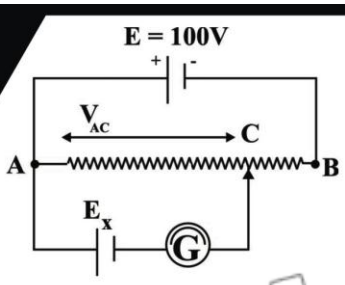

Chapter 13

CURRENT ELECTRICITY

TOPICAL MULTIPLE CHOICE QUESTIONS

Topic 13.1:

Electric Current

(1) Electric current is defined as
(a) flow of charges through conductor
(b) rate of flow of charges through conductor
(c) flow of electrons
(d) flow of protons

(2) A charge of 90C passes through a wire in 1 hour and 15 minutes. What is the current in the wire?
(a) 10mA **(b)** 15mA
(c) 20mA **(d)** 25mA

(3) The magnetic field produced by the current due to the flow of –ve charges in one direction is
(a) equal to the flow of +ve charges in the same direction
(b) equal to the flow of +ve charges in the opposite direction
(c) equal to the –ve charges in opposite direction
(d) equal to the direction of actual charges

(4) The SI unit of electric current
(a) ampere **(b)** kelvin
(c) joule **(d)** watt

(5) Mathematically the electric current can be expressed as
(a) $I = \frac{\Delta Q}{\Delta t}$ **(b)** $I = \frac{\Delta t}{\Delta Q}$
(c) $I = \Delta Q \times \Delta t$ **(d)** $I = \frac{1}{\Delta Q \times \Delta t}$

(6) 1 ampere =
(a) C x sec **(b)** $C\,sec^{-1}$
(c) $C^{-1}\,sec^{-1}$ **(d)** $C^{-1}\,sec$

(7) The convential current always flow from
(a) negative terminal to positive terminal **(b)** positive to negative terminal
(c) either a or b **(d)** same as electronic current

(8) The current in the metallic conductor is due to the motion of
(a) protons **(b)** electrons
(c) neutrons **(d)** all of these

(9) The velocity acquired by the electrons in a conductor when a constant P.D is applied is called
(a) drift velocity **(b)** relative velocity
(c) uniform velocity **(d)** instantaneous velocity

(10) The drift velocity is of the order of

(a) 10^{-2} ms^{-1} **(b)** 10^{-5} ms^{-1}
(c) 10^{-3} ms^{-1} **(d)** 10^{-4} ms^{-1}

(11) The velocity of free electrons at room temperature due to their thermal motion is

(a) few km per sec **(b)** several hundred km per sec
(c) several km per sec **(d)** several meter per sec

(12) The conventional current is due to flow of

(a) positive charge **(b)** negative charge
(c) both a and b **(d)** none of these

(13) The speed of randomly moving electrons depends upon

(a) velocity **(b)** acceleration
(c) temperature **(d)** all of these

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(14) The drift velocity of electrons is of the order of **(DGK-2017, MTN-2019, GRW-2019)**

(a) 10^{-2} m/s **(b)** 10^{-3} m/s
(c) 10^{3} m/s **(d)** 10^{6} m/s

(15) The velocity of an oscillating charge as it moves to and fro along the wire is: **(LHR-2019)**

(a) Infinite **(b)** Constant
(c) Changing **(d)** Zero

(16) A battery moves a charge of 400 C in a circuit in time 50 seconds. The current will be_____. **(GRW-2022)**

(a) 2A **(b)** 8A
(c) 20A **(d)** 200A

(17) The current which flows from a point at higher potential to a point at lower potential is called **(SGD-2017)**

(a) electric current **(b)** conventional current
(c) either of these **(d)** none of above

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(18) How many electrons per second constitute a current of one micro ampere?

