LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram-521 230 :: NTR Dist. :: A.P

Approved by AICTE, New Delhi. Affiliated to JNTUK, Kakinada

B.Tech. (VI Semester) (R17) Semester End Examinations (Supplementary) - April 2026

(2018, 2019 Regular admitted batches and 2020 Lateral Entry admitted batch only)

R17

TIME TABLE

Time: 02.00 PM to 05.00 PM **A.Y. 2025-26**

Branch	01-04-2026 (Wednesday)	02-04-2026 (Thursday)	04-04-2026 (Saturday)	06-04-2026 (Monday)	07-04-2026 (Tuesday)	08-04-2026 (Wednesday)	09-04-2026 (Thursday)
					Program Elective - II	Open Elective - I	Add on Course - II
ASE	17AE16 - Propulsion –II	17AE17 - Aircraft Structures-II	17AE18 - Flight Dynamics	17AE19 - Finite Element Methods in Engineering	17AE23 - Space Mechanics	17MB80 - Industrial Engineering and Management	17AE91 Industrial Aerodynamics
CE	17CE20 - Design of Steel Structures	17CE21 - Irrigation and Water Resources Engineering	17CE22 - Water and Waste Water Engineering	17CE23-Geo Technical Engineering – II	17CE26 - Construction Techniques and Equipment Planning 17CE25 - Railways, Airport Planning and Harbour Engineering	17MB80 - Industrial Engineering and Management	17CE91 Low Cost and Eco-Friendly Building Technology
CSE	17CS05 - Android Technologies	17CI16 - Data Mining and Data Warehousing	17CI17 - Data Communications and Computer Networks	17EC22 - Microprocessors and Microcontrollers	17CS08 - PHP Programming	17MB80 - Industrial Engineering and Management	17CS91 Software Testing Methodologies
ECE	17EC20 - Linear Control Systems	17CI07 - OOPs through Java	17EC21 - Antenna and Wave Propagation	17EC22 - Microprocessors and Microcontrollers	17EC25 - Cellular and Mobile Communications	17MB80 - Industrial Engineering and Management	17EC91 Telecommunication Switching Systems and Networks
EEE	17EE17 - Analog and Digital Signal Processing	17EE18 - Power System Analysis	17EE19 - Power Electronics	17EE20 - Measurements and Instrumentation	17EC29 - Embedded System Design	17MB80 - Industrial Engineering and Management	17EE91 Electrical Reliability Engineering
EIE	17EI10 - Process Control Instrumentation	17EI11 - Bio Medical Instrumentation	17EC10 - Digital Signal Processing	17EI12 - Opto Electronics and Laser Instrumentation	17EI13 - Virtual Instrumentation	17MB80 - Industrial Engineering and Management	17EI91 Remote Sensing
IT	17CI20 - Information Security	17CI16 - Data Mining and Data Warehousing	17IT03 - R Programming	17CI15 - Automata Theory and Compiler Design	17IT05 - Object Oriented Software Engineering 17CI24 - Image Processing	17MB80 - Industrial Engineering and Management	17IT91 Network Programming
ME	17ME20 - Heat Transfer	17ME21 - Mechanical Engineering Design - II	17ME22 - CAD/CAM	17ME23 - Finite Element Analysis	17ME26 -Modern Machining Processes 17ME24 - Automobile Engineering	17MB81 - Project Management 17MB82-Logistics and Supply Management	17ME91 Design of Experiments

Note: Any omissions or clashes in the time table may please be informed to the Controller of Examinations immediately.

Date: 17 MAR 2026

CONTROLLER OF EXAMINATIONS

PRINCIPAL

Copy to: 1. Vice-Principal, Deans & HoDs 2. T&P cell, Transport in-charge & Librarian
3. Canteen, PD, Security & Hostels 4. Coordinator-Disciplinary 5. Notice Boards

H.T.No.										

1 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar:: Mylavaram – 521 230:: NTR Dist.:: A.P.

