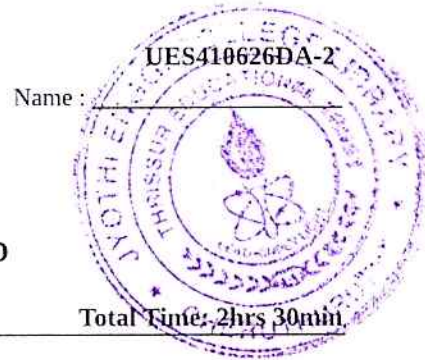


Reg No.: _____



Jyothi Engineering College(Autonomous)
B. Tech Degree S1 (S) Examination, June 2026 (2025 Scheme)
25EST104 - INTRODUCTION TO ELECTRICAL AND ELECTRONICS ENGINEERING



Name : _____

Total Mark: 60

Total Time: 2hrs 30min

General Instructions

1. Use separate answer booklets for Part 1 and Part 2
2. No separate minimum marks are required to pass

CO MARK

Part 1: Electrical Engineering (30 Marks)

PART 1-A

Answer All Questions. Each question carries 3 marks

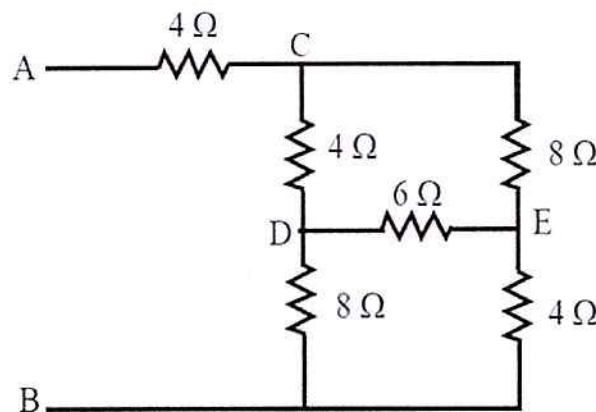
1. Find the current through resistors R1 and R2 which are connected in parallel across a current source I_s . CO1 (3)
2. Derive an expression for the energy stored in an inductor. CO1 (3)
3. A series RLC circuit containing a resistance of 12Ω , an inductance of $0.15H$ and a capacitor of $100\mu F$ are connected in series across a $100V$, $50Hz$ supply. Calculate the total circuit impedance. CO3 (3)
4. A delta-connected load of 12Ω resistance and 16Ω reactance are connected across a $100V$, $50 Hz$ supply. Find line current and phase current. CO3 (3)

PART 1-B

Answer any one full question from each module. Each question carries 9 marks

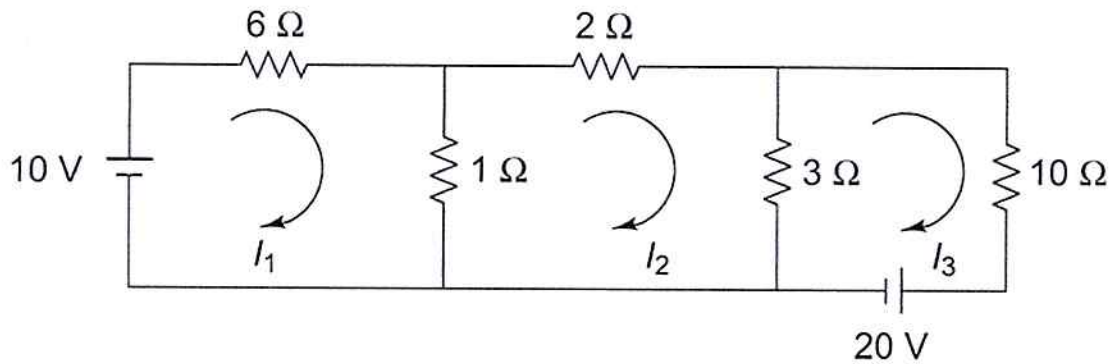
Module - 1

5. Find the equivalent resistance between the terminals A and B of the figure by using star delta transformation. CO2 (9)



OR

6. Find the value of current flowing through the 2Ω resistor by using mesh analysis. CO2 (9)



Module - 2

7. A capacitor having a capacitance of $20\mu\text{F}$ is connected in series with a non – inductive resistance of 200Ω across 220V , 50 Hz supply. Calculate the following: CO3 (9)
 i) Impedance ii) Current iii) Power Factor iv) Active Power drawn from supply.

OR

8. Prove that in a purely inductive circuit, current lags behind the applied voltage by 90 degrees, and the power consumed is zero. CO1 (9)

PART 2: ELECTRONICS ENGINEERING (30 Marks)

PART 2-A

Answer All Questions. Each question carries 3 marks

9. What is meant by ripple factor? Mention its typical values for half-wave and full-wave rectifiers. CO4 (3)
10. Calculate the value of capacitance (a) 104 (b) $2\text{M}2$ (c) $4\text{k}7$. CO4 (3)
11. List the major components of a Cathode Ray Oscilloscope (CRO). CO5 (3)
12. Compare wired and wireless networks in terms of setup, security, and mobility. CO5 (3)

PART 2-B

Answer any one full question from each module. Each question carries 9 marks

Module - 3

13. a) Draw and explain the input and output characteristics of a transistor in the common-emitter (CE) configuration. CO4 (5)
 b) Determine the resistance and tolerance of a resistor with colour bands: Green, Blue, Orange, Silver. CO4 (4)

OR

14. a) Draw the block diagram of a DC power supply and explain the functions of each block. CO4 (5)
 b) A full-wave bridge rectifier is fed by 12 V (rms) AC from a transformer. Assuming $R_L = 1\text{k}\Omega$
 Find:
 (a) Peak value of voltage
 (b) Average (DC) output voltage
 (c) RMS output voltage
 (d) Average DC load current CO4 (4)

Module - 4

15. a) Differentiate between 5G and 6G communication technologies. CO5 (5)

b) List the advantages and disadvantages of a fiber optic communication system.

CO5 (4)

OR

16. a) What is modulation? Compare Amplitude Modulation and Frequency Modulation.

CO5 (5)

b) Explain the block diagram of an instrumentation system.

CO5 (4)
