Max Marks: 60

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

			Marks	CO	BL
Q.1	i.	Babcock and Wilcox boiler is a fire tube boiler. True or False	1M	1	1
	ii.	What is blowing down process in boiler?	1M	1	1
	iii.	What is steam turbine governing?	1M	2	1
	iv	Define the steam nozzle.	1M	2	2
	v.	What is TR in refrigeration?	1M	3	1
	vi	Define the Relative humidity.	1M	3	1
	vii.	Write the four process in Brayton cycle.	1M	4	1
	viii.	What is rocket engine?	1M	4	2
	ix.	An S.I. engine is petrol engine. True or False	1M	5	1
	x.	Knocking takes place in CI engines at the start of combustion. True or False	1M	5	3
Q.2(A)		Explain with the help of neat diagrams any two boiler mountings.	10M	1	3
		OR			
Q.2(B)		i. Explain the working principle of one fire tube boiler	5M	1	3
		ii. Comparison between fire and water tube boiler	5M		
Q.3(A)		Explain with the help of neat sketch a single-stage impulse turbine. Also explain the pressure and velocity variations along the axial direction.	10M	1	3
		OR			
Q.3(B)		Explain with the help of neat sketch pressure and velocity compounding.	10M	2	3
Q.4(A)		Describe the effect of superheating and subcooling of liquid in vapour compression refrigeration cycle with the help of h-s diagram.	10M	3	2
		OR			
Q.4(B)		Explain the following psychrometric processes with the help psychrometric chart. (a) heating with humidification, (b) Cooling with Dehumidification	10M	3	3
Q.5(A)		Explain the principle of jet propulsion.	10M	4	3
		OR			
Q.5(B)		Explain the working difference between turbo-jet and turboprop engines	10M	4	3
Q.6(A)		Discuss the difference between ideal and actual valve timing diagrams of a petrol engine.	4M	5	3
		OR			
Q.6(B)		Explain the phenomenon of knock in CI engines and compare it with SI engine knock.	10M	5	3

*** END***

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

Question Paper Code: 18ME406

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

DESIGN AND ANALYSIS OF WELDED STRUCTURES

(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

Q.No		Question	Marks	CO	BL
Q.1	i.	Write any four requirement for designing weldments	1M	1	1
	ii.	Define the term weldability	1M	1	1
	iii.	Draw Butt joint U-groove	1M	2	1
	iv	List the advantages of edges preparation	1M	2	1
	v.	How welding calculation are helpful for cost reduction.	1M	3	1
	vi	Name two functions of groove and fillet weld	1M	3	1
	vii.	How residual occurs on welded structures	1M	4	1
	viii.	Define stress concentration	1M	4	1
	ix.	How welding residual stress occurred.	1M	5	1
	x.	Outline about welding distortion	1M	5	1
Q.2(A)		Discuss in detail about weldability of steel structure.	10M	1	6
		OR			
Q.2(B)		Discuss about various theories of failure.	10M	1	6
Q.3(A)		Explain with a suitable sketch about welding terminology.	10M	2	2
		OR			
Q.3(B)		Describe in detail about sizing of welds in structures.	10M	2	2
Q.4(A)		Briefly explain various shear loading conditions.	10M	3	2
		OR			
Q.4(B)		Describe in detail about combined tension and compression that resist to moment.	10M	3	1
Q.5(A)		List and explain the various elements that affects the fatigue life	10M	4	2
		OR			
Q.5(B)		Describe in detail about reliability and safety factors applied to fatigue design	10M	4	6
Q.6(A)		In brief explain about weld thermal cycle.	10M	5	2
		OR			
Q.6(B)		Write about any five distortion in welding	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ME407

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year II Semester (R18) Supplementary End Semester Examination – JAN 2023

REFRIGERATION AND AIR-CONDITIONING

(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. From Q.no 2 to 6 answer either Part-A or B only.

			Marks	CO	BL
Q.1	i.	Show the cycle of operation of a refrigerator working on reversed Carnot cycle on the p-v and T-S diagram.	1M	1	1
	ii.	Explain the necessity for aircraft cooling.	1M	1	1
	iii.	Draw the T-S diagram of actual vapor compression refrigeration cycle.	1M	2	1
	iv	Write the expression of COP for a vapor absorption refrigeration system.	1M	2	1
	v.	Write the chemical formula for refrigerant R22.	1M	3	1
	vi	What are the properties of an ideal refrigerant?	1M	3	1
	vii.	What is efficiency of a heating or cooling coil?	1M	4	1
	viii.	What is meant by humidification?	1M	4	1
	ix.	What is room sensible heat factor?	1M	5	1
	x.	Explain the general rules for duct design.	1M	5	1
Q.2(A)		Explain the air refrigeration system working on reversed Carnot cycle. Derive the expression of COP of the same.	10M	1	1
		OR			
Q.2(B)		A Carnot refrigeration cycle absorbs heat at 270 K and rejects it at 300 K.	10M	1	3
	i.	Calculate the coefficient of performance of the refrigeration cycle.			
	ii.	If the cycle is absorbing 1130 kJ/min at 270 K, how many kJ of work is required per second?			
	iii.	If the Carnot heat pump operates between the same temperatures as the above refrigeration cycle what is the coefficient of performance?			
	iv.	How many KJ/min will the heat pump deliver at 300 K if it absorbs 1130 KJ/min at 270 K.			
	v.				
Q.3(A)		Explain two-stage vapour compression with water intercooler and liquid sub-cooler. Derive the expression for COP.	10M	2	2
		OR			
Q.3(B)		Draw a neat compact diagram of H_2O-NH_3 absorption refrigeration system and explain its working principle. Also, derive the expression for Coefficient of performance of an ideal vapor absorption refrigeration system.	10M	2	2

Q.4(A)	Explain the types of condenser. What are the advantages and disadvantages of surface condenser?	10M	3	1
	OR			
Q.4(B)	What are the essential properties of an ideal refrigerants in terms of thermodynamic and thermo-physical, environmental and safety properties and economic point of view?	10M	3	1
Q.5(A)	800 m^3/min of reticulated air at 22°C DBT and 10°C dew point temperature is to be mixed with 300 m^3/min of fresh air at 30°C DBT and 50% RH. Determine the enthalpy, specific volume, humidity ratio and dew point temperature of the mixture.	10M	4	2
	OR			
Q.5(B)	A restaurant with a capacity of 100 persons is to be air-conditioned with the following conditions: outside conditions: 30°C and 70% RH, desired inside conditions: 23°C DBT and 55% RH and quantity of air supplied: 0.5 m^3/min/person. The desired conditions are achieved by cooling, dehumidifying and then heating. Determine: (i) capacity of cooling coil in tonnes of refrigeration, (ii) capacity of heating coil, (iii) amount of water removed by dehumidifier and by-pass factor of th coil if its surface temperature is 35°C.	10M	4	2
Q.6(A)	Discuss the procedure for estimating cooling load.	10M	5	1
	OR			
Q.6(B)	Write short notes on: (i) Velocity method (ii) Equal friction method (iii) Static regain method (iv) Classification of duct	10M	5	1

*** END***

Hall Ticket No: | | | | | | | | | | | Course Code: 14ME408

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R14) Supplementary End Semester Examinations -JAN'2023

INTERNET OF MANUFACTURING THINGS

(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 2 to 6 answer either Part A or Part B only. Q.no 1 which is a case study is compulsory.

			Marks	CO	BL
Q.1	i.	Define PETRINET.	1M	1	1
	ii.	Define data preprocessing .	1M	1	1
	iii.	What is a the real-time information exchange?	1M	2	1
	iv	Draw the MODULES present in RTPPA.	1M	2	2
	v.	What is VBS?	1M	3	1
	vi	Define WIP in IOT.	1M	3	1
	vii.	Describe the major concepts in WORKFLOW,	1M	4	1
	viii.	Write the principle of RTMIS	1M	4	2
	ix.	Write any two differences between PT & DT.	1M	5	1
	x.	Describe the use of EA.	1M	5	3
Q.2(A)		Identify all the manufacturing paradigms.	10M	1	3
		OR			
Q.2(B)		Explain about applications of IOT in manufacturing.	10M	1	3
Q.3(A)		Write about the deployment of multisource RMMISS	10M	2	3
		OR			
Q.3(B)		Illustrate the development of Cloud Computing Based Producton.	10M	2	3
Q.4(A)		Write on IOT enabled smart assembly station	10M	3	2
		OR			
Q.4(B)		Describe a note on IOT enabled smart trolley.	10M	3	3
Q.5(A)		Identify and explain on Stages of KPI ANALYSIS.	10M	4	3
		OR			
Q.5(B)		Explain about RTPPAA? Explain with an example.	10M	4	3
Q.6(A)		Describe RTPS briefly.	10M	5	3
		OR			
Q.6(B)		Define the Representation of PEMA.	10M	5	3

*** END***

Hall Ticket No: | | | | | | | | | | | Course Code: 18ME4MO6C

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year & II Semester (R18) MOOCS Supplementary End Semester Examinations –JAN'2023

NON-CONVENTIONAL ENERGY RESOURCES

(Common to EEE & ME)

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

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

			Marks	CO	BL
Q.1	i.	Name the five fundamental sources of energy?	1M	1	1
	ii.	Write differences between renewable and nonrenewable sources.?	1M	1	1
	iii.	Describe the effect of temperature on the performance of flat plate collector?	1M	2	1
	iv	Explain in brief about solar radiation.?	1M	2	2
	v.	What are the causes for the wind formation?	1M	3	2
	vi	Outline the advantages and disadvantages of VAWT.?	1M	3	1
	vii.	Which are the three primary battery types available for consumer use?	1M	4	1
	viii.	How a battery power is measured?	1M	4	2
	ix.	Why are fuel cells not durable?	1M	5	1
	x.	Why hydrogen is called clean fuel?	1M	5	1
Q.2(A)		Explain the energy scenario in the form of pictorial representation in India?	10M	1	2
		OR			
Q.2(B)		Describe the Renewable Energy Scenario in Andhra Pradesh.?	10M	1	2
Q.3(A)		Explain the solar photo voltaic conversion process in detail.?	10M	2	2
		OR			
Q.3(B)		Illustrate any two solar devices with their working principles.	10M	2	2
Q.4(A)		Identify the applications of Biomass Energy along with its impact on the environment.?	10M	3	2
		OR			
Q.4(B)		Explain the factors to be considered in the selection of a site for wind energy.?	10M	3	2
Q.5(A)		Explain different testing methods for batteries.	10M	4	2
		OR			
Q.5(B)		Elaborate on different types of batteries and their applications for power generation?	10M	4	2
Q.6(A)		Explain the working of fuel cell and their applications.?	10M	5	2
		OR			
Q.6(B)		Elaborate on the functions of Flywheels And Super Capacitors.	10M	5	2

*** END***

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

Course Code: 18ME4M07

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech Year III & II Semester (R18) MOOCS Supplementary Examinations -JAN 2023

OPERATIONS MANAGEMENT

(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 2 to 6 answer either Part A or Part B only.

