



MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

(Autonomous Institution – UGC, Govt. of India)

(Affiliated to JNTU, Hyderabad, Approved by AICTE - - ISO 9001:2015 Certified)

Accredited by NBA & NAAC – 'A' Grade

NIRF India Ranking, Accepted by MHRD, Govt. of India

B.TECH III YEAR I SEMESTER REGULAR EXAMINATIONS, DECEMBER-2023

CONTROL SYSTEMS

(EEE)

[Time: 3 Hours]

[Max. Marks: 70]

PART – A

(5 x 2 = 10M)

- Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

1	A	What are the advantages of closed loop system?	2M	BTL2
	B	State the Mason's gain formula	2M	BTL1
	C	What are the various standard test signals?	2M	BTL2
	D	List time domain specifications?	2M	BTL1
	E	State the necessary and sufficient conditions R-H criterion on stability	2M	BTL1
	F	What are the advantages of frequency response analysis?	2M	BTL2
	G	What are the different types of compensators?	2M	BTL2
	H	Define state transition matrix?	2M	BTL1

PART – B

(5 x 12 = 60M)

- Note:** 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12 Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

2.A	Explain open loop control system and closed loop control system with example.	6M	BTL3
2.B	List the properties of signal flow graphs.	6M	BTL2

(OR)

3.A	Develop the transfer function of the following by using block diagram reduction technique. 	6M	BTL4
3.B	Explain the necessity and effect of feedback in control systems?	6M	BTL3

SECTION - II

4.A	The open-loop transfer function of unity feedback system is $G(s) = \frac{4}{s(s+1)}$. Determine the nature of the closed-loop system for a unit-step input. Also determine rise time, peak time and peak overshoot.	6M	BTL4
4.B	Explain the Routh's criteria with an example. What are its limitations	6M	BTL3

(OR)

5.A	Explain the construction rules for root locus technique	6M	BTL3
5.B	Explain the special cases in Routh's stability criterion	6M	BTL3

SECTION - III

6.A	Illustrate the correlation between time domain and frequency domain specifications.	6M	BTL4
6.B	Explain how gain crossover frequency and phase crossover frequency are determined with respect to the polar plots	6M	BTL3

(OR)

7.A	List the advantages and limitations of Frequency response methods	6M	BTL2
7.B	Develop the expressions for frequency domain specifications of a second order system.	6M	BTL4

SECTION – IV

8.A	Develop the expression for the transfer function of a lag-lead compensator.	6M	BTL4
8.B	Explain the design procedure of lag compensator.	6M	BTL3

(OR)

9.A	Explain the procedure for design of lead compensator using Bode plot.	6M	BTL3
9.B	Explain procedure for design of lag-lead compensator using Bode plot	6M	BTL3

SECTION – V

10.A	Build diagonal matrix for the matrix A, $A = \begin{bmatrix} 3 & -2 \\ -1 & 2 \end{bmatrix}$	6M	BTL4
10.B	Develop state space model of the system in the diagonal canonical form $G(s) = \frac{2}{s^2+5s+6}$	6M	BTL4

(OR)

11.A	What is state transition matrix? List its properties.	6M	BTL2
11.B	Explain the concept of controllability and observability with an example.	6M	BTL3



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B.TECH III YEAR I SEMESTER REGULAR EXAMINATIONS, DECEMBER-2023 ELECTRICAL MACHINES-II (EEE)

[Time: 3 Hours]

[Max. Marks: 70]

PART – A

(5 x 2 = 10M)

- Note:**
1. This Part consists of 8 QUESTIONS
 2. Answer any 5 questions. Each question carries 2 Marks.