B.Tech. (VI Semester) Supplementary Examinations

17EE17-ANALOG AND DIGITAL SIGNAL PROCESSING

(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Define signal. Discuss in detail about different types of signals.	6M	CO1	L1
(b)	Determine if the following system are time invariant or time variant (i) y(n)=x(n)+x(n-1) (ii) y(n)=x(-n).	6M	CO1	L3
	(OR)			
2(a)	Give the mathematical expression for unit step and unit impulse signal and provide the relationship between them.	6M	CO1	L2
(b)	Check whether or not each of the following signals is periodic $i)\, x_1[n]=u[n]+u[-n] \quad ii)\, x_2[n]=e^{j0.2n\pi}+e^{-j0.3n\pi}$	6M	CO1	L3
3(a)	Evaluate the 8-point DFT for the given x(n) = 2^n using DIT-FFT algorithm.	6M	CO2	L3
(b)	Use concentric circle method to perform the circular convolution of $x_1(n)=\{1,2,2,1\}$; $x_2(n)=\{1,2,3,1\}$.	6M	CO2	L3
	(OR)			
4(a)	Draw the signal flow graph of 8 point DIF –FFT.	6M	CO2	L4
(b)	An input sequence is x[n]={1,2} is applied to discrete time system with impulse response h[n]={1,1},then determine linear convolution using DFT.	6M	CO2	L3
5(a)	Obtain the directform-I, directform-II for the IIR filter with difference equation given as $y(n)=-0.1y(n-1)+0.2y(n-2)+3x(n)+3.6x(n-1)$	6M	CO3	L4
(b)	Obtain the cascade and parallel realization for the IIR filter with difference equation given as $y(n)=-0.1y(n-1)+0.2y(n-2)+3x(n)+3.6x(n-1)$	6M	CO3	L4
	(OR)			
6(a)	A causal LTI system is defined by the difference equation 2y[n]-y[n-2]=x[n-1]+3x[n-2]+2x[n-3]. Determine the frequency response, magnitude response and phase response.	6M	CO3	L3
(b)	Obtain the cascade and direct form structures for $H(z)=(1+\frac{1}{2}z^{-1}+z^{-2})(1+z^{-1}+2z^{-2})$.	6M	CO3	L4
7(a)	What is digital filter in signal processing? Write the advantages and disadvantages of digital filters over analog filters.	6M	CO4	L2
(b)	Convert the analog filter with following system transfer function H(s) into a digital IIR filter by means of bilinear transformation $H(s)=\frac{(s+0.3)}{(s+0.3)^2+16}$ for T = 0.5 sec	6M	CO4	L3
	(OR)			
8(a)	Explain about design of an IIR filter using Bilinear transformation.	6M	CO4	L2
(b)	For the analog transfer function $X(s)=\frac{2}{(S+1)(S+2)}$. Determine its digital equivalent taking T= 1sec.Use Impulse invariance method.	6M	CO4	L2
9(a)	Design an FIR low pass filter using Hanning windows with pass band gain of 1dB, cutoff frequency of 400Hz, sampling frequency of 1 kHz. Assume the length of the impulse response as 7.	6M	CO4	L3
(b)	Summarize the process of inverse discrete wavelets transform computation by filter banks.	6M	CO4	L2
	(OR)			
10(a)	Discuss the characteristics of Hamming and Hanning window techniques with necessary equations and sketches.	6M	CO4	L3
(b)	Design a bandpass filter to pass frequencies in the range 1 to 2 rad/sec using hanning window, with N=5.	6M	CO4	L3

****

H.T.No | | | | | | | | | | |

1 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VI Semester) Supplementary Examinations

17ME20-HEAT TRANSFER

(ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss the basic mechanisms of heat transfer and state Fourier's Law of Heat Conduction with a brief explanation.	6M	CO1	L2
(b)	Derive the general heat conduction equation in cartesian coordinates. Hence, obtain the simplified form for one-dimensional unsteady heat conduction assuming variable thermal conductivity and absence of internal heat generation.	6M	CO1	L2
	(OR)			
2(a)	What is the critical thickness of insulation on a small diameter wire or pipe. Explain its physical significance and derive the expression for same.	4M	CO1	L2
(b)	A steel tube of 40mm inner diameter and 70 mm outer diameter is covered by 35 mm thick of asbestos. The thermal conductivity of steel, asbestos are 40 W/m-K, 0.25 W/m-K. The tube receives heat from hot gases at 450°C with heat transfer coefficient of 310 W/m²-K. The outer surface is exposed to air at 25°C with heat transfer co-efficient of 10 W/m²-K. Determine (a) heat loss/m length (b) Interface temperatures and surface temperatures.	8M	CO1	L3
3.	A truncated cone like solid has its circumferential surface insulated. The base is at 300°C and the area along the flow direction at x is given by A = 2.3 (1 – 2.5x). Where x is measured from the base in the direction of flow in m and A is in m2. If the thermal conductivity is 2.6 W/m K and the plane at x = 0.2 m is maintained at 100°C, determine the heat flow and also the temperature at x = 0.1 m. Calculate the temperature gradients at the three sections.	12M	CO2	L3
	(OR)			
4(a)	Derive the lumped capacitance model for transient heat conduction and explain the physical significance of the solution.	6M	CO2	L2
(b)	A straight rectangular fin of length 50 mm, thickness 5 mm, and width 100 mm is attached to a wall maintained at 200°C. The surrounding air is at 25°C with a heat transfer coefficient of 25W/m²K. Thermal conductivity of fin material is 200 W/m-K. Find the efficiency and rate of heat transfer of the fin.	6M	CO2	L3
5(a)	Explain the concepts of hydrodynamic and thermal boundary layers. Illustrate their development for fluid flow over a heated flat plate. Also, define boundary layer thickness and explain how it is determined.	6M	CO3	L2
(b)	An air stream at 0 °C is flowing along a heated plate at 90 °C at a speed of 75 m/sec the plate is 45 cm long and 60 cm wide. Assuming the transition of the boundary layer to take place at $Re_{cx} = 5*10^5$ calculate the average values of friction coefficient and heat transfer coefficient for the full length of the plate. Hence calculate the rate of energy dissipation from the plate.	6M	CO3	L2
	(OR)			