			Marks	CO	Bl.
Q.1	i.	What do you mean by Batch Production?	1M	1	1
	ii.	Brief the steps of Life Cycle of a Product	1M	1	2
	iii.	What do you know about Routing?	1M	2	1
	iv	Define the term " Production".	1M	2	1
	v.	What do you mean by Supply chain?	1M	3	1
	vi	What is fixed position layout?	1M	3	1
	vii.	What is Lean Manufacturing?	1M	4	1
	viii	Define Plant Location?	1M	4	2
	ix.	What is Load – Distance method?	1M	5	1
	x.	Is there any advantage of combined layout?	1M	5	3

Q.2(A) Define Operations Management? Give the classifications of production systems — 10M, 1, 1

OR

Q.2(B) What are the significance of plant layout? Elaborate the factors influencing layout changes. — 10M, 1, 2

Q.3(A) What is Total Productive Maintenance(TPM)? What are its objectives? How it helps in improving the productivity and reducing the downtime of the organization? — 10M, 2, 3

OR

Q.3(B) A book binder has one printing press, one binding machine, and manuscripts of 7 different books. The times required for performing printing and binding operations for different books are shown below. — 10M, 2, 4

Book	1	2	3	4	5	6	7
Printing time (hours)	20	90	80	20	120	15	65
Binding time (hours)	25	60	75	30	90	35	50

Decide the optimum sequence of processing of books in order to minimize the total time required to bring out all the books.

Q.4(A)	Explain about need of production and operational management	10M	3	2
	OR			
Q.4(B)	What is meant by Plant Location? What are the factors to selection of location and explain any six factor.	10M	3	2
Q.5(A)	What is priority sequencing? List the various criteria used in it and state how an appropriate sequencing rule in practice?	10M	4	2
	OR			
Q.5(B)	What is ISO? Bring out the benefits from getting ISO 9000 Certificate?	10M	4	2
Q.6(A)	ABC corporation has got a demand of particular part as 10,000 units per year. The cost per unit is Rs. 2 and it costs Rs. 36 to place an order and to process the delivery. The inventory carrying cost is estimated at 9 percent of cost per unit. Determine: (i)Economic order quantity (ii)Optimum number of orders to be placed per annum (iii)Minimum total cost of inventory per annum	10M	5	4
	OR			
Q.6(B)	Find solution of Processing 5 Jobs Through 3 Machines Problem	10M	5	4

Job	1	2	3	4	5
Machine-1	8	10	6	7	11
Machine-2	5	6	2	3	4
Machine-3	4	9	8	6	5

*** END***

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

Question Paper Code: 18ECE111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – January 2023

INTERNET OF THINGS

(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.	Elaborate the term "**Ubiquitous computing**".	1M	1	1
	ii.	The data related to IoT system belongs to whom? In this context, explain what is "**Data Subject**".	1M	1	1
	iii.	What is SoC?	1M	2	1
	iv	How many Digital I/O pins and PWM pins are present in Arduino UNO?	1M	2	1
	v.	What is the default Login ID and Password of Raspberry Pi	1M	3	1
	vi.	Write the length of MAC Address.	1M	3	1
	vii.	IPv6 can obtain how many numbers of addresses?	1M	4	1
	viii.	What is the length of MAC address number?	1M	4	1
	ix.	What is **Polling** technology in making an HTTP request to the server?	1M	5	1
	x.	Write down the full form of **SOAP**.	1M	5	1
Q.2(A)	i.	Write the basic elements of IoT in terms of an equation, draw the block diagram of an IoT system and explain the significance of each components.	5M	1	2
	ii.	What is IOT? Mention at least any five flavours of Internet of Things with detail explanation.	5M	1	2
		OR			
Q.2(B)		Explain the following terms with regards to IoT design principles:		1	2
	i.	Calm and ambient technology	4M		
	ii.	Privacy in IoT	3M		
	iii.	Web thinking for connected devices	3M		
Q.3(A)	i.	Describe the system on chip and explain the factors while choosing the platform to develop a prototype.	5M	2	2
	ii.	Describe various design principles that should be considered while designing an Internet of Things system.	5M	2	2
		OR			
Q.3(B)	i.	Write the detail specification of Arduino UNO	5M	2	2
	ii.	Write a program to glow an LED in Pin number 14 of an Arduino UNO at an interval of 10ms	5M	2	3
Q.4(A)		Elaborate the following in Raspberry Pi3 in detail.	4M	3	2
		(i) Operating System.	3M		
		(ii) Features and Specifications.	3M		
		(iii) Pin Layout.			

OR

Q.4(B)	Give a detail comparison between Raspberry Pi and Arduino? Specify some essential components which differentiate Raspberry Pi from Arduino? Show that the usefulness of both the devices varies from application to application.	10M	3	2
Q.5(A)	What are the different series of layers present in a network protocol suit? Explain in detail on various Internet protocols used in each communication layer.	10M	4	2
	OR			
Q.5(B)	i. What is the difference between IPv4 and IPv6? Provide a detail comparison with suitable explanation.	4M	4	2
	ii. Write short Notes on the following		4	2
	a.Static IP address assignment	3M		
	b. Domain name system	3M		
Q.6(A)	What is API? Give a detail description on the existing standards to implement the API. Also discuss how the API interacts via HTML.	10M	5	2
	OR			
Q.6(B)	Give Short note on the following protocols			
	a. MQTT	5M	5	2
	b. XMPP	5M		

*** END***

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

Question Paper Code: 18ECE112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – January 2023

ELECTROMAGNETIC WAVES AND WAVEGUIDES

(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.	List out the Maxwell's equations for Static Fields.	1M	1	1
	ii.	Write the Cross Product of two vectors.	1M	1	1
	iii.	What is wave polarization?	1M	2	1
	iv	Write the relation between wavelength and phase constant?	1M	2	1
	v.	What is the range of Transmission coefficient?	1M	3	1
	vi	Explain about standing wave ratio.	1M	3	2
	vii.	List out the various modes used in Rectangular wave guide.	1M	4	1
	viii.	Write the dominant mode of the rectangular waveguide?	1M	4	1
	ix.	Write the expression of VSWR.	1M	5	1
	x.	Recall the condition for distortion less transmission line.	1M	5	1
Q.2(A)		Explain about the following **i)** Ampere's Circuital Law. **ii)** Faraday's Law, Transformer EMF and Motional EMF **iii)** Gauss Law for Electric field and Magnetic field.	10M	1	2
		OR			
Q.2(B)		Outline about Gradient of a Scalar field and write the expressions for Cartesian and Cylindrical coordinate Systems.	10M	1	2
Q.3(A)		Explain skin effect and derive the expression for skin depth for good conductors.	10M	2	2
		OR			
Q.3(B)		In a lossless dielectric, for which η=60 Ohm, μ_r=1 and $H = -0.1\cos(\omega t - z)\hat{a}_z + 0.5\sin(\omega t - z)\hat{a}_y\ A/m$. Calculate ε_r, ω & E.	10M	2	3
Q.4(A)		Explain and derive the expressions for Reflection Coefficient, Transmission Coefficient and VSWR when a plane wave is incident on the boundary of two mediums at normal angle.	10M	3	2
		OR			
Q.4(B)		Outline the concept of reflection and transmission of a plane wave at Oblique incidence. Also derive the equation for reflection coefficient and the transmission coefficients.	10M	3	1
Q.5(A)		Explain about the transverse field components for TE10 mode in Rectangular Waveguide. Sketch the E-field lines for the above mode.	10M	4	2
		OR			
Q.5(B)		Write short notes on What you mean by dominant and degenerate modes? Write the fundamental difference between waveguide and transmission line.	10M	4	1
Q.6(A)		Explain about the voltage and current solutions of transmission lines with neat sketches.	10M	5	2
		OR			
Q.6(B)		Summarize the distortion less and lossless transmission lines. Explain the properties of primary and secondary constants of these transmission lines.	10M	5	2