1	A	Define the term "rotor EMF" in the context of induction machines.	2M	BTL1
	B	Briefly explain what crawling and cogging phenomena are in induction machines.	2M	BTL2
	C	What information is obtained from the no-load test of an induction machine?	2M	BTL2
	D	Mention one key feature of the phasor diagram for synchronous machines.	2M	BTL4
	E	Why is the analysis of short circuit current waveforms important in synchronous machines?	2M	BTL2
	F	What is synchronizing power torque, and how is it relevant to parallel operation?	2M	BTL3
	G	Provide one application where stepper motors are commonly used.	2M	BTL4
	H	State one advantage of reluctance motors in comparison to other motor types.	2M	BTL4

PART – B

(5 x 12 = 60M)

- Note:**
1. This Part consists of 10 QUESTIONS
 2. Answer any 1 question from each Section. Each question carries 12 Marks.
 3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

2.A	Explain the principle of operation and the production of a rotating magnetic field.	6M	BTL2
2.B	Derive expressions for rotor EMF, rotor frequency, and rotor reactance in an induction machine.	6M	BTL3

(OR)

3.A	Discuss the variation of rotor current and power factor at standstill and during operation.	6M	BTL2
3.B	Deduce the torque equation for induction machines and derive expressions for maximum torque and starting torque.	6M	BTL3

SECTION - II

4.A	Define and interrelate rotor power input, rotor copper loss, and mechanical power developed in induction machines.	6M	BTL4
4.B	Derive the torque slip characteristic and explain the equivalent circuit of an induction machine.	6M	BTL3

(OR)

5.A	Detail the various speed control methods for induction machines, including change of voltage, change of frequency, voltage/frequency control, and qualitative treatment of injecting EMF into the rotor circuit.	6M	BTL4
5.B	Discuss how the no-load and blocked rotor tests help in predetermining the performance of the machine.	6M	BTL2

SECTION - III

6.A	Derive the E.M.F equation for synchronous machines and discuss harmonics the generated e.m.f.	6M	BTL3
6.B	Explain the regulation of synchronous machines using synchronous impedance, M.M.F., Z.P.F., and A.S.A. methods.	6M	BTL2

(OR)

7.A	Describe the constructional features of round rotor and salient pole synchronous machines.	6M	BTL2
7.B	Explain the two-reaction analysis and the experimental determination of X_d and X_q using the slip test.	6M	BTL3

SECTION – IV

8.A	Discuss the process of synchronizing alternators with infinite bus bars.	6M	BTL2
8.B	Explain synchronizing power torque and how parallel operation and load sharing are achieved.	6M	BTL4

(OR)

9.A	Explain the theory of operation of synchronous motors. Discuss the phasor diagram and the variation of current and power factor with excitation.	6M	BTL2
9.B	Analyze the short circuit current waveform in synchronous machines. Explain how to determine sub-transient, transient, and steady-state reactances.	6M	BTL4

SECTION – V

10.A	Discuss the theory and applications of stepper motors. Explain how they operate, and how they differ from other types of motors.	6M	BTL4
10.B	Discuss the double revolving field theory, cross field theory in single phase induction machines.	6M	BTL2

(OR)

11.A	Describe the construction and working principle of reluctance motors. Discuss their applications and advantages.	6M	BTL2
11.B	Discuss the applications of special machines, including single-phase induction motors, stepper motors, and reluctance motors. Highlight their advantages and specific use cases.	6M	BTL4

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B.TECH III YEAR I SEMESTER REGULAR EXAMINATIONS, DECEMBER-2023 HIGH VOLTAGE ENGINEERING (EEE)

[Time: 3 Hours]

[Max. Marks: 70]

PART – A

(5 x 2 = 10M)

- Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

1	A	What is ionization process?	2M	BTL1
	B	Illustrate the intrinsic breakdown mechanisms of solid dielectrics.	2M	BTL2
	C	Show the voltage multiplier circuit for high DC voltage generation.	2M	BTL2
	D	List the factors that influence the spark over voltages of sphere gaps	2M	BTL4
	E	Distinguish the methods of measuring high DC currents.	2M	BTL4
	F	Outline the function of surge diverter.	2M	BTL2
	G	Name the different tests to be conducted on insulators.	2M	BTL1
	H	Summarize the IS standards for HV Testing of electrical apparatus.	2M	BTL2