6(a)	Derive the dimensionless correlation for natural convection using Buckingham π-theorem and identify the governing parameters.	6M	CO3	L2
(b)	A 10m long section of a 6 cm diameter horizontal hot water pipe passes through a large room whose temperature is 22°C. If the temperature of the outer surface of the pipe is 65°C. Determine the rate of heat loss from the pipe by natural convection.	6M	CO3	L3
7(a)	Compare film wise and dropwise condensation in terms of their heat transfer characteristics. Which mode provides a higher heat transfer coefficient and explains the reason for the difference.	6M	CO4	L2
(b)	Water is to be boiled at atmospheric pressure in a polished copper pan by means of an electric heater. The diameter of the pan is 0.38m and is kept at 115°C. calculating the (i) Surface heat flux (ii) Power required to boil the water.	6M	CO4	L2
	(OR)			
8(a)	What is the need of radiation shields? Explain the significance and their applications.	6M	CO4	L2
(b)	Calculate the net radiant heat exchange per m^2 area for two large parallel plates at temperatures of 430°C and 30°C respectively. ε (hot plate) = 0.95 and ε (cold plate) = 0.62. If a polished aluminum shield is placed between them, find the percentage reduction in the heat transfer, ε (shied) = 0.42.	6M	CO4	L2
9(a)	Define the efficiency and effectiveness of a heat exchanger and discuss the common modes of failure encountered in heat exchangers.	6M	CO5	L2
(b)	A crossflow heat exchanger with both unmixed fluids is used to heat water flowing at a rate of 15 kg/s from 30°C to 80°C using gases available at 400 °C to be cooled to 180 °C. The overall heat transfer coefficient has a value of 90 W/m^2 K. Determine the area required. For gas Cp = 1005 J/kg K.	6M	CO5	L2
	(OR)			
10(a)	Explain the causes, effects, and prevention techniques of heat exchanger failures in industrial applications.	6M	CO5	L2
(b)	A heat exchanger operates under parallel flow conditions. A hot fluid enters the exchanger at a temperature of 250°C with a mass flow rate of 2.5 kg/s and a specific heating of 2.0 kJ/kg K. It is cooled by a cold fluid entering at 27°C, having a mass flow rate of 0.9 kg/s and a specific heat of 0.45 kJ/kg K. The overall heat transfer coefficient, based on an outside heat transfer area of $20m^2$, is 250 $W/m^2 \cdot K$. Determine the exit temperature of the hot fluid.	6M	CO5	L3

****

H.T.No. | | | | | | | | | | |

02 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.:: A.P.

B.Tech. (VI Semester) Supplementary Examinations

Passed 24/4/26

17EE18-POWER SYSTEM ANALYSIS

(EEE)

Time : 3 hours | Max. Marks : 60

Answer all questions with either or choice

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	What are the limitations of Singular transformation method and how it is overcome by direct inspection method explain with a suitable example?	6M	CO1	L2
(b)	What is primitive network matrix and represent its forms?	6M	CO1	L2
	(OR)			
2(a)	Illustrate the formation of element node incidence matrix with suitable example.	6M	CO1	L2
(b)	Find the Y-bus matrix using direct inspection method for the given network Element | Positive sequence impedance (ohms) 1-2 | j 1.0 2-3 | j 0.4 2-4 | j 0.2 3-4 | j 0.2 3-1 | j 0.8 4-5 | j 0.08	6M	CO1	L3
3(a)	Compare G-S method and N- R methods of load flow solutions.	6M	CO2	L2
(b)	The schedule of active and reactive powers of a 3-bus system is shown in following table. Bus | P(p.u) | Q(p.u) | V(p.u) | Bus specification 1 | - | - | 1.06+j0 | slack 2 | 0.5 | -0.2 | Not specified | PQ 3 | -1.0 | 0.5 | Not specified | PQ The admittance matrix is $Y_{bus} = \begin{bmatrix} 3-j9 & -2+j6 & -1+j3 \\ -2+j6 & 3.666-j11 & -0.666+j2 \\ -1+j3 & -0.666+j2 & 3.666-j11 \end{bmatrix}$ Assume a flat voltage start; find the voltages and bus angles at the buses at the end of first iteration using G-S method.	6M	CO2	L3
	(OR)			
4(a)	Discuss the significance of Load flow studies.	6M	CO2	L2
(b)	With the help of a neat flow chart, describe the Newton-Raphson method of load flow solution when the system contains voltage controlled busses in addition to swing bus and load bus.	6M	CO2	L2