***** END*****

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE113

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations-January 2023

VLSI DESIGN

(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 gate-to-body capacitance?	1M	1	1
	ii.	Draw the different symbols for transmission gate.	1M	1	2
	iii.	Write advantages and disadvantages of Scaling.	1M	2	3
	iv	What is Channel-length modulation?	1M	2	2
	v.	What is difference between Wet and Dry oxidation?	1M	3	2
	vi	What are four generations of Integration Circuits?	1M	3	1
	vii.	What is Noise Margin?	1M	4	4
	viii.	Why NMOS technology is preferred more than PMOS technology?	1M	4	3
	ix.	What is scaling factor of Gate delay in constant field model?	1M	5	2
	x.	Draw VTC of CMOS Inverter.	1M	5	2
Q.2(A)		Illustrate the following with necessary diagrams (i) Ideal I-V characteristics of MOS transistors, (ii) C-V characteristics of MOS transistors.	10M	1	4
		OR			
Q.2(B)		A CMOS inverter has $V_{TO,n}$ = 0.8 V, $V_{TO,p}$ = - 0.8 V , and $k_n=k_p$. Obtain V_{IL}, V_{IH}, V_{OH},V_{OL} , N_{MH} and N_{ML} for V_{DD} = 5V.	10M	3	3
Q.3(A)		Draw the basic structure of a dynamic CMOS gate. Explain basic principal of pass transistor circuits with neat sketch.	10M	2	4
		OR			
Q.3(B)		Explain briefly about the impact of RC Delay model and Elmore delay model in CMOS design?	10M	2	4
Q.4(A)		What are the different short-channel effects? Discuss each in detail.	10M	3	5
		OR			
Q.4(B)		What is a compound logic gate? Design a AOI logic using series and parallel switching device.	10M	3	3
Q.5(A)		Calculate the drain current of a Silicon NMOS with V_{th}=1V, W=10mm, L=1mm, t_{ox} =20 nm, surface mobility μ_n=300 cm^2/V.S V_{BS}=0V. Calculate the g_m (trans-conductance) at V_{GS} = 3V and V_{DS}=5V, and g_d (output conductance) at V_{GS} = 3V and V_{DS}=0V.	10M	3	3
		OR			
Q.5(B)		Discuss the switching threshold on the basis of VTC and derive switching threshold for a CMOS inverter.	10M	4	4
Q.6(A)		Explain various types of scaling in detail and what is the impact of scaling on different parameters of MOS transistor?	10M	5	4
		OR			
Q.6(B)		Write short notes on any two: i) Photolithography ii) Dynamic power dissipation in CMOS iii) Sense Amplifier Circuits	10M	5	4

*** END***

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

Question Paper Code: 18ECE407

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

EMBEDDED SYSTEMS

(ECE)

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

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

Q.No		Question	Marks	CO	BL
Q.1	i.	How you calculate NRE cost per product if NRE=$2000, unit=$100, for 10 units?	1M	1	1
	ii.	Name the bit addressable Special Function Registers of Intel 8051 microcontroller	1M	1	1
	iii.	Consider a 12-bit successive-approximation type analog-to-digital converter, where the successive approximation register (SAR) is initialized to 1000 0000 at the beginning of every conversion. Determine the number of clock cycles required to carry out one conversion.	1M	2	1
	iv	For an 8-bit counter-type analog-to-digital converter, find the maximum number of clock cycles required for each conversion.	1M	2	2
	v.	What is hard real-time system give suitable example?	1M	3	1
	vi	What are Special features of RTOS?	1M	3	2
	vii.	What is use of Device Drivers?	1M	4	1
	viii.	How are threads different from tasks?	1M	4	2
	ix.	Write the services provided by Kernel.	1M	5	1
	x.	Write difference between ARM / Thumb instruction set	1M	5	1
Q.2(A)		Illustrate the memory organization of an Intel 8051 microcontroller.	10M	1	2
		OR			
Q.2(B)		Illustrate General-purpose processors architecture and distinguish between Embedded System and General Computing System?	10M	1	2
Q.3(A)		Illustrate what were some of the motives behind Digital signal processing used in embedded system?	10 M	2	2,2
		OR			
Q.3(B)		What is the role of sensors in an embedded system? Explain the working of sensors used in two popular embedded systems?	10M	2	1,3
Q.4(A)		Explain Round robin and preemptive multi-tasking algorithm?	10M	3	2
		OR			
Q.4(B)		Compare and contrast the various types of scheduling algorithms used in Real Time Operating systems with suitable examples.	10M	3	2
Q.5(A)		Describe concept of shared memory.	10M	4	2
		OR			
Q.5(B)		Explain live lock and starvation in the resource sharing context?	10M	4	2
Q.6(A)		Explain different data processing instructions in ARM7	10M	5	2
		OR			
Q.6(B)		Explain the interrupts supported by ARM Processor?	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE407

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

DSP ARCHITECTURES

(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.	Specify the number of complex addition and complex multiplication required for implementing 16-point DFT using DIT-FFT algorithm.	1M	1	1
	ii.	Comment on the number of multipliers, adders and unit delays required to implement a digital FIR filter of length 11.	1M	1	1
	iii.	What are the functions of DR and FSR pins of TMS320C25 processor?	1M	2	1
	iv	TMS320C25 is a fast, _____bit, fixed-point digital signal processor.	1M	2	1
	v.	What is GPU?	1M	3	1
	vi	Define ILP.	1M	3	1
	vii.	Write the applications of FPGA.	1M	4	1
	viii.	What are all the secondary users in cognitive radio environment?	1M	4	2
	ix.	HPC stands for _____	1M	5	1
	x.	What are the benefits of parallel computing?	1M	5	1
Q.2(A)		Sketch the block schematic of Von-Neumann & Harvard Architecture and discuss their architectural features. Also, compare the instruction execution cycle on both the architectures.	10M	1	2
		OR			
Q.2(B)		What do you mean by MAC unit in DSP processor? Discuss how multiplier and accumulator of MAC unit act in parallel while implementing AB + CD expression. Specify the number of execution cycles required for implementing the above expression.	10M	1	2
Q.3(A)		Discuss the key architectural features of the TMS320C25 processor.	10M	2	2
		OR			
Q.3(B)		Sketch the functional block schematic of the TMS320C5416 processor and discuss its functional features.	10M	2	2
Q.4(A)		Describe how the VLIW architecture works. Give a comparison between RISC, CISC and VLIW.	10M	3	2
		OR			
Q.4(B)		Sketch the functional block schematic of the TMS320C6713 processor and discuss its functional features.	10M	3	2
Q.5(A)		What is cognitive radio. Explain the types of cognitive radio systems.	10M	4	2
		OR			

Q.5(B)	What do you mean by FPGA? Explain design flow of FPGA based DSP system.	10M	4	2
Q.6(A)	What is cluster used in high performance computing (HPC)? Explain the types of cluster and its benefits.	10M	5	2
	OR			
Q.6(B)	What is message passing interface (MPI)? What does MPI do?	10M	5	2

*** END***

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

Question Paper Code: 18ECE408

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

INFORMATION THEORY AND CODING

(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 conditional probability and how is it related with Bayes' result. Mention the expression of the same.	1M	1	1
	ii.	How to characterize the information content of a symbol? What are the metrics of information?	1M	1	1
	iii.	What is the maximum value of the entropy when two discrete sources S_0 and S_1 are transmitted with probability p and (1-p)? At what probability value this entropy is maximum.	1M	2	1
	iv.	Define differential entropy. Write the expression for the same.	1M	2	1
	v.	Considering a binary symmetric channel, what is the maximum value of the channel capacity? Under what condition this channel capacity is maximum?	1M	3	1
	vi.	Define discrete memoryless source.	1M	3	1
	vii.	What do you mean by rate distortion theory?	1M	4	1
	viii	What are the types of lossy compression problems?	1M	4	1
	ix.	What is uniform and non-uniform quantization? Give examples.	1M	5	1
	x.	Differentiate between scalar and vector quantization.	1M	5	1
Q.2(A)		i) Consider the pdf, $f_X(x) = \begin{cases} kx^2, & 0 < x < 3 \\ 0, & \text{otherwise} \end{cases}$, find the value of P[1<x<2].	5M	1	3
		ii) What do you mean by AWGN in wireline communication? Explain in details each and every terminology	3M	1	2
		iii) What are the metrics of information content? State Shannon's capacity theorem.	2M	1	2
		OR			
		i) Define sample space. Give examples. How it is related with random experiment? What is a random variable? Why random variable is neither random nor a variable?	5M	1	2
Q.2(B)		ii)	5M	1	3

Gender	Rank 1	Rank 2	Rank 3	Total
Male	30	80	90	200
Female	20	40	40	100
Total	50	120	130	300

iii) Find the probability of
a) Female candidates, b) male candidates, c) male candidates secured Rank 1, d) Female candidates secured Rank 2, e) Female candidates secured Rank 3, f) Probability of Rank 1 candidates given that the candidates are male, g) probability of Rank 2 candidates given that the candidates are female.

Q.3(A)		i) State some of the properties of entropy. Prove that the maximum value of the entropy for two discrete sources S_0 and S_1 transmitted with probability p and (1-p) is 1. Find the value of 'p' at which the entropy is maximum.	4M	2	2

ii) Define differential entropy. Find the differential entropy h(x) for the random variable X which is exponentially distributed having rate parameter λ i.e. X~Exp(λx). Find the value for λ=2. | 6M | 2 | 3

OR

Q.3(B) i) What is a convex and concave function? Explain with a neat diagram and write the inequality expression which clearly distinguish a function to be convex or concave. | 3M | 2 | 2

7M | 2 | 3

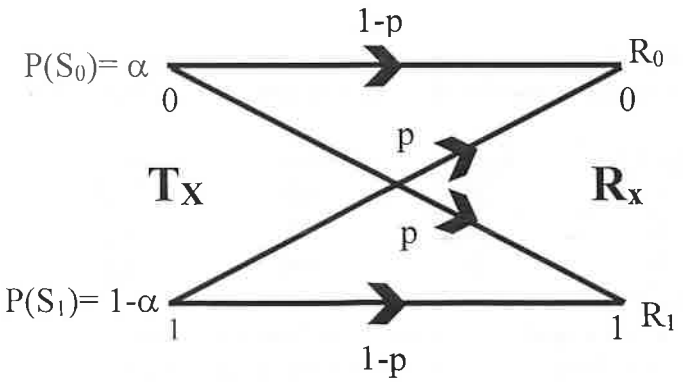
X \ Y	r_0	r_1	r_2	r_3
S_0	1/8	1/16	1/32	1/32
S_1	1/16	1/8	1/32	1/32
S_2	1/16	1/16	1/16	1/16
S_3	1/4	0	0	0

ii) Evaluate the following using Table 1 as mentioned above:

a) Comment on the validity of the information provided in Table 1.
b) Find the marginal entropy H(X) and H(Y) of the source symbols X and Y, respectively.
c) Find the joint entropy H(X,Y) of the two source symbols
d) Show that H(X,Y)≥H(X), H(X,Y)≥H(Y) and H(X,Y)≤H(X)+H(Y).
e) Find the conditional entropy H(Y|X).
f) Find the mutual information I(X;Y).

