

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

Course Code & Name: **23EET103-Electrical Circuits and Electron Devices**

Course Faculty : Dr Indu Nair. V

Puzzles/In Class Activities

Topics Covered: **Unit I–DC Circuits**

1. (Fill in the Blank)

Q: According to _____, the algebraic sum of currents entering and leaving a junction in a circuit is zero.

A: Kirchhoff's Current Law (KCL)

Industry: Texas Instruments (Analog Design, In-house Training)

Career Mapping: In-house Training

GATE Mapping: GATE ECE2020–Network Theory

2. (Puzzle-Word Scramble)

Q: Unscramble the term related to circuit law: "HOM'SALW"

A: Ohm's Law

Industry: Intel (Semiconductor Fundamentals, Placement Interview)

Career Mapping: Placement Interview

GATE Mapping: GATE ECE2022–Basic Electrical Engineering

3. (Odd-Man-Out)

Q: Resistor, Inductor, Capacitor, Amplifier →

A: Amplifier (Not a passive circuit element)

Industry: Broadcom (Analog Circuit Design, Virtual Internship)

Career Mapping: Virtual Internship

GATE Mapping: GATE ECE2019–Circuit Components

4. (Match the Following)

A. Resistor → Stores energy in magnetic field

B. Inductor → Opposes change in current

C. Capacitor → Stores energy in electric field

D. Conductor → Offers resistance

Answer:

A–D, B–A, C–C, D–B (Correct mapping: Resistor–Resistance, Inductor–Magnetic Field, Capacitor–Electric Field, Conductor–Carries current)

Industry: Texas Instruments (Analog Component Design)

Career Mapping: Virtual Internship

GATE Mapping: GATE ECE2021–Basic Circuit Elements

5. (Short Quiz)

Q: What is the unit of electrical resistance?

A: Ohm (Ω)

Industry: Bharat Electronics Limited (BEL)

Career Mapping: Placement Interview

GATE Mapping: GATE ECE2018–ElectricalParameters

6. (Logic Riddle)

Q: I oppose current without storing energy, I convert electric energy to heat. Who am I?

A: Resistor

Industry: Samsung Electronics (Circuit Design)

Career Mapping: In-house Training

GATE Mapping: GATE ECE2017–BasicCircuits

7. (Numerical Puzzle)

Q: A 10Ω resistor and 20Ω resistor is connected in series across $30V$. What is the total current?

A: $1A$ (Total resistance= 30Ω ; $I=V/R=30/30$)

Industry: BEL (Testing & Calibration)

Career Mapping: Virtual Internship

GATE Mapping: GATE ECE2020–DCCircuits

8. (Odd-Man-Out)

Q: Series Circuit, Parallel Circuit, Resonant Circuit, Digital Circuit →

A: Digital Circuit (Others are analog circuit

types) Industry: Cisco Systems (Signal

Networks) Career Mapping: Placement Interview

GATE Mapping: GATE ECE2018–NetworkAnalysis

9. (Logic Puzzle)

Q: When three resistors of 3Ω each are connected in parallel, what is the total resistance?

A: 1Ω

Industry: Bharat Electronics Limited (Testing & Design)

Career Mapping: Placement Interview

GATE Mapping: GATE ECE2019–ParallelCircuits

10. (Fill in the Blank)

Q: The power factor is defined as the cosine of the angle between _____ and _____.

A: Voltage and Current

Industry: Siemens (Power Systems)

Career Mapping: In-house Training

GATE Mapping: GATE ECE2021–ACCircuits