PART – B

(5 x 12 = 60M)

- Note:** 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12 Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

2.A	Explain in detail the Townsend's criterion for breakdown?	6M	BTL2
2.B	Discuss how treeing and tracking leads to breakdown in solid insulating materials.	6M	BTL6

(OR)

3.A	State and explain Paschen's law?	6M	BTL2
3.B	Explain the various mechanisms of breakdown phenomenon in commercial liquids?	6M	BTL5

SECTION - II

4.A	Discuss with a neat sketch the working of a Van de Graff generator.	6M	BTL6
4.B	Explain about tripping and control of impulse generators?	6M	BTL2

(OR)

5.A	Discuss about Tesla Coil and its significance.	6M	BTL6
5.B	Explain a 3-stage cascaded transformer with a neat sketch?	6M	BTL5

SECTION - III

6.A	Discuss the measurement of high voltages using sphere gaps.	6M	BTL6
6.B	Compare different methods of high A.C voltage measurements with their relative merits and demerits.	6M	BTL4

(OR)

7.A	Discuss the requirements of an oscillograph for impulse voltage measurements.	6M	BTL6
7.B	Explain partial discharge measurements?	6M	BTL2

SECTION – IV

8.A	Discuss the charge formation in clouds.	6M	BTL6
8.B	Explain how is the protection against over voltages achieved?	6M	BTL2

(OR)

9.A	Discuss the mechanism of lightning surges.	6M	BTL6
9.B	Explain the importance of switching overvoltages?	6M	BTL2

SECTION – V

10.A	Discuss about the high voltage laboratory layout, indoor and outdoor laboratories, testing facility requirements	6M	BTL6
10.B	Explain the different tests conducted on cables?	6M	BTL2

(OR)

11.	Discuss about the different electrical tests done on transformers.	12M	BTL6
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B.TECH III YEAR I SEMESTER REGULAR EXAMINATIONS, DECEMBER-2023

JAVA PROGRAMMING (COMMON TO ECE, EEE)

[Time: 3 Hours]

[Max. Marks: 70]

PART – A

(5 x 2 = 10M)

- Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

1	A	What is data abstraction?	2M	BTL1
	B	Define polymorphism	2M	BTL1
	C	Write the difference between interface and abstract class	2M	BTL1
	D	What is dynamic binding	2M	BTL1
	E	Differentiate between error and exception	2M	BTL1
	F	Write the difference between thread and process	2M	BTL1
	G	List any four methods of file class	2M	BTL1
	H	Write the subclasses of JButton class.	2M	BTL1

PART – B

(5 x 12 = 60M)

- Note:** 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12 Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

2.A	Compare and Contrast procedural and object oriented languages	6M	BTL2
2.B	What are the primitive data types in Java? Write about type conversions	6M	BTL2

(OR)

3.A	What is type casting? Explain its types with proper syntax and example	6M	BTL2
3.B	State and explain scope of variable with an example.	6M	BTL2

SECTION - II

4.A	Explain the different types of inheritances in detail	6M	BTL2
4.B	What is the main function of “final” keyword? Explain the use of final-keyword in a method with an example.	6M	BTL3

(OR)

5.A	How polymorphism can be achieved through methods? Discuss method overloading with a suitable example.	6M	BTL3
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5.B	How do we use design a package? How do we add a class or, an interface to a package?	6M	BTL2
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SECTION - III

6.A	With a suitable Java program explain user-defined exception handling	6M	BTL3
6.B	What are the uses of 'throw' and 'throws' clauses for exception handling? Explain with sample code	6M	BTL3

(OR)

7.A	Write a program that creates a thread that forces preemptive scheduling for lower priority threads.	6M	BTL3
7.B	Describe the complete life cycle of a thread.	6M	BTL2

SECTION – IV

8.A	Explain any two methods of file and file input stream class each	6M	BTL2
8.B	Write a program which stores a list of strings in an Array List and then displays the contents of the list.	6M	BTL3