Q.4(A) i) What do you mean by binary symmetric channel? Explain why it is termed so. A binary symmetric channel is shown below where S_0 and S_1 are source symbols 0 and 1, respectively and R_0 and R_1 are received symbols 0 and 1, respectively. The probability of transmission of S_0 and S_1 are α and (1-α), respectively. The probability of flipping the source bit symbol from 0 to 1 and from 1 to 0 is p. | 10M | 3 | 4

a) Show that the conditional entropy H(Y|X) is independent of α. Find the mutual information, where X∈{S_0, S_1} and Y∈{R_0, R_1}.
b) Find mutual information I(X;Y). Find the channel capacity. For what optimal value of α, the channel capacity attains a maximum value. Henceforth evaluate the channel capacities for p=0, 1 and 1/2 . Show the graphical plot of the same versus probability.



OR

Q.4(B) i) Consider a source alphabet of size M=4, where the symbols and the code words are shown in the below mentioned table A-C. State whether the code words are fixed length or variable length and also state whether they can be uniquely decodable or not. Explain in details. Draw the binary tree structure for all the cases shown below. 4M 3 3

Table A

S_0	11
S_1	10
S_2	01
S_3	00

Table B

S_0	0
S_1	01
S_2	001
S_3	000

Table C

S_0	0
S_1	1
S_2	00
S_3	11

ii) Consider the source symbols S_1, S_2, S_3, S_4 and S_5 and the respective probabilities $P(S_1)=0.4$, $P(S_2)=0.2$, $P(S_3)=0.2$, $P(S_4)=0.1$ and $P(S_5)=0.1$. Using Huffman coding technique find a) the code word of the source symbols, b) average code word length, c) Entropy, d) efficiency and d) variance. Draw the binary tree and state whether it is a prefix free code or not. 6M 3 3

Q.5(A) i) State and proof the hold four properties that for the rate distortion function 6M 4 3

ii) Comment on the Shannon lower bound for rate distortion function. How the rate distortion function is calculated for a memoryless Gaussian source? 4M 4 2

OR

Q.5(B) i) For the source and reproducing alphabets, it is given that the dimensions N=2 and M=3, respectively. The probabilities of the source symbols are $P(x_1) = P(x_2) = 1/2$. The distortion matrix is given below 10M 4 4

$$D = \begin{bmatrix} 0 & 1 & 3 \\ 3 & 1 & 0 \end{bmatrix}$$

Assume $P(y_1)=2/5$, $P(y_2)=1/5$ and $P(y_3)=2/5$. Calculate R(0.45).

Q.6(A) i) Explain mid-tread and mid-rise quantization techniques using a neat diagram. 4M 5 2

ii) Explain Lloyd-Max Quantization method. Write the advantage of using this method over other quantization methods. 6M 5 3

OR

Q.6(B) i) What do you mean by companding? Explain in details. Explain μ-Law Compressor and A-Law Compressor techniques with a neat diagram. 5M 5 2

ii) A 12 bit ADC, with analog input voltage ranging from -2 to 2 V. Determine the following: 5M 5 3

a) number of quantization levels,
b) step size
c) quantization level when the analog voltage is 1.33V,
d) quantization error,
e) dynamic range,
f) Signal to noise ratio of the quantization.

*** END***

Hall Ticket No: | | | | | | | | | | | | Question Paper Code: 18ECE409

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

FPGA BASED SYSTEM DESIGN

(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 the purpose of the synthesis tools?	1M	1	1
	ii.	Draw the general structure of FPGA.	1M	1	1
	iii.	List the two major FPGA manufacturer companies.	1M	2	1
	iv	What is CLB's in terms of FPGA?	1M	2	1
	v.	In behavioral modeling specify the two most basic statements.	1M	3	1
	vi	Blocking and non-blocking statements differ in executing the statements. How?	1M	3	1
	vii.	What are the various modeling used in VERILOG?	1M	4	1
	viii.	What is Mealy machine	1M	4	1
	ix.	In FSM diagram what does circle represent?	1M	5	1
	x.	What happens if the input is low in FSM?	1M	5	1
Q.2(A)		Compare the architecture of CPU and FPGA with neat diagram.	10M	1	3
		OR			
Q.2(B)		(i) What do you mean by hierarchical Design on FPGA? Justify this with the help of an example.	8M	1	3
		(ii) Describe setup and hold time, what happens if they are violated?	2M	1	2
Q.3(A)		(i) Explain how the pass transistors are used to connect wire segments for the purpose of FPGA programming.	6M	2	2
		(ii) Write short notes on ANTIFUSE technology.	4M	2	2
		OR			
Q.3(B)		(i) With a neat block diagram, explain about the Virtex IOB.	6M	2	2
		(ii) Write short notes on interconnection delay and wire delay.	4M	2	2
Q.4(A)		(i) Explain the design of universal shift register and write the HDL code (VERILOG) for its design.	8M	3	3
		(ii) Write about the different arithmetic operators.	2M	3	2
		OR			
Q.4(B)		(i) Write the HDL code (VERILOG) for the design of the free-running binary counter with the proper explanation.	8M	3	3
		(ii) What are the various modeling used in Verilog?	2M	3	2

Q.5(A)	(i) With a neat block diagram, explain the operation of carry select adder.	6M	4	3
	(ii) Explain how unnecessary glitch propagation can be eliminated in FPGA based system.	4M	4	2
	OR			
Q.5(B)	Design an FSM for serial sequence detector with the pattern "1010" with overlapping and with non-overlapping.	10M	4	3
Q.6(A)	(i) Explain the syntax directed translation with example. How you will implement the logic by macro.	5M	5	3
	(ii) Describe the importance of placement in FPGA. Differentiate clustering vs portioning.	5M	5	3
	OR			
Q.6(B)	Design a finite state machine (FSM) for the traffic light controller and explain it properly.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE4M05

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

Computer Architecture (MOOCs)

(Common to all ECE sections)

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 the 2's complement binary representation of -9.	1M	1	1
	ii.	Which of the following memory technologies is very dense? SRAM or DRAM.	1M	1	1
	iii.	Give the name of registers used in X86 32-bit processor.	1M	2	1
	iv	The role of "LEA" instruction is to copy the address of the memory operand (not its contents) to the register. True or False?	1M	2	1
	v.	Which one performs fast operation among Ripple carry adder and Carry lookahead adder?	1M	3	1
	vi	How many half adder and full adder is required for 4-bit addition?	1M	3	1
	vii.	How many latches are required in an n-stage pipelined processor.	1M	4	1
	viii.	When multiple instructions are processed simultaneously during the execution of a program, this is called.....	1M	4	1
	ix.	What is Memory Access Time.	1M	5	1
	x.	Name of any two cache memory.	1M	5	1
Q.2(A)		Discuss the various methods to represent the negative integers by taking one example	10M	1	2
		OR			
Q.2(B)		(i) Design the CMOS inverter and CMOS NAND gate. Explain its truth table also. (ii) Design 3X8 Decoder and 8X3 Encoder by explaining its truth table.	10M	1	2
Q.3(A)		Discuss different instructions set used in Simple RISC processor with appropriate example.	10M	2	2
		OR			
Q.3(B)		How many types of arithmetic and branch instructions used in Simple RISC processor? Explain all instructions by taking an example.	10M	2	3
Q.4(A)		Discuss the booths multiplication algorithm by taking one example.	10M	3	3
		OR			
Q.4(B)		Discuss the floating-point addition and subtraction method by taking one appropriate example.	10M	3	2
Q.5(A)		What is the need of microprogramming? Discuss the micro programmed data path.	10M	4	2
		OR			
Q.5(B)		Describe the different types of Pipeline Hazards. Discuss the Forwarding concept in pipelining.	10M	4	2

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

Question Paper Code: 18ENG102

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

ENGLISH COMMUNICATION: READING AND WRITING

(Common to ME, CSE, CST, CSIT)

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 communication?	1M	1	1
	ii.	Write any two examples for scanning.	1M	1	3
	iii.	Define the topic sentence of a paragraph.	1M	2	4
	iv	When a reader makes conclusions based on what he/she knows outside of the text using the information given in the text, it is called ..... . (a)Analysis (b)Prediction (c)Inference (d)Evaluation	1M	1	2
	v.	Which of the following is NOT a part of skimming? a) Focus on highlighted parts b) Move rapidly through the pages. c) Look for specific information d) Read the headings, sub-headings, etc.	1M	2	2
	vi	Define the term brainstorming	1M	5	3
	vii.	Which of the following could be an effect of the sentence "Magpie makes the best nest"? (a) Magpie is a bird (b) All the birds asked Magpie to teach them how to build nests. Magpie did not want to teach the other birds how to build nests.	1M	3	5
	viii.	Topic sentence is ____ of a paragraph (a) The first sentence (b) the last sentence (c) (can be) any sentence	1M	4	3
	ix.	Write two some benefits of brainstorming before writing an essay	1M	3	3
	x.	Which among the following is a formal word for "fired"? a) sacked (b) terminated (c) axed (d) suspended	1M	5	1

Q.2(A) **Read the following passage carefully and answer the questions below.**

Naval architects never claim that a ship is unsinkable, but the sinking of the passenger-and-car ferry Estonia in the Baltic surely should have never have happened. It was well designed and carefully maintained. It carried the proper number of lifeboats. It had been thoroughly inspected the day of its fatal voyage. Yet hours later, the Estonia rolled over and sank in a cold, stormy night. It went down so quickly that most of those on board, caught in their dark, flooding cabins, had no chance to save themselves: Of those who managed to scramble overboard, only 139 survived. The rest died of hypothermia before the rescuers could pluck them from the cold sea. The final death toll amounted to 912 souls. However, there were an unpleasant number of questions about why the Estonia sank and why so many survivors were men in the prime of life, while most of the dead were women, children and the elderly.