5(a)	Discuss how Fast decoupled load flow is superior to decoupled load flow and N.R method.	6M	CO2	L4
(b)	What is the importance of DC load flow study in power flow studies?	6M	CO2	L3
	(OR)			
6(a)	What is meant by Sparcity and explain with suitable example?	6M	CO2	L2
(b)	What is DC load flow study and give the comparison between DC load flow and AC load flow study?	6M	CO2	L2
7(a)	Distinguish between symmetrical and unsymmetrical faults. List the steps in symmetric fault calculations.	6M	CO3	L2
(b)	A 50MVA, 11KV, 3-phase alternator was subjected to different types of faults. The fault currents were: 3-phase fault1870A, line to line fault 2590A, single line to ground fault 4130A. The alternator neutral is solidly grounded. Find the pu values of the three sequence reactances of alternator.	6M	CO3	L3
	(OR)			
8(a)	Derive expression for fault current when a double line to ground fault occurs at the terminal of an unloaded 3-phase alternator. Assume that the alternator has an isolated neutral.	6M	CO3	L2
(b)	The line to ground voltages on the high voltage side of a step up transformer are 100KV,33KV and 38KV on phases a,b and c respectively. The voltage of phase a leads that of phase b by 100^0 and lags that of phase c by 176.5^0. Determine analytically the symmetrical components of voltage.	6M	CO3	L3
9(a)	What is power angle curve and sketch the power angle curve for generator and motor?	6M	CO4	L2
(b)	What is Transient stability and Discuss the methods to improve transient stability?	6M	CO4	L3
	(OR)			
10(a)	What is steady state stability and Discuss the methods to improve steady state stability?	6M	CO4	L2
(b)	Derive the expression for swing equation with a necessary diagram.	6M	CO4	L3

****

H.T.No.										

04 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar:: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (VI Semester) ~~Regular~~/Supplementary Examinations

17EE19-POWER ELECTRONICS

(EEE)

9.22

Time : 3 hours Max.Marks:60

Answer one question from each unit
All questions carry equal marks

Q.No.	Questions	Marks	CO	BL
1(a)	Draw the two-transistor analogy of a SCR. Explain SCR operation with this analogy.	6M	C01	L2
(b)	Discuss the various abnormal conditions against which thyristors must be protected.	6M	C03	L2
	(OR)			
2(a)	Describe the different modes of operation of SCR with the help of its static V- I characteristics.	6M	C01	L1
(b)	Sketch and explain Switching Characteristics of IGBT.	6M	C01	L2
3(a)	Outline the differences between natural commutation and forced commutation methods.	6M	CO4	L2
(b)	Describe the working of a three-phase bridge full converter with RL load.	6M	CO2	L3
	(OR)			
4(a)	Analyze the purpose of connecting an antiparallel diode across main thyristor with or without a series inductor.	6M	CO4	L2
(b)	Describe complimentary commutation used for thyristors.	6M	CO1	L1
5(a)	Describe the principle of operation of cyclo converter.	6M	CO1	L2
(b)	Discuss the operation of single phase to single phase step down cyclo converter.	6M	CO1	L2
	(OR)			
6(a)	Design a step-up cycloconverter and discuss its operation with neat waveforms.	6M	CO3	L4
(b)	Prove that RMS output voltage of cycloconverter is equal to $\frac{V_m}{\sqrt{2}}\left[\frac{1}{\pi}\left(\beta-\alpha+\frac{\sin 2\alpha}{2}-\frac{\sin 2\beta}{2}\right)\right]^{\frac{1}{2}}$	6M	CO2	L2
7(a)	Discuss the use of time ratio control for controlling the output voltage in choppers.	6M	C03	L2
(b)	The input voltage of a step-down chopper being 220V, the load voltage is 100V. Assuming a chopping frequency of 5kHz, determine the ON and OFF intervals of the thyristors in each cycle.	6M	C02	L3
	(OR)			
8(a)	Define the pulse width modulation and draw the waveform for variations of T_{ON} time period.	6M	CO1	L2
(b)	A Step-up/Step-down chopper has input dc voltage of 100V and output voltage of 300V. If the conduction time of thyristor chopper is 120μs, determine the pulse width of load voltage.	6M	CO2	L3
9(a)	Illustrate the operation of 3phase inverter for 120^0 mode with necessary waveforms. Also draw line and phase voltages.	6M	CO1	L2
(b)	Three-phase bridge inverter powering to a resistive load from a 400V dc source. For star connected load of 5Ω per phase, determine for 120^0 mode (i) rms value of load current (ii) load power.	6M	CO2	L3
	(OR)			
10(a)	By the help of necessary carrier wave, discuss about modified SPWM.	6M	CO1	L2
(b)	For single phase full bridge inverter, V_s=200V DC, T=1ms. The load consists of RLC in series with R=1Ω, ωL=3Ω and 1/ωC=5Ω. Find power delivered to load due to fundamental component of load.	6M	CO2	L3

****

H.T.No. | | | | | | | | | | |

06 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VI Semester) Supplementary Examinations

