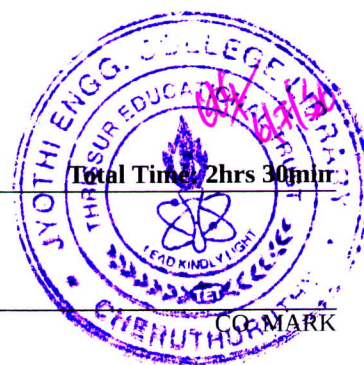


Reg No.: _____

Name : _____



Jyothi Engineering College(Autonomous)
 B. Tech Degree S2 (S) Examination, June 2026 (2025 Scheme)
25EST205 - BASIC ELECTRICAL & ELECTRONICS ENGINEERING

**Total Mark: 60****General Instructions**

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

Part 1: Electrical Engineering (30 Marks)**PART 1- A****Answer All Questions. Each question carries 3 marks**

1. A resistor of $20\ \Omega$, an inductor of $0.05\ \text{H}$ and a capacitor of $50\ \mu\text{F}$ are connected in series. A supply voltage of $230\ \text{V}$, $50\ \text{Hz}$ is connected across the series combination. Calculate the impedance. CO1 (3)
2. Three resistors $10\ \Omega$, $20\ \Omega$ and $30\ \Omega$ are connected in series across a $100\ \text{V}$ supply. Find the voltage across each resistor. CO1 (3)
3. List any three advantages and disadvantages of hydro-electric power plant. CO2 (3)
4. Differentiate between feeder and distributor. CO2 (3)

PART 1-B**Answer any one full question from each module. Each question carries 9 marks****Module - 1**

5. The equation of an alternating current is given by $i=62\sin(314t)$. Determine its: CO1 (9)
 (i) Maximum value (ii) Frequency (iii) RMS value (iv) Average value (v) Form factor
 (vi) Peak factor

OR

6. A capacitor has a capacitance of $30\ \mu\text{F}$, which is connected across a $230\ \text{V}$, $50\ \text{Hz}$ supply. Find (a) capacitive reactance, (b) rms value of current, (c) power, (d) power factor, and (v) equations for voltage and current. CO1 (9)

Module - 2

7. With a neat diagram, explain the working of a simple DC motor. CO3 (9)

OR

8. With a neat diagram explain the working of nuclear power plant. CO2 (9)

PART 2: ELECTRONICS ENGINEERING (30 Marks)**PART 2 - C****Answer All Questions. Each question carries 3 marks**

9. Describe the function of a rectifier used in power supply circuits. CO4 (3)

- | | | |
|-----|---|---------|
| 10. | What you mean by power rating of a resistor? Why is it so important in electronic circuits? | CO4 (3) |
| 11. | What is the role of sensors in IoT? | CO5 (3) |
| 12. | List the applications of strain gauge. | CO5 (3) |

PART 2 -D

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

Module - 3

- | | | |
|--------|--|---------|
| 13. a) | A resistor has a colour band sequence : Yellow , Violet , Orange and Gold. Find the range in which its value must lie so as to satisfy the manufactures tolerance. | CO4 (5) |
| b) | With the help of a neat sketch, explain the working of a PN junction diode under reverse bias. | CO4 (4) |

OR

- | | | |
|--------|---|---------|
| 14. a) | Explain the working of a full-wave bridge rectifier with a neat sketch. | CO4 (5) |
| b) | Implement OR and AND gates using NOR gates only. | CO4 (4) |

Module - 4

- | | | |
|--------|--|---------|
| 15. a) | Explain in detail the structure and working of an ultrasonic sensor with a neat diagram. | CO5 (5) |
| b) | List the advantages of smart street lighting over conventional lighting systems. | CO5 (4) |

OR

- | | | |
|--------|---|---------|
| 16. a) | Explain the dynamic characteristics of measuring instruments. | CO5 (5) |
| b) | List the applications and advantages of Bourdon Gauge. | CO5 (4) |