Questions:

1. What do the Naval architects claim in terms of ships' design?
2. How many passengers survived and how many died?
3. What is the name of the ship and the sea?
4. What is hypothermia?
5. How do you think that many survivors were men, while most of the dead were women, children and the elderly?
6. Define the term 'architect'.
7. How was the condition of the ship before its fatal voyage?
8. Do you think that the nature dominates the technology? And why?
9. What do you know about 'lifeboat'?
10. Write the two synonyms of the word 'rescue'.

OR

Q.2(B)	Discuss various reading techniques with examples	10M	1	5

Q.3(A)	**Fill in the blanks using appropriate verbs that would complete the collocation.**	10M	2	3

a. If you park there, you will have to ..... a fine.
a) pay b) take c) have
b. He ..... no attention to my requests.
a) paid b) took c) had
c. I ..... a cough to catch her attention.
a) gave b) paid c) took
d. Although the doctors tried hard, they couldn't ..... his life.
a) save b) bring c) take
e. Abbreviations ..... space and hence they are very common in newspaper headlines.
a) catch b) save c) take
f. Do you ..... a diary?
a) keep b) have b) save
g. Few people can ..... a secret.
a) keep b) save c) have
h. He still ..... in touch with most of his old school mates.
a) keeps b) saves c) take
i. I asked her what her problem was but she ..... quiet.
a) kept b) took c) saved
j. They ..... close to hitting each other.
a) came b) took c) brought

OR

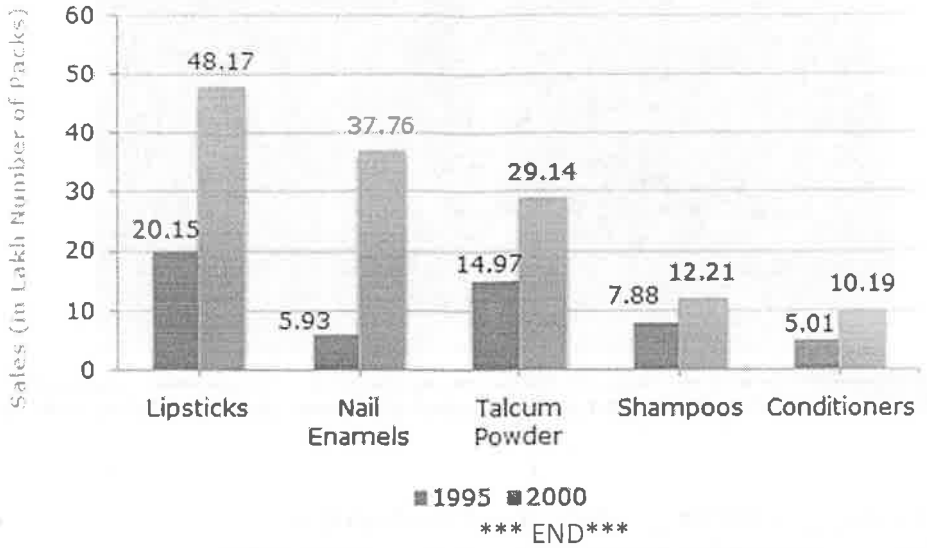
Q.3(B)	Interpret the picture in your own way and write a paragraph about it. Give a title to the picture.	10M	2	6

Q.4(A)	**Develop the following hints into a meaningful story and give a suitable title to it.** Robert Bruce___ 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	10M	3	4
	OR			
Q.4(B)	You might have visited many places of importance. Describe any place you have visited in the form of a travelogue. You may include : vivid description of the place , your thoughts and feelings, cultural background of the place, interaction with locals, etc.	10M	3	6
Q.5(A)	The process of making cement is described here. Prepare a flow chart ba sed on this description. The two raw materials used in the process are limestone and clay. Limestone is crushed, sized, dried and stored in storage silos. In the same way, Clay is washed, crushed, and dried in storage basins. The two materials are mixed in the correct proportion and ground in a tube mill (This mixture is known as slurry) and stirred in a correcting basin. It is then stored in a storage tank. From there, it is fed into the rotary kiln where it is burnt at a high temperature of 1000 to 1700°C. Here clinkers are formed which are sent to a cooler, to be cooled. At this stage, Gypsum is added to the clinker and this mixture is powdered. The powdered mixture is the finished product, cement, and it is sent to the storage silos ready for distribution.	10M	4	5
	OR			
Q.5(B)	Here are a few words related to Science and Technology academic vocabulary .Use them in sentences of your own, 1) Indicate, 2) strategy, 3) verify, 4) incorporate, 5) procedure, 6) current, 7) impact, 8) perspective, 9) potential, 10) implication	10M	4	5

Q.6(A) While writing an essay, we consider the audience, tone, purpose and content. Write an essay about how these features contribute to essay writing. 10M 5 6

OR

Q.6(B) A cosmetic company provides five different products. The sales of these five products (in lakh number of packs) during 1995 and 2000 are shown in the following bar graph. Evaluate the sales of five products. 10M 5 5



*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE114

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January- 2023

COMPILER DESIGN

(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.	Define cross compiler.	1M	1	1
	ii.	Write a regular expression for a identifier.	1M	1	1
	iii.	Apply left factoring on the below grammar. A → eBqZ | eBqZeZ | c B → b	1M	2	3
	iv	What is ambiguous grammar? Give an example.	1M	2	1
	v.	What is L-attributed definition?	1M	3	1
	vi	Define three address code.	1M	3	1
	vii.	State the benefits of using a machine-independent intermediate form.	1M	4	1
	viii.	What are the different implementations of three address statements?	1M	4	1
	ix.	What is DAG? Give two applications of DAG.	1M	5	1
	x.	How to represent scope in symbol table?	1M	5	1
Q.2(A)	a. What is bootstrapping? Show its use in compiler design with an example.		5M	1	2
	b. Describe the role of lexical analyzer with diagram.		5M	1	2
	OR				
Q.2(B)	(i) Explain the different phases of a compiler.		5M	1	2
	(ii) Analyze the working of a compiler with the help of the following statement: x=a+b+c*l00, where a, b and c are float variables.		5M	1	4
Q.3(A)	Check the given grammar is feasible for Look Ahead LR grammar. E→Da/bDc/dc/bda D→d		10M	2	4
	OR				
Q.3(B)	Construct SLR parsing table for the following grammar. E → E+T | T T → T*F | F F → (E) | id Show the moves of the parser for parsing the string a*a+a.		10M	2	4
Q.4(A)	Explain the process of bottom-up evaluation for S-attribute definitions with an example.		10M	3	3
	OR				
Q.4(B)	a) Write an SDT to convert infix to postfix expression. b) Describe the SDT for type checking in expression.		10M	3	2
Q.5(A)	What are different intermediate code statements? Discuss different three code statements and its implementations.		10M	4	3
	OR				

Q.5(B)	Write the translation scheme to produce three-address code for control flow statements.	10M	4	3
Q.6(A)	Explain the various principal sources of optimization in detail.	10M	5	2

OR

Q.6(B)	Sketch the flow graph for the matrix addition program below.	10M	5	3

```
begin
        for i := 1 to n do
                for j := 1 to n do
                        c[i,j]: = a[i,j]+b[i,j];
end
```

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE4M07C

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Regular End Semester Examinations, January - 2023

ETHICAL HACKING

(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.	Which OSI layer is responsible for node-to-node routing of packets?	1M	1	1
	ii.	What is the range of valid port numbers in TCP/IP?	1M	1	1
	iii.	List the protocol(s) is/are not vulnerable to sniffing?	1M	2	2
	iv	How many ports are scanned in Nmap for a target system by default?	1M	2	1
	v.	What kind of mapping does a hash function implement?	1M	3	1
	vi	List any two hash functions?	1M	3	1
	vii.	How does Slowloris work?	1M	4	1
	viii.	What is steganography?	1M	4	1
	ix.	List any two of Hardware-based attacks?	1M	5	1
	x.	List the various types of PUF can be used?	1M	5	1
Q.2(A)		How would you analyze User Datagram Protocol? Explain	10M	1	2
		OR			
Q.2(B)		Evaluate about natural masks and VLSM.	10M	1	4
Q.3(A)		Compare ARP spoofing and ARP poisoning.	10M	2	4
		OR			
Q.3(B)		Discuss the active Reconnaissance with example.	10M	2	3
Q.4(A)		Explain the Dos attack with real time example.	10M	3	3
		OR			
Q.4(B)		Illustrate about the Cryptographic Hash Functions.	10M	3	4
Q.5(A)		Describe the Denial of service Attack.	10M	4	3
		OR			
Q.5(B)		Classify the various biometrics.	10M	4	3
Q.6(A)		Explain the ways to prevent power analysis attacks.	10M	5	4
		OR			
Q.6(B)		Illustrate meta sploit framework and its modules.	10M	5	3