17EE20-MEASUREMENTS AND INSTRUMENTATION

(EEE)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Derive the expression for shunt and series resistances for extending the range of DC ammeter and DC voltmeter, respectively with necessary circuit diagram.	6M	CO1	L3
(b)	Derive the expression for torque in moving iron type instrument.	6M	CO1	L3
	(OR)			
2(a)	Define the following terms with respect to measuring instruments: (i) Accuracy, (ii) Precision, (iii) Zero drift, (iv) Speed of response, (v) Fidelity and (vi) Dynamic error.	6M	CO1	L1
(b)	Explain the generalized measurement system with ammeter as example.	6M	CO1	L2
3(a)	Demonstrate the circuit of a Kelvin's double bridge used for measurement of low resistance.	6M	CO2	L3
(b)	Summarize advantages and disadvantages of Anderson bridge.	6M	CO2	L2
	(OR)			
4(a)	Discuss working of Carey-Foster slide wire bridge with neat circuit diagram.	6M	CO2	L2
(b)	Tabulate advantages and disadvantages of Wheatstone bridge.	6M	CO2	L1
5(a)	Discuss the principle of slide wire DC Potentiometer.	6M	CO3	L2
(b)	Discuss the characteristics of potential transformers.	6M	CO3	L2
	(OR)			
6(a)	Differentiate between current transformer and potential transformer.	6M	CO3	L2
(b)	Demonstrate the construction and working of power factor meter.	6M	CO3	L2
7(a)	Discuss the shape of scale of electrodynamometer type wattmeter with the help of a neat sketch.	6M	CO4	L2
(b)	List the differences between LPF and UPF wattmeters.	6M	CO4	L1
	(OR)			
8(a)	Describe the construction and theory of operation of a single phase electrodynamometer type wattmeter.	6M	CO4	L2
(b)	Illustrate the errors caused due to pressure coil inductance and pressure coil capacitance in electrodynamometer type wattmeter.	6M	CO4	L2
9(a)	Outline the data acquisition system.	6M	CO5	L3
(b)	Assess the function of each component of data acquisition system	6M	CO5	L2
	(OR)			
10(a)	Demonstrate the principle of the Strain gauges.	6M	CO5	L3
(b)	Predict with a neat diagram, discuss Piezoelectric transducers.	6M	CO5	L3

****

H.T.No | | | | | | | | | | |

06 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech (VI Semester) Supplementary Examinations

17CI15-AUTOMATA THEORY AND COMPILER DESIGN

(IT)

Time : 3 hours Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Define a DFA. Explain at least two applications where the finite automaton is used.	6M	CO1	L1
(b)	Explain the procedure for constructing minimum state DFA with an example.	6M	CO1	L2
	(OR)			
2(a)	Explain the Closure Properties of Regular sets.	8M	CO1	L2
(b)	For the regular expression: (0/1)*011 draw the DFA with ϵ-closures and convert it into NFA.	4M	CO1	L3
3(a)	Define Context Free Grammar. State and Explain the closure properties of CFG.	6M	CO2	L1
(b)	Convert the following CFG into CNF. S →ASA | aB A→ B | S B→ b | ε	6M	CO2	L3
	(OR)			
4(a)	What is deterministic Push Down Automata? Draw a deterministic PDA for accepting { 0^n1^n | n>1}.	6M	CO2	L3
(b)	Consider the following grammar S--> (L) | a L--> L,S | S Find the parse tree, leftmost derivation and right most derivation for the sentences: (a,(a,a)).	6M	CO2	L3
5.	Explain the phases of a compiler with a neat diagram and write the output of each phase for the given expression d=(a*b)+c;	12M	CO3	L1
	(OR)			
6(a)	What is the role of a Lexical Analyzer? Give the general format of a LEX program.	6M	CO3	L2
(b)	A Define LR(k) parser. Explain the model of LR parser.	6M	CO3	L1
7(a)	What are the various applications of Syntax directed Translations? Explain in detail the SDT for Procedures.	6M	CO4	L2
(b)	Compare and contrast the different Parameter passing techniques.	6M	CO4	L2
	(OR)			
8(a)	Define the following terms and translate the arithmetic expression a + - (b + c) into: (i) Syntax tree (ii) Quadruples (iii) Triples.	6M	CO4	L3
(b)	Elaborate different storage Allocation strategies.	6M	CO4	L1
9.	Discuss about the principle sources of Code Optimization techniques with examples.	12M	CO5	L2
	(OR)			
10(a)	Describe various issues in design of Code generator.	6M	CO5	L1
(b)	Explain Peephole Optimization in detail with suitable examples.	6M	CO5	L1

****

H.T.No | | | | | | | | | | |

06 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech. (VI Semester) Supplementary Examinations

