

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

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

Course Faculty : Dr.M.Sudha

Question Bank

Unit I- DC CIRCUITS

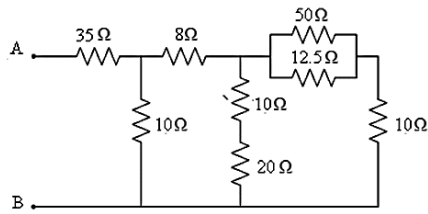
Part A- Two Mark Questions

Q.No	Questions	Bloom Level	Company/Industry
1	Define electric current and mention its unit.	Remember	Texas Instruments
2	State Ohm's Law with its formula.	Remember	Siemens
3	State the significance of Ohm's Law.	Understand	Schneider Electric
4	Outline the limitations of Ohm's law.	Remember	STMicroelectronics
5	Explain electrical power and electrical energy with their formulas.	Understand	Texas Instruments
6	Identify active and passive elements.	Understand	Schneider Electric
7	Define Resistance, Inductance and capacitance	Understand	General Electric (GE)
8	Write down the expression of equivalent resistance for 'n' number of resistors in series connection.	Remember	STMicroelectronics
9	Compare capacitance and inductance.	Understand	Texas Instruments
10	Differentiate series and parallel circuits.	Understand	General Electric (GE)
11	Distinguish ideal and practical sources.	Understand	Siemens
12	State KCL and KVL.	Remember	GATE (2018)
13	Why is electric charge important in circuit analysis?	Remember	GATE (2019)
14	Compute the power delivered by a 5V, 2A USB port.	Apply	Intel
15	Determine the resistance of a 12V adapter supplying 3A.	Apply	Cisco
16	Calculate total resistance of 10Ω and 20Ω resistors in series.	Apply	Bosch

17	Evaluate equivalent resistance of two 10Ω resistors in parallel.	Apply	GATE (2016)
18	Find the power delivered by a 12V battery supplying 2A.	Apply	Huawei Technologies
19	Estimate energy consumed by a 200W server running for 3 hours (in kWh).	Apply	Amazon Web Services
20	Clarify the internal resistance of a battery.	Understand	Panasonic Corporation
21	Solve for resistance when a 24V supply delivers 4A.	Apply	Delta Electronics
22	Interpret the efficiency of a DC power supply.	Understand	Emerson Electric
23	Justify the use of parallel circuits in homes and server rooms.	Understand	Microsoft
24	Ascertain the voltage across a 5Ω resistor carrying 2A.	Apply	GATE (2020)
25	Obtain the power delivered by a 48V battery supplying 5A.	Apply	Exide Industries
26	Predict backup time of a 12V, 100Ah UPS battery supplying a 120W load.	Apply	APC by Schneider Electric

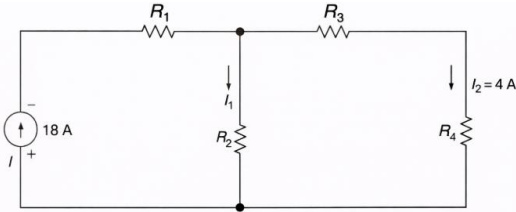
Part B - 16 Mark Questions

Q.No	Questions	Bloom Level	Company/Industry
1	Explain comprehensively the concepts of (i) Voltage, (ii) Current, (iii) Power, (iv) Energy, and (v) Resistance, including their SI units and mathematical expressions.	Understand	Texas Instruments
2	Illustrate and analyze Kirchhoff's Current Law (KCL) and Kirchhoff's Voltage Law (KVL) using suitable circuit examples.	Analyze	Microsoft
3	Discuss Ohm's Law in detail and examine the characteristics and behavior of resistive elements with appropriate explanation.	Analyze	General Electric (GE)
4	A 12V DC supply is connected to two resistors of 4Ω and 8Ω in series. Calculate: (i) Total resistance (ii) Circuit current (iii) Voltage drop across each resistor (iv) Total power consumed.	CO2	Emerson Electric
5	A 24V DC supply is connected to two resistors of 6Ω and 12Ω in parallel. Calculate: (i) Equivalent resistance (ii) Total current (iii) Branch currents (iv) Total power consumed.	CO2	GATE (2018)
6	A 12V laptop battery supplies 5A to a system. Evaluate: (i) Power delivered to the load and (ii) Energy consumed over a duration of 4 hours.	Apply	Dell Technologies
7	Determine the equivalent resistance between terminals A & B shown in figure	CO2	Google