*** END***

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

Question Paper Code: 18CST111

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January - 2023

INTERNET OF THINGS

(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 calm and ambient technology?	1M	1	1
	ii.	The data related to IoT system belongs to whom? In this context, explain what "Data Subject" is.	1M	1	1
	iii.	What is SoC?	1M	2	2
	iv	How many Digital I/O pins and PWM pins are present in Arduino UNO?	1M	2	2
	v.	What is the default Login ID and Password of Raspberry Pi	1M	3	
	vi	The data related to IoT system belongs to whom? In this context, explain what "Data Subject" is.	1M	3	1
	vii.	What is HTTP?	1M	4	2
	viii.	What is length of IPv6 Address?	1M	4	2
	ix.	What is JSON-RPC?	1M	5	1
	x.	How REST is different than CoAP?	1M	5	1
Q.2(A)		What is IOT? Mention at least any five flavors of Internet of Things with detail explanation?	10M	1	2
		OR			
Q.2(B)		Explain the following in detail. (i) Small Pieces, Loosely Joined. (ii) Enchanted Objects. (iii) WhereDial.?	10M	1	2
Q.3(A)		Give a detail comparison between Raspberry Pi and Arduino and discuss its openness? Show that the usefulness of both the devices varies from application to application.	10M	2	2
		OR			
Q.3(B)		Write a program to glow an LED in Pin number 14 of an Arduino UNO at an interval of 10ms.	10M	2	3
Q.4(A)		What is Raspberry pi? Describe the architecture of raspberry pi 3 and explain the hardware embedded on it?	10M	3	2
		OR			
Q.4(B)		Write a program for raspberry pi for the automatic door opening system.	10M	3	3
Q.5(A)		Explain the following terms: (i) TCP and UDP port (ii) MAC address (iii) D address (iv) DHCP (v) IPv6.	10M	4	2
		OR			

Q.5(B)	What is IPv4? For given IP address 198.48.93.0 find following parameters i) Subnet Mask ii) Class iii) Broadcast ID iv) Network ID v) No of possible Hosts vi) Host IP Range .	10M	4	3
Q.6(A)	What is real time reaction explains with the help of Polling and Comet? How scaling works with Comet?	10M	5	2
	OR			
Q.6(B)	What is web socket and how it is efficient than http? Explain other protocols which are available to replace HTTP.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST112

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January- 2023

SOFTWARE ENGINEERING

(Computer Science & Technology)

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

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

Q.No		Questions	Marks	CO	BL
Q.1	i.	List out the Ethics of Software Engineering.	1M	1	1
	ii.	What Is SDLC?	1M	1	2
	iii.	State the Difference Between SDLC And STLC.	1M	1	2
	iv	What are functional and non-functional requirements?	1M	2	2
	v.	Draw a Context Diagram for an e-commerce website.	1M	2	3
	vi	What is feasibility study?	1M	3	1
	vii.	Outline various Structural and Behavioral diagrams of UML.	1M	3	3
	viii.	Define Software Testing?	1M	4	4
	ix.	What is cohesion?	1M	4	4
	x.	What is Quality Assurance vs. Quality Control?	1M	5	5
Q.2(A)		Explain Waterfall Model in Capability Maturity Model Integration. List out its advantages and disadvantages with neat diagrams.	10M	1	2
		OR			
Q.2(B)		Why Spiral Model is regarded as a risk-driven software development process model? Explain. List out its advantages and disadvantages.	10M	1	2
Q.3(A)		Discuss in detail about SRS and what is the need for a Software Company to have a SRS and write a sample SRS for any application.	10M	2	2
		OR			
Q.3(B)		Explain in details about Behavioral Models with example.	10M	2	2
Q.4(A)		Explain in detail about User Interface Design process and mention the golden rules that needs to be followed while doing the same.	10M	3	3
		OR			
Q.4(B)		Explain the concept of Coupling and Cohesion, Justify which leads to a good software design.	10M	3	3
Q.5(A)		Discuss in detail about whitebox testing with its types and define what is Regression testing.	10M	4	3
		OR			
Q.5(B)		Describe in detail about metrics for Design model.	10M	4	4
Q.6(A)		Discuss in detail about software quality assurance, Software reviews and formal technical reviews.	10M	5	4
		OR			
Q.6(B)		Explain briefly about Statistical quality assurance and software reliability.	10M	5	5

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST409

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January- 2023

PRINCIPLES OF INFORMATION SECURITY

(Computer Science & Technology)

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

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

Q.No		Question	Marks	CO	BL
Q.1	i.	What is the difference between threats and attacks.	1M	1	1
	ii.	Differentiate virus and worms.	1M	1	1
	iii.	State the fundamental principles of HIPAA.	1M	2	1
	iv	Write the five strategies followed in risk control process.	1M	2	1
	v.	What is ISSP?	1M	3	1
	vi	List the factors used for authentication mechanism?	1M	3	1
	vii.	Define Statistical Anomaly-Based IDPS.	1M	4	1
	viii.	Differentiate symmetric and asymmetric encryption.	1M	4	1
	ix.	Explain project Wrap-up.	1M	5	1
	x.	What are the approaches followed by an organization when employing digital forensics.	1M	5	1
Q.2(A)		Elaborate Information Security and critical characteristics of Information.	10M	1	2
		OR			
Q.2(B)		Discuss the categorization of threats.	10M	1	2
Q.3(A)		Discuss the Ethics and Information Security.	10M	2	2
		OR			
Q.3(B)		Explain in detail about the various Risk control strategies in detail	10M	2	2
Q.4(A)		Briefly discuss about EISP and ISSP.	10M	3	2
		OR			
Q.4(B)		Discuss Firewall processing modes and how to select Firewall.	10M	3	2
Q.5(A)		Explain in detail about the categorization of IDPS and IDPS detection methods	10M	4	2
		OR			
Q.5(B)		Discuss about Honeypots, Honeynets, padded cells and Trap and Trace systems.	10M	4	2
Q.6(A)		Explain the technical and non-technical aspects of implementing information security.	10M	5	2
		OR			
Q.6(B)		Explain in detail about Digital Forensics.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST4M09C

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January-2023

OBJECT ORIENTED SYSTEM DEVELOPMENT USING UML, JAVA AND PATTERN

(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 UML?	1M	1	1
	ii.	What is Elaboration?	1M	1	1
	iii.	What is Interface?	1M	2	1
	iv	What is the use of UML package diagram?	1M	2	2
	v.	What is the use of System sequence diagram?	1M	3	2
	vi	What are all the Components used in Collaboration Diagram?	1M	3	1
	vii.	Define CRC cards.	1M	4	1
	viii.	What is meant by swim lane?	1M	4	1
	ix.	Define Facade Pattern.	1M	5	1
	x.	What is the Uses of Design Patterns	1M	5	1
Q.2(A)		With a suitable example explain how to design a class. Give all possible representation in a class.	10M	1	3
		OR			
Q.2(B)		Draw and Explain about the Usecase Modelling?	10M	1	3
Q.3(A)		Explain briefly about the Modeling Technique for class Diagram?	10M	2	4
		OR			
Q.3(B)		Define Abstract class. How to create an abstract class and Abstract operation with example.	10M	2	4
Q.4(A)		Describe the Interaction Diagrams and Explain the Interaction diagram for Banking application?	10M	3	2
		OR			
Q.4(B)		Draw and Explain the Sequence Diagram for Unified Library Application.	10M	3	3
Q.5(A)		What is GRASP? Explain the following GRASP patterns. Creator, Informatio Low Coupling, and High Cohesion.	10M	4	3
		OR			
Q.5(B)		Discuss Briefly about the Information expert, Protected variations and Indirection.	10M	4	3
Q.6(A)		Describe Briefly about the Singleton Design Pattern with neat structure and example.	10M	5	4
		OR			
Q.6(B)		Describe Briefly about the Composite Pattern with neat structure and example.	10M	5	4

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CST4M11

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January 2023

ONLINE PRIVACY

(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 EULA.	1M	1	1
	ii.	How does the encryption tunnel work?	1M	1	1
	iii.	What is Personally Identifiable Information?	1M	2	1
	iv	Define Pseudonymization	1M	2	1
	v.	What is ethics in online privacy?	1M	3	1
	vi	How are cookies useful?	1M	3	1
	vii.	Define GDPR.	1M	4	1
	viii.	What is meant by OCEAN?	1M	4	1
	ix.	List the three pillars of digital privacy.	1M	5	1
	x.	List the types of cyber-attack?	1M	5	1
Q.2(A)		Explain in detail about various Privacy breaches, and its effects.	10M	1	2
		OR			
Q.2(B)		Discuss in detail about Need of Virtual private network and outcomes of the VPN.	10M	1	2
Q.3(A)		Explain in detail about Data Anonymization Techniques and Differential Privacy.	10M	2	3
		OR			
Q.3(B)		Discuss about K-anonymity, L-diversity, T-closeness in detail.	10M	2	3
Q.4(A)		Discuss in detail about Need of Ethics about studying online privacy.	10M	3	2
		OR			
Q.4(B)		Explain in detail about Institutional Review Board and Ethics Committee.	10M	3	2
Q.5(A)		Summarize in detail about General Data Protection Regulation.	10M	4	3
		OR			
Q.5(B)		Summarize in detail about Digital Personal Data Protection Bill.	10M	4	3
Q.6(A)		Explain in detail about Privacy laws and regulations.	10M	5	2
		OR			
Q.6(B)		Explain in detail about Privacy standards.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18HUM302

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

HUMAN RESOURCE DEVELOPMENT

(OE-II: Common to CE, EEE, ME, ECE, CSE, CST & CSIT)