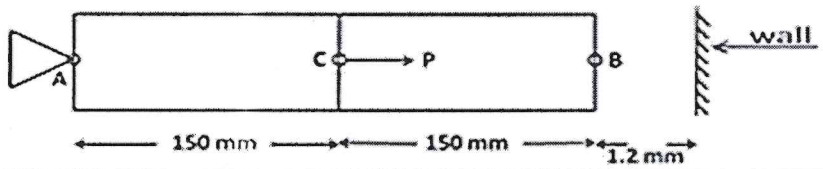
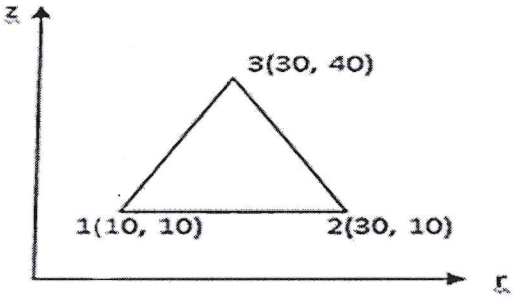
17ME23-FINITE ELEMENT ANALYSIS

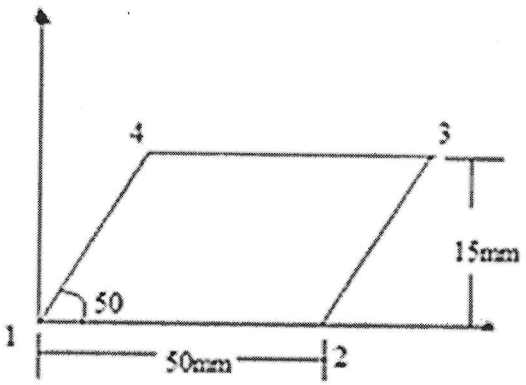
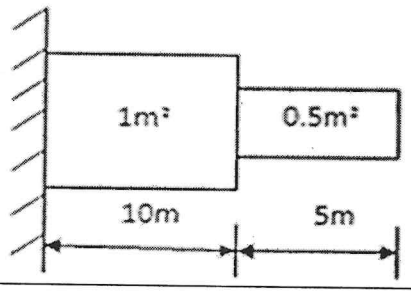
(ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Derive the strain-displacement relation for a 3-D element.	4M	CO1	L1
(b)	If a displacement field is described by $u = (-x^3 + 2y^3 + 6xyz + 2z^3 + 4yz)\ 10^{-4}$ $v = (3x + 6y - y^3 + 6yz + 3z)\ 10^{-4}$ $w = (x^3 + 2y^3 + z^3 - 2z + 2xyz)\ 10^{-4}$ Determine the strain field at the point x = 1 and y =0.	8M	CO1	L3
	(OR)			
2.	A load P=60x103 N is applied on a bar as shown in Figure. Determine (i) Displacement field (ii) Stresses and (iii) Support reactions by using penalty approach. Take E=20X103 N/mm^2 	12M	CO1	L3
3(a)	Derive the stiffness matrix for CST element.	8M	CO2	L2
(b)	Explain in detail the applications of iso-parametric elements in two dimensional stress analysis.	4M	CO2	L2
	(OR)			
4(a)	Derive the stiffness matrix for BEAM element.	8M	CO2	L2
(b)	What is a beam? Write the hermite shape functions for beam element.	4M	CO2	L2
5(a)	Nodal coordinates for an Axi-Symmetric element are given below. Evaluate Stiffness Matrix. E=2x105 N/mm^2, υ = 0.25. 	8M	CO3	L3
(b)	What are the advantages of Gauss quadrature numerical integration for iso parametric element?	4M	CO3	L2
	(OR)			

6(a)	Consider a quadrilateral element as shown in fig, the local coordinates are ξ =0.5, η = 0.5. Evaluate Jacobian matrix and strain- Displacement matrix. 	12M	CO3	L3
7(a)	Derive a finite element equation for one dimensional heat conduction with free end convection.	6M	CO4	L2
(b)	Determine the temperature distribution in 1D rectangular cross section fin with 8cm long, 4cm wide, 1cm thick. Assume that convective heat loss occurs from the end of the fin. Take K = 3W/cm K, h = 0.1W/cm^2 k and Tα = 20^{0}C. tip temperature is 100^{0}C.	6M	CO4	L3
	(OR)			
8.	A furnace wall is made up of three layers, inside layer with thermal conductivity 8.5 W/mK, the middle layer with conductivity 0.25 W/mK, the outer layer with conductivity 0.08 W/mK. The respective thicknesses of the inner, middle and outer layer are 2.5 cm, 5 cm and 3 cm respectively. The inside temperature of the wall is 600 K and outside of the wall is exposed to atmospheric air at 30K with heat transfer coefficient of 45 W/m^{2}K. Determine the nodal temperatures.	12M	CO4	L3
9(a)	Derive mass matrices for BEAM Element.	6M	CO5	L2
(b)	Derive the consistent mass matrix for a truss element in its local coordinate system.	6M	CO5	L2
	(OR)			
10.	Determine the Eigen values and Eigen Vectors for the stepped bar as shown in figure.  ρ = 7850 Kg/m³ E = 30 x 10⁶ N/m²	12M	CO5	L3

****

H.T.No | | | | | | | | | | |

07 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech (VI Semester) Supplementary Examinations

