Subject Code:24EE11RC01 **R-24** **Reg No:** | | | | | | | | | | | |

GAYATRI VIDYA PARISHAD COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)
(Affiliated to Andhra University, Visakhapatnam)
B.Tech. - I Semester Regular Examinations, December / January – 2025

FUNDAMENTALS OF ELECTRICAL ENGINEERING

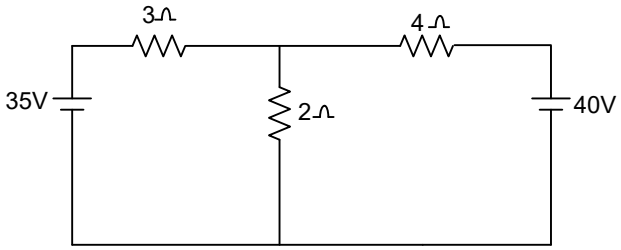
(Electrical and Electronics Engineering)

1. All questions carry equal marks
2. Must answer all parts of the question at one place

Time: 3Hrs. **Max Marks: 70**

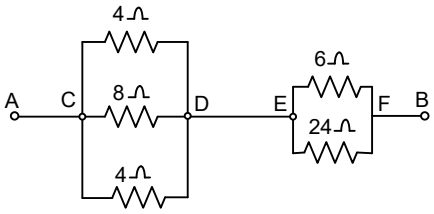
UNIT-I

1. a. Explain the effect of temperature on resistance of conducting materials. [7M]
   b. Calculate the current in 2 ohms resistor from the figure below. [7M]



OR

2. a. A battery having an emf of 12V is connected across terminals AB of the circuit shown in the fig. find the equivalent resistance and also find the current and total power supplied by the battery. [7M]



   b. Given a resistive network with three resistors of 10Ω each arranged in a star configuration, convert this to an equivalent delta configuration. Calculate the resistance values in the delta configuration. [7M]

UNIT-II

3. a. State and explain Coulomb's Law of Electrostatics. [7M]
   b. Explain Faraday's law of electromagnetic induction and derive relation for induced emf. [7M]

OR

4. a. State and explain Biot's savarts law. [7M]
   b. State and explain Ampere circuitry law. [7M]

UNIT-III

5. a. Explain the principle of operation of PMMC type instrument with a neat sketch. [7M]
   b. Explain the various forces acting in indicating instruments. [7M]

OR

6. a. Explain the construction and working of dynamometer type wattmeter with a neat sketch. [7M]
   b. Explain the working principle of energy meter with a neat sketch. [7M]

UNIT-IV

7. a. Explain the properties of ferro electric materials. [7M]
   b. Briefly explain Dielectric as an electric field medium. [7M]

OR

8. a. Classify various magnetic materials. [7M]
   b. List the characteristics of soft and hard magnetic materials. [7M]

UNIT-V

9. a. Discuss the different types of conductors used in electrical installations. [7M]
   b. Explain with neat diagram of house wiring including MCB, ELCB, and Energy meter. [7M]

OR

10. a. Explain the operation of staircase wiring with a neat sketch. [7M]
    b. Discuss the function and operation of circuit protective devices such as fuses and Miniature Circuit Breakers. [7M]