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

1			Marks	CO	BL
Q.1	i.	Define management	1M	1	2
	ii.	Responsibility of Human resource	1M	1	2
	iii.	What is Succession Planning?	1M	2	2
	iv	Outline Job Design.	1M	2	2
	v.	What is Critical Incident method?	1M	3	1
	vi	Recruitment	1M	3	2
	vii.	What is Training?	1M	4	2
	viii.	Define Compensation Management.	1M	4	2
	ix.	What is grievance?	1M	5	2
	x.	Trade Union.	1M	5	2
Q.2(A)	Explain nature and scope of human resource development.		10M	1	2
Q.2(B)	Elucidate functions of human resource management.		10M	1	6
Q.3(A)	Explain process of Job Analysis		10M	2	4
Q.3(B)	Illustrate Human Resource Planning process		10M	2	5
Q.4(A)	Elucidate Performance Appraisal methods.		10M	3	4
Q.4(B)	Explain sources of recruitment.		10M	3	3
Q.5(A)	Explain Training Process.		10M	4	4
Q.5(B)	Explain components of Compensation Management.		10M	4	4
Q.6(A)	Explain Trade Union in India.		10M	5	3
Q.6(B)	Explain types of grievances.		10M	5	3

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18ECE301

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

BIO-MEDICAL ELECTRONICS

(OE-II: 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

Q.No		Question	Marks	CO	BL
Q.1	i.	RTD stands for _____	1M	1	2
	ii.	LVDT stand for _____	1M	1	2
	iii.	Examine the Resting Potential.	1M	2	4
	iv	Draw ECG waveform and name its parts.	1M	2	4
	v.	RV stands for _____	1M	3	2
	vi	FRC stand for _____	1M	3	2
	vii.	List the properties of X-rays.	1M	4	4
	viii.	What are the advantages of an ultrasound imaging system?	1M	4	2
	ix.	What is an implantable pacemaker?	1M	5	2
	x.	Draw a block diagram of an implantable defibrillator.	1M	5	3
Q.2(A)		What is difference between VIVO and VITRO Measurements in medical field? Explain intelligent medical instrumentation system with suitable examples.	10M	1	4
		OR			
Q.2(B)		Draw the typical waveform of the action potential. Explains different types of electrodes used for measurement of bio-potential.	10M	1	4
Q.3(A)		Explain 12 lead electrode system for ECG measurement.	10M	2	2
		OR			
Q.3(B)		Elaborate the steps for the typical recording setup of EMG and ECG with diagram.	10M	2	4
Q.4(A)		Illustrate the ultrasonic Doppler shift principle and how it is applied for measurement of blood pressure? Explain the major sub systems of such a system.	10M	3	3
		OR			
Q.4(B)		Discuss in detail about various types of Respiratory system measurements.	10M	3	2
Q.5(A)		Describe the basic NMR imaging system with the help of a diagram.	10M	4	3
		OR			
Q.5(B)		What is a real time ultrasound imaging system? What are special requirements of real time imaging systems?	10M	4	3
Q.6(A)		Explain in detail about the Heart lung machine with neat block diagram.	10M	5	2
		OR			
Q.6(B)		Discuss in detail about the Artificial Kidney.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE301

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January- 2023

OPERATING SYSTEMS

(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.	List services of operating system.	1M	1	1
	ii.	Define microkernel operating system.	1M	1	1
	iii.	Distinguish between thread and process?	1M	2	2
	iv	Define context switching.	1M	2	1
	v.	State critical section problem.	1M	3	2
	vi	Define Semaphore.	1M	3	1
	vii.	Differentiate between page and segment.	1M	4	2
	viii.	Define virtual memory.	1M	4	1
	ix.	Write any four file operations.	1M	5	1
	x.	Define the terms seek time and latency with respect to disk.	1M	5	1
Q.2(A)		Outline the types of System Calls with appropriate examples.	10M	1	2
		OR			
Q.2(B)		Describe the looping statements available in shell programming with an example.	10M	1	2
Q.3(A)		Explain the concept of multi-threading? Discuss the following multithreading models. a) Many-to-one b) One-to-one c) Many-to-many	10M	2	2
		OR			
Q.3(B)		Consider the following set of processes	10M	2	3

Processes	Burst time
P1	7
P2	5
P3	3
P4	10
P5	2

Draw Gantt charts to illustrate the schedule of process execution using FCFS, RR scheduling algorithms. Let the Time Slice for RR policy is 3. Calculate the average turnaround time and average waiting time also.

Q.4(A)		Illustrate Reader's & Writer Problem, and Dinning Philosopher Problem.	10M	3	2
		OR			
Q.4(B)		Explain Banker's algorithm for deadlock avoidance with a neat example.	10M	3	5

Q.5(A)	Classify the different file allocation methods with neat diagram. Mention the advantages and disadvantages of it.	10M	4	2
	OR			
Q.5(B)	Consider the following page reference string: 1, 2, 3, 4, 5, 3, 4, 1, 6, 7, 8, 7, 8, 9, 7, 8, 9, 5, 4, 5, 4, 2. Assuming demand paging with Three frames, how many page faults would occur for the following replacement algorithms? • LRU replacement • FIFO replacement • Optimal replacement	10M	4	3
Q.6(A)	List out the different file allocation method. Mention its advantages and disadvantages.	10M	5	4
	OR			
Q.6(B)	Describe the various Disk scheduling Techniques in detail.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18PHY302

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester Supplementary End Semester Examinations – January 2023

(Regulations: R18)

LASER PHYSICS AND ADVANCED LASER TECHNOLOGY

(Open Elective II – 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

Q.No		Question	Marks	CO	BL
Q.1	i.	State the characteristics of laser?	1M	1	2
	ii.	Write difference between spontaneous emission and stimulated emission?	1M	1	1
	iii.	Write expression for Laser Beam waist (spot size)in the direction of Z axis?	1M	1	2
	iv	What are the three output wavelengths possible from He-Ne laser?	1M	2	1
	v.	What kind of pumping mechanism used in CO_2 laser?	1M	2	1
	vi	What is the lasing medium in free electron laser?	1M	3	2
	vii.	Laser pulse having 10 ns pulse duration and 4mJ energy per pulse what is peak power?	1M	4	1
	viii.	What is the typical pulse width of femtosecond laser pulses?	1M	4	1
	ix.	State applications of Raman spectroscopy?	1M	5	2
	x.	In LASIK surgery which kind of lasers are used?	1M	5	1
Q.2(A)		Derive expression for Einstein's coefficients for stimulated emission and spontaneous emission. Discuss the conditions of lasing using the of Einstein's coefficients.	10M	1	4
		OR			
Q.2(B)		i) Find out the relative population of the excited laser level with respect lower laser level in Nd:YAG laser that produces a light beam of wavelength if 1.06 μm at 300 K?	4M	1	4
		ii) What is the role of pumping to achieve population inversion and explain the three-level pumping scheme involved in the laser production.	6M	1	3
Q.3(A)		Explain the working of He-Ne laser system? Describe the three lasing transitions possible in He-Ne laser with energy level diagram.	10M	2	3
		OR			
Q.3(B)		What kind of pumping scheme is used for chemical laser to achieve the population inversion in chemical laser? Describe the chemical laser working?	10M	2	3
Q.4(A)		Explain how broadened the energy levels by doping glass to Nd atoms? Write a detailed structure of construction and working of Nd: YAG laser?	10M	3	3
		OR			

Q.4(B)	Describe the homojunction structure semiconductor laser working principle? What kind of semiconductor materials could be used for construcion of laser?	10M	3	3
Q.5(A)	Explain the acousto-optic method for producing the short pulses?	7M	4	3
	A laser pulse width of 40 ns with repetition rate of 10 Hz and having spot size of 10 cm is focused to 20 μm spot size what is the peak intensity of laser before and after the focusing? The energy per pulse is 10 mJ.	3M	4	2
	OR			
Q.5(B)	What are the Q-Switching methods used to produce high power pulsed laser? Describe Electro-optic method to produce high power laser?	10M	4	3
Q.6(A)	Explain is Raman scattering process in detail? How lasers are useful in spectroscopy?	10M	5	3
	OR			
Q.6(B)	What is fluorescence spectroscopy? How lasers were useful in the Laser fluorescence spectroscopy? State applications using laser fluorescence spectroscopy?	6M	5	3
	ii) Describe how lasers are useful in engineering and industrial applications?	4M	5	2

*** END***

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

Question Paper Code: 18CE302

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

ENVIRONMENTAL IMPACT ASSESSMENT

(OE-II: Common to EEE, ME, ECE, CSE, CST & CSIT)

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.	Define EIA?	1M	1	1
	ii.	What is one direct and indirect impact of land cleaning project.	1M	1	2
	iii.	Write the name of different environmental Parameters	1M	1	2
	iv.	What is EBM in EIA project?	1M	1	2
	v.	What are the different types of impact induced by any project activity?	1M	1	2
	vi.	Write the categories of land use in a map.	1M	1	1
	vii.	Define product audit.	1M	1	2
	viii.	Define the minimization audit.	1M	1	2
	ix.	What is audit protocol	1M	1	2
	x.	What do you mean by "Environmental Impact Assessment?	1M	1	2
Q.2(A)		Explain EIA and illustrate the example of Land Cleaning Activity (L.C.A) in detail.	10M	1	3
		OR			
Q.2(B)		Explain in detail the salient feature and key elements of EIA process.	10M	1	3
Q.3(A)		Describe the systematic approach for the study of impacts on soil and groundwater.	10M	1	4
		OR			
Q.3(B)		Discuss in detail about the "Assessment of Soil and Ground Water Pollution".	10M	2	3
4Q.(A)		Introduce the concept of assessing the impact on vegetation and wild Life and discuss the general methodology for the assessment of Impacts on biological environment	10M	2	4
		OR			
Q.4(B)		Discuss in detail the systematic approach for evaluating biological impacts	10M	2	4

Q.5(A)	Explain and define audit in the context of EIA in detail.	10M	3	4
	OR			
Q.5(B)	Define environmental audit according to ICC and differentiate between financial and environmental audit.	10M	2	4
Q.6(A)	Describe in detail the post audit activities.	10M	3	5
	OR			
Q.6(B)	What is Environmental pollution act, describe in detail.	10M	3	5

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18CSE302

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations, January- 2023

E-LEARNING 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 Part-A or B only