(OR)

9.A	Explain the file management using File class.	6M	BTL2
9.B	Differentiate between File and File Reader classes along with necessary methods with an example program.	6M	BTL3

SECTION – V

10.A	Design a user interface to collect data from the student for admission application using swing components	6M	BTL4
10.B	What are the various layout managers used in Java? Explain	6M	BTL2

(OR)

11.A	Explain delegation event model in detail	6M	BTL2
11.B	Design an applet which displays rectangle filled with blue colour and Display message as “MRECWEND EXAM” in red colour below it.	6M	BTL3

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B.TECH III YEAR I SEMESTER REGULAR EXAMINATIONS, DECEMBER-2023 PROFESSIONAL ENGLISH (ECE&EEE)

[Time: 3 Hours]

[Max. Marks: 70]

PART – A

(5 x 2 = 10M)

- Note:** 1. This Part consists of 8 QUESTIONS
2. Answer any 5 questions. Each question carries 2 Marks.

1	A	Define Collocation with an example	2M	BTL1
	B	(i) The Boy said to her, “ Are you going to museum today?” (Change into Reported Speech) (ii) She told me that She was playing Guitar then. (Change into Direct Speech)	2M	BTL3
	C	Differentiate Note making and Note-Taking.	2M	BTL4
	D	Identify various steps in overcoming barriers to listening.	2M	BTL5
	E	Write any Two Stress/Accent Patterns with an example each.	2M	BTL2
	F	Explain the strategies of Reading.	2M	BTL4
	G	Punctuate the sentence: mr johnson has delivered a speech on human psychology	2M	BTL1
	H	Write Any Two types of essays in writing.	2M	BTL2

PART – B

(5 x 12 = 60M)

- Note:** 1. This Part consists of 10 QUESTIONS
2. Answer any 1 question from each Section. Each question carries 12 Marks.
3. Illustrate your answers with NEAT sketches wherever necessary.

SECTION - I

2.A	Enumerate the role of eight Parts of Speech with examples.	6M	BTL1
2.B	There are different ways to enhance one's vocabulary: Explain.	6M	BTL3

(OR)

3.A	What are the various types of Listening Comprehension?	6M	BTL1
3.B	Explain the importance of business vocabulary and communication at workplace in detail.	6M	BTL3

SECTION - II

4.A	Write all the Monophthongs with an example each.	6M	BTL3
4.B	Write all the consonant sounds with an example each.	6M	BTL2

(OR)

5.A	Draw the importance of word accent/stress and intonation while speaking.	6M	BTL4
5.B	Draft a speech on extempore topic, The role of politics in shaping the future of our country.	6M	BTL5

SECTION - III

6.A	Write the dynamics of Group Discussion and its DOs and Don'ts.	6M	BTL2
6.B	List out the benefits of participating in Role Plays as student of engineering	6M	BTL3

(OR)

7.A	'English is not a phonetic language'. Discuss it in the light of 'pronunciation'.	6M	BTL3
7.B	Suggest a few tips for Effective Presentation Skill?	6M	BTL2

SECTION – IV

8.A	Discuss France Bacon's famous quote, 'Reading make tha full man'.	6M	BTL3
8.B	Differentiate critical reading and analytical reading.	6M	BTL2

(OR)

9.A	Explain SQ3R method in reading skills.	6M	BTL1
9.B	Write a note on 'professional etiquette'.	6M	BTL3

SECTION – V

10.A	Differentiate the writing devices, Cohesion and Coherence used in paragraphs.	6M	BTL2
10.B	Draft a Technical Report on the establishment of Computer Peripherals in Hyderabad, Telangana State.	6M	BTL4

(OR)

11.A	Write a paragraph on 'human ethics and values in the 21 st century'.	6M	BTL5
11.B	Apply for a job in any one of the companies of repute by sending your Résumé with a cover letter.	6M	BTL5