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 **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. A resistor of 20 Ω, an inductor of 0.05 H and a capacitor of 50 μF are connected in series. A supply voltage of 230 V, 50 Hz is connected across the series combination. Calculate the impedance. CO1 (3)

2. Three resistors 10Ω, 20Ω and 30Ω are connected in series across a 100V 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=62sin(314t). Determine its:
(i) Maximum value (ii) Frequency (iii) RMS value (iv) Average value (v) Form factor (vi) Peak factor CO1 (9)

OR

6. A capacitor has a capacitance of 30 microfarads, which is connected across a 230 V, 50 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)

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