Q.No		Question	Marks	CO	BL
Q.1	i.	Write any four characteristics of E-learning.	1M	1	1
	ii.	Compare Synchronous learning and Asynchronous learning.	1M	1	2
	iii.	What way help the problem-based approach to learner?	1M	2	3
	iv	Is Bloom's Taxonomy is a teaching strategy? Write the Bloom's Revised Taxonomy.	1M	2	1
	v.	Distinguish between Formal and Informal Learning.	1M	3	4
	vi	Explain Adaptive learning.	1M	3	2
	vii.	What is Multimedia?	1M	4	1
	viii.	Explain Drill and Practice.	1M	4	2
	ix.	What are the Challenges of Online Learning for Students?	1M	5	4
	x.	Who are the E-content developers in India?	1M	5	2
Q.2(A)		Demonstrate on various components of E-Learning.	10M	1	2
		OR			
Q.2(B)		Illustrate the teleconference, audio and video conference.	10M	1	2
Q.3(A)		Illustrate the E-learning Development Process	10M	2	2
		OR			
Q.3(B)		Explain the following in detail:	5M	2	2
	(i)	Behaviourism	5M		
	(ii)	Cognitivism			
Q.4(A)		Explain briefly about Hyper Media Design Model.	10M	3	2
		OR			
Q.4(B)		List the Future of E-Learning and explain with suitable example.	10M	3	1
Q.5(A)		Summarize the Characteristics and Applications for Teaching through Multi/Hyper Media.	10M	4	2
		OR			
Q.5(B)		Classify about Collaborative Learning Strategies.	10M	4	2
Q.6(A)		Illustrate the Challenges of Distance Education	10M	5	2
		OR			
Q.6(B)		Explain briefly about the E-Patashala.	10M	5	2

*** END***

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

Question Paper Code: 18EEE302

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

INTRODUCTION TO MEMS

(OE-II: Common to CE, ME, ECE, CSE, CST & CSIT)

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.	DMD stands for _____.	1M	1	1
	ii.	Name an two major branches of MEMS technology.	1M	1	1
	iii.	A substrate is _____.	1M	2	1
	iv	Why silicon is used in Microsystems?	1M	2	1
	v.	List the micro fabrication steps in MEMS.	1M	3	1
	vi	Name the dopants used in Ion Implantation process.	1M	3	1
	vii.	List out the MEMS Simulation types.	1M	4	1
	viii.	Name any two software's used for Finite Element Method.	1M	4	1
	ix.	List any two applications of RF-MEMS devices	1M	5	1
	x.	What are the relative merits of optical MEMS devices	1M	5	1
Q.2(A)		What are MEMS and Microsystems? How will you classify them from the conventional systems?	10M	1	2
		OR			
Q.2(B)		Explain in detail about history of Micro Electro Mechanical Systems.	10M	1	2
Q.3(A)		Write a note on characteristics of sensors.	10M	2	3
		OR			
Q.3(B)		Illustrate the working principle of Micro actuators.	10M	2	3
Q.4(A)		Describe the Evolution of Micro-fabrication.	10M	3	2
		OR			
Q.4(B)		Write briefly about all the Substrate materials available in the market. List their applications individually.	10M	3	2
Q.5(A)		Explain various procedures involved in Finite Element Method in detail.	10M	4	2
		OR			
Q.5(B)		Explain about the modeling steps involved in cantilever piezoelectric accelerometer.	10M	4	2
Q.6(A)		Explain oscillators and filters MEMS devices in detail	10M	5	2
		OR			
Q.6(B)		Explain about fluid applications of MEMS devices.	10M	5	2

*** END***

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

Question Paper Code: 18CE301

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations –JAN'2023

GROUND IMPROVEMENT TECHNIQUES

(OE-II: Common to EEE, ME, ECE, CSE, CST & CSIT)

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 the role of ground improvement in foundation engineering?	1M	1	1
	ii.	Write the objective of grouting.	1M	1	1
	iii.	What are the problems occurred to seepage of water?	1M	2	1
	iv	What is a stone column?	1M	2	1
	v.	What are the different methods available in the stabilization of soil?	1M	3	1
	vi	What are the different chemicals used in the stabilization of soil?	1M	3	1
	vii.	Write the concept behind soil reinforcement.	1M	4	1
	viii.	Name a few raw materials that are used in the manufacture of geosynthetics.	1M	4	1
	ix.	Write the various methods to the identification of expansive soil.	1M	5	1
	x.	How to improve the expansive soil?	1M	5	1
Q.2(A)		Explain in brief the Classification of ground improvement techniques.	10M	1	2
		OR			
Q.2(B)		What is dewatering on a construction site? Explain in detail with a neat sketch the method of dewatering using following methods (i) Deep (Bored) wells with pumps, (ii) Electro – Osmosis method	10M	1	2
Q.3(A)		What is densification? Explain in detail with a neat sketch the method of densification using any two methods.	10M	2	2
		OR			
Q.3(B)		Explain the various types of ground modification for insitu treatment of Coarsed grained soils.	10M	2	2
Q.4(A)		What is the stabilization of soil? Write short notes on the following: (a) lime stabilization. (b) Cement Stabilization.	10M	3	2
		OR			
Q.4(B)		Write the necessity of soil stabilization? Explain the various chemicals used in stabilization of soil?	10M	3	2

Q.5(A)	With neat sketches explain in detail the various applications and benefits of reinforced earth for ground improvement.	10M	4	2
	OR			
Q.5(B)	Explain in detail role of geotextiles in the construction with figure.	10M	4	2
Q.6(A)	Explain the various methods to the identification of expansive soil.	10M	5	2
	OR			
Q.6(B)	Explain the various foundation techniques in expansive soils for ground improvement.	10M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18PHY301

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B.Tech III Year II Semester (R18) Supplementary End Semester Examinations –January 2023

(Regulations: R18)

OPTICAL PHYSICS AND APPLICATIONS

(Open Elective II – 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.No		Question	Marks	CO	BL
Q.1	i.	Define nodal planes.	1M	1	1
	ii.	What is the focal length of a thin lens with radius of curvatures -25 cm and +25 cm and refractive index 1.5?	1M	1	1
	iii.	What is Fermat's principle?	1M	2	1
	iv	What are chromatic aberration?	1M	2	1
	v.	What is constructive interference?	1M	3	1
	vi	Write the conditions to get interference pattern.	1M	3	1
	vii.	What is the relationship between the path difference and phase difference?	1M	4	1
	viii.	What is Brewster's law?	1M	4	1
	ix.	What is acceptance angle of an optical fiber?	1M	5	1
	x.	What is meant by attenuation?	1M	5	1
Q.2(A)		i)Determine the refraction matrix for the light ray through a homogeneous medium	8M	1	3
		ii) Two thin convex lenses of powers 5 diopters and 4 diopters are placed co-axially 10 cm apart. Find the focal length of the combination.	2M		
Q.2(B)		What are unit planes? Derive relations for distances of unit planes from the thick lens refracting surfaces in Gaussian constants.	10M	1	3
Q.3(A)		What are Chromatic aberrations? Derive the condition for Achromatic doublet to minimize the chromatic aberrations.	10M	2	4
		OR			
Q.3(B)		Explain the construction, working of a compound microscope and derive an expression for its magnification.	10M	2	3
Q.4(A)		Explain Young's double slit experiment with neat sketch and derive an expression for resultant Intensity.	10M	3	3
		OR			
Q.4(B)		With neat diagram explain the experiment to find the wavelength of source is determined by Newton's rings experiment with necessary theory.	10M	3	3
Q.5(A)		Describe Fraunhoffer diffraction due to single slit with a suitable diagram.	10M	4	4
		OR			

Q.5(B)	What is Malus law? Explain the phenomenon of polarization by refraction through transparent surfaces.	10M	4	3
Q.6(A)	i) With neat ray diagram explain the working principle and also the construction of the optical fiber.	8M	5	3
	ii) What is the critical angle of a refracting medium with refractive index 1.414?	2M	5	2
	OR			
Q.6(B)	I) Explain fiber optic communication system with a neat block diagram.	8M	5	3
	ii) A step index optical fiber has diameter of 60 μm and a numerical aperture of 0.45. Calculate the number of modes for an operating wavelength of 10 μm.	2M	5	2

*** END***

Hall Ticket No: | | | | | | | | | | | Question Paper Code: 18HUM301

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

B. Tech III Year II Semester (R18) Supplementary End Semester Examinations – JAN'2023

INTELLECTUAL PROPERTY RIGHTS

(OE-II: Common to CE, EEE, ME, ECE, CSE, CST & CSIT)

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 agreement	1M	1	2
	ii.	What is copy right?	1M	1	2
	iii.	What is trade?	1M	2	2
	iv	What is patent?	1M	2	2
	v.	Define licensing	1M	3	1
	vi	Define ownership	1M	3	2
	vii.	Define strategy	1M	4	2
	viii.	What is law?	1M	4	2
	ix.	Write about trade blocs?	1M	5	2
	x.	What is fine?	1M	5	2
Q.2(A)	Explain Intellectual Property Rights importance in developing countries.		10M	1	2
	OR				
Q.2(B)	What is WTO? Explain functions of WTO.		10M	1	6
Q.3(A)	What is copy right? Explain copy right principles and law.		10M	2	4
	OR				
Q.3(B)	What is derivative? Explain right to prepare derivative works.		10M	2	5
Q.4(A)	What is technology? Explain assignment and transfer of technology.		10M	3	4
	OR				
Q.4(B)	What is valuation? Explain valuation of intellectual property rights.		10M	3	3
Q.5(A)	What is patent filing? Explain procedure for filing patents in India.		10M	4	4
	OR				
Q.5(B)	Explain about patent infringement and patent strategy.		10M	4	4
Q.6(A)	What is RTI? Explain obligations of public authority.		10M	5	3
	OR				
Q.6(B)	Explain functions of Central and State information commission.		10M	5	3

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