Using Kirchhoff's First Law, determine the value of the unknown current of the circuit as shown below

8

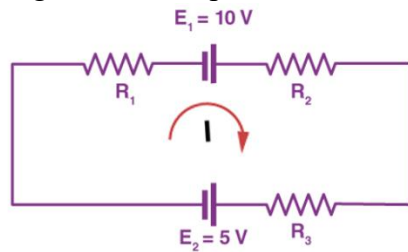


CO2

Bosch

Using Kirchhoff's Voltage Law (KVL), determine the electric current I flowing in the circuit shown below. If $R_1 = 2\ \Omega$, $R_2 = 4\ \Omega$, $R_3 = 6\ \Omega$. All elements are connected in a single closed loop. Find the value of current I .

9

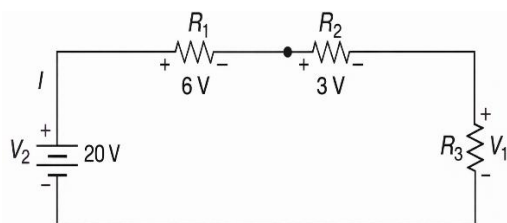


CO2

GATE (2019)

Calculate the unknown voltage across R_3 resistor of the circuit as shown below by applying Kirchhoff's Loop Rule

10



CO2

Siemens

11

A small server lab contains three devices rated 300W each operating at 48V DC. Calculate total current drawn and energy consumed in 6 hours.

CO2

Microsoft

12

Using Kirchhoff's Voltage Law, verify that the sum of voltage drops equals supply voltage in a circuit with 20V source and resistors 5Ω and 15Ω in series.

CO2

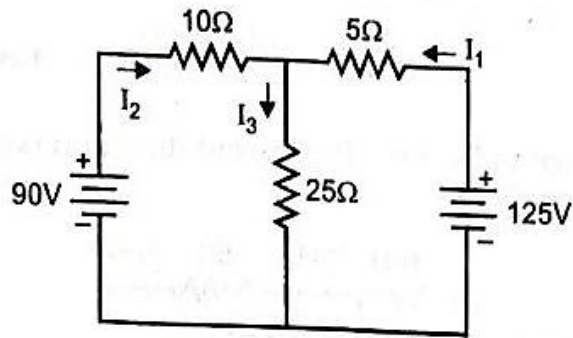
GATE (2020)

13

Calculate the currents supplied by the batteries in the network shown in the figure

Analyze

GATE (2019)



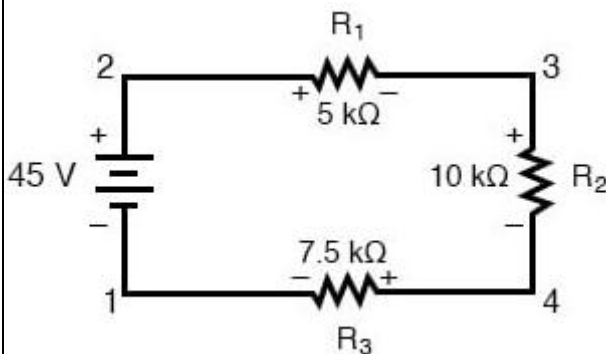
14 Three Resistances of values 2Ω , 3Ω and 5Ω are connected in series across a 20V DC Supply . Calculate

- Equivalent resistance of the circuit
- The total Current of the circuit
- The voltage drop across each resistor
- The power dissipated in each resistor

Analyze

GATE (2020)

15 Calculate the voltage drop in each resistor in the below circuit



Analyze

GATE (2019)