17EC29 -EMBEDDED SYSTEM DESIGN

(EEE)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Describe design challenges in embedded systems.	6M	CO1	L2
(b)	Explain processor technology used in embedded systems.	6M	CO1	L2
	(OR)			
2(a)	Explain trade-offs in embedded system development.	6M	CO1	L2
(b)	Describe RT-level combinational and sequential logic in embedded systems.	6M	CO1	L2
3(a)	Explain FSMD (Finite State Machine with Data path) model with an example.	6M	CO2	L3
(b)	Compare models and languages used in embedded systems.	6M	CO2	L4
	(OR)			
4(a)	Explain program state machine (PSM) model.	6M	CO2	L2
(b)	Discuss concurrent processes and their communication.	6M	CO2	L4
5(a)	Explain timers and counters used in embedded systems.	6M	CO3	L2
(b)	Explain UART communication with block diagram.	6M	CO3	L2
	(OR)			
6(a)	Discuss LCD controller interfacing in embedded systems.	6M	CO3	L3
(b)	Describe memory hierarchy and cache in embedded systems.	6M	CO3	L2
7(a)	Explain I/O addressing techniques in embedded systems.	6M	CO4	L2
(b)	Discuss serial and parallel communication protocols.	6M	CO4	L4
	(OR)			
8(a)	Explain DMA operation with a neat diagram.	6M	CO4	L3
(b)	Describe wireless communication protocols used in embedded systems.	6M	CO4	L2
9(a)	Explain semi-custom (ASIC) design methodology.	6M	CO5	L2
(b)	Explain programmable logic devices (PLDs).	6M	CO5	L2
	(OR)			
10(a)	Explain full-custom (VLSI) IC technology.	6M	CO5	L2
(b)	Discuss hardware/software co-simulation in embedded design.	6M	CO5	L4

****

H.T.No.										

08 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)

L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (VI Semester) ~~Regular~~/Supplementary Examinations

17MB80-INDUSTRIAL ENGINEERING AND MANAGEMENT

(ASE,CE,CSE,ECE,EEE,EIE&IT)

Time : 3 hours Max.Marks :60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Discuss about sustainability of an organization and how runs in the society.	6M	CO1	L1
(b)	What is the contribution of Henry Fayol to the management process? Are his administrative principles strictly enforceable in the current.	6M	CO1	L1
	(OR)			
2(a)	Explain the real-life example of a leader and what is the role played in an organization.	6M	CO1	L2
(b)	Explain basic concepts related to organization departmentation and decentralization.	6M	CO1	L2
3(a)	Discuss the different types of layouts with the help of pictorial representation.	6M	CO2	L3
(b)	Define production and operations management. Explain its significance in service organization.	6M	CO2	L1
	(OR)			
4(a)	Explain the factors involving in selecting the right location for the plant.	6M	CO2	L2
(b)	What do you mean by batch production system? Explain in detail along with the advantages and disadvantages.	6M	CO2	L1
5(a)	What do you mean by make or buy decision? Discuss the pros and cons of this decision?	6M	CO3	L2
(b)	Explain about the control charts with graphical representation and explain its objectives.	6M	CO3	L2
	(OR)			
6(a)	What are the objectives of MRP? Explain its advantages and disadvantages of MRP.	6M	CO3	L1
(b)	Discuss the various control charts for attributes? Explain them briefly.	6M	CO3	L3
7(a)	Write the difference between on-the-job training methods and off-the-job methods?	6M	CO4	L2
(b)	Distinguish grievance handling and welfare administration and how the grievance handling is done in an organization.	6M	CO4	L2
	(OR)			
8(a)	Explain Recruitment and selection process and write about the steps in selection process.	6M	CO4	L3
(b)	Give the examples of latest training methods which are followed in modern organization.	6M	CO4	L1
9(a)	What is the difference between Project evaluation and review techniques and critical path method?	6M	CO5	L1
(b)	Create the network from the following information **Events number** **Predecessor** A 1-2 B 1-3 C 1-4 D 2-5 E 3-5 F 4-6 G 5-6 Find out the PERT,CPM, EST, LFT and SLACK.	6M	CO5	L2
	(OR)			
10(a)	Write about the early techniques of project management with the help of diagram.	6M	CO5	L2
(b)	Create a PERT network for the following project: A is the first event and J the end event J is a successor event to F C and D are successor events to B D is a f occur after predecessor event to G E and F occur after event CE precedes F C restrains the occurrence of G and G precedes H H follows FH precedes J.	6M	CO5	L3

****

H.T.No.										

09 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING
(AUTONOMOUS)
L.B. Reddy Nagar :: Mylavaram – 521 230 :: Krishna Dist.::A.P.

B.Tech. (VI Semester) ~~Regular~~/Supplementary Examinations

17EE91-ELECTRICAL RELIABILITY ENGINEERING
(EEE)

Time : 3 hours Max.Marks : 60

Answer one question from each unit
All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Define reliability and explain the basic concept of probability theory.	6M	CO1	L1
(b)	Explain any three rules for combining probabilities of events.	6M	CO2	L2
	(OR)			
2(a)	Derive the expression for standard deviation of binomial distribution.	6M	CO2	L3
(b)	How reliability isevaluated for series-parallel networks?	6M	CO1	L2
3(a)	Derive the mean and standard deviation of failure density function with exponential distribution.	6M	CO2	L3
(b)	Derive the reliability of a 2-component series system using exponential probability distribution.	6M	CO1	L3
	(OR)			
4(a)	Explain in detail the different techniques employed in improving the reliability.	6M	CO2	L2
(b)	A component has a reliability of 0.9 for a mission time of 50 hrs. What is there liability for a mission time of 100 hrs and 500 hrs?	6M	CO2	L3
5.	Compute markov analysis of availability model for one component reliable system.	12M	CO2	L4
	(OR)			
6(a)	Distinguish between Markov chain and Markov process.	6M	CO1	L1
(b)	Explain concept of stochastic transitional probability matrix.	6M	CO1	L2
7(a)	Obtain the frequency of encountering for individual states of two component repairable system.	6M	CO2	L3
(b)	Obtain the mean duration of its states.	6M	CO2	L3
	(OR)			
8(a)	Derive the frequency and duration of a two state markov model of a single repairable component, with a failure rate of λ and a repair rate of μ.	6M	CO1	L2
(b)	Two Identical components have the repair rate of λ= 0.005 per hour and repair rate of μ = 0.01 per hour, find the Availability and Unavailability of the system, when the components are in series, also find the frequency encountering state-1 of the system.	6M	CO2	L3
9(a)	Explain the Minimal Cut set method for reliability evaluation.	6M	CO2	L2
(b)	Explain how Cumulative probability and Cumulative frequency evaluation is done for merged states by examples.	6M	CO2	L2
	(OR)			
10(a)	Summarize the reliability model of Generation system.	6M	CO2	L2
(b)	Describe the recirsive relation algorithm for unit removal in a generation system.	6M	CO2	L2

****

H.T.No | | | | | | | | | | |

09 APR 2026

R17

LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING (AUTONOMOUS)

L.B.Reddy Nagar :: Mylavaram – 521 230 :: NTR Dist.:: A.P.

B.Tech (VI Semester) Supplementary Examinations

17ME91-DESIGN OF EXPERIMENTS

(ME)

Time : 3 hours | Max. Marks : 60

Answer one question from each unit

All questions carry equal marks

Q.No	Questions	Marks	CO	BL
1(a)	Explain the basic principles of experimental design: Replication, Randomization, and Blocking.	6M	CO1	L2
(b)	State and explain the three fundamental axioms of probability.	6M	CO1	L3
	(OR)			
2(a)	Explain why statistical design is preferred over the "one-factor-at-a-time" approach.	6M	CO1	L2
(b)	A production line has two machines. Machine A produces 60% of items (2% defective) and Machine B produces 40% (4% defective). If an item is defective, find the probability it came from Machine A using Bayes' Theorem.	6M	CO1	L3
3(a)	Define Probability Density Function (PDF) and explain its role in continuous random variables.	6M	CO2	L2
(b)	Derive the expressions for the Mean and Variance of a Discrete Random Variable.	6M	CO2	L3
	(OR)			
4(a)	The diameter of a precision shaft is normally distributed with a mean $\mu = 25.00$ mm and a standard deviation $\sigma = 0.02$ mm. If the specification limits are 25.00 ± 0.03 mm, what percentage of the shafts will be rejected?	6M	CO2	L3
(b)	Explain how the Normal Distribution can be used to approximate the Binomial Distribution.	6M	CO2	L2
5(a)	Define Sampling and explain why it is essential in experimental analysis.	6M	CO3	L3
(b)	Explain One-sided and Two-sided confidence bounds with graphical representations.	6M	CO3	L2
	(OR)			
6(a)	Explain the use of the Chi-square distribution in estimating the variance of a normal distribution.	6M	CO3	L3
(b)	Discuss the procedure for comparing two means using a hypothesis test framework.	6M	CO3	L3
7(a)	Explain the fundamental logic behind the Analysis of Variance (ANOVA).	6M	CO4	L3
(b)	Describe how to interpret an ANOVA table for a two-factor design.	6M	CO4	L2
	(OR)			
8(a)	State the basic principles and guidelines for designing single-factor experiments.	6M	CO4	L2
(b)	Explain "Orthogonality" in the context of 2^k factorial designs.	6M	CO4	L3
9(a)	Explain the concept of Simple Linear Regression and its mathematical model.	6M	CO5	L3
(b)	Explain the classification of Linear" vs non-linear optimization problems.	6M	CO5	L2
	(OR)			
10(a)	How do you identify "Outliers" in a regression fit and what is their impact?	6M	CO5	L3
(b)	Explain how Regression Analysis and Optimization are linked in Response Surface Methodology.	6M	CO5	L4

****