(a) One electron **(b)** 10^{-6} electrons
(c) 10^{6} electrons **(d)** 6.25×10^{12} electrons

(19) A typical value of drift velocity is

(a) 1 mm s^{-1} **(b)** 1 m s^{-1}
(c) 10 m s^{-1} **(d)** 1000 km s^{-1}

Topic 13.2 & 13.3:

Source of Current and Effects of Current

(20) A source of constant current joined across a circuit produces

(a) highly potential **(b)** low potential
(c) steady potential difference **(d)** zero potential

(21) Resistor is a device which convert electric energy to

(a) heat energy **(b)** chemical energy
(c) elastic energy **(d)** nuclear energy

(22) Heating effect of current is given by

(a) $H = I^2Rt$ **(b)** $H = P\,t$
(c) $H = V\,I\,t$ **(d)** all of these

(23) In electrolyte, the current flows due to motion of
(a) proton **(b)** electron
(c) proton and electron **(d)** positive and negative ions

(24) Identify the incorrect statement
(a) conventional current flow from –ve terminal to the +ve terminal of a battery
(b) current in a metal is due to flow of electrons
(c) current in solution is due to +ve and –ve ions
(d) current is the rate of flow charge

(25) In electrolysis process the $CuSO_4$ deposited at
(a) anode **(b)** cathode
(c) neither cathode nor anode **(d)** either a or b

(26) Thermocouple converts heat energy into
(a) P.E **(b)** K.E
(c) electrical energy **(d)** nuclear energy

(27) Solar cells convert _____ energy into electrical energy
(a) solar **(b)** heat
(c) mechanical **(d)** chemical

(28) Electrical generator convert _____ energy into electrical energy
(a) solar **(b)** heat
(c) mechanical **(d)** chemical

(29) In electrolysis process, the vessel containing the two electrodes and the liquid is called
(a) ohm meter **(b)** voltameter
(c) ammeter **(d)** galvanometer

(30) The liquid which conducts electric current is called
(a) cathode **(b)** anode
(c) electrolyte **(d)** electrode

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(31) The most common source of alternating voltage is: **(LHR-2022)**
(a) Motor **(b)** Cell
(c) Generator **(d)** Thermocouple

(32) Thermo-couples produce electric energy by: **(LHR-2022)**
(a) Heat **(b)** Chemical energy
(c) Sunlight **(d)** Mechanical energy

(33) The heat produced by the passage of current through a resistor is. **(BWP-2022)**
(a) I^2Rt **(b)** IR^2t
(c) I^2R **(d)** IRt^2

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(34) A heater coil is cut into two parts of equal length and one of them is used in the heater. The ratio of the heat produced by this half coil to that by the original coil is
(a) 2 : 1 **(b)** 1:4
(c) 1:2 **(d)** 4:1

Topic 13.4:

Ohm's Law

(35) Ohm's law explain the behavior of current under the constant

(a) resistance. **(b)** voltage

(c) current **(d)** both a and b

(36) Semiconductor is an example of

(a) Ohmic conductor **(b)** non Ohmic conductor

(c) insulator **(d)** super conductor

(37) 1 ohm =

(a) volt/ampere. **(b)** ampere x volt

(c) ampere/volt **(d)** $\frac{1}{(\text{volt} \times \text{ampere})}$

(38) The SI unit of resistance is

(a) volt **(b)** ohm

(c) joule **(d)** ampere

(39) The ohm's law expressed as

(a) $V = IR$ **(b)** $V = \frac{I}{R}$

(c) $V = \frac{R}{I}$ **(d)** $V = \frac{1}{IR}$

(40) The graphical representation of Ohm's law is

(a) straight line **(b)** parabola

(c) hyperbola **(d)** ellipse

(41) Slope of V-I graph represents

(a) resistance **(b)** conductance

(c) resistivity (d) conductivity

(42) If the resistance of the conductor is increased, the current will

(a) increase **(b)** decrease

(c) remain same **(d)** zero

(43) The resistance of a conductor depends upon

(a) nature of conductor only

(b) potential difference between its ends

(c) magnitude of the current flowing through it

(d) nature, dimension and physical state of conductor

(44) The conductors which strictly obey ohm's law are called

(a) insulators **(b)** super conductors

(c) semi conductors **(d)** none of these

(45) If three resistors are combined parallel then the equivalent resistance is given by

(a) $\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ **(b)** $R_{eq} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

(c) $R_{eq} = R_1 + R_2 + R_3$ **(d)** none of these

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(46) Slope of V-I graph in Ohm's law is numerically equal to **(SGD-2017)**

(a) resistance **(b)** power
(c) conductance **(d)** capacitance

(47) The current flowing through each resistor of equal resistance in parallel combination is: **(LHR-2022)**

(a) Different **(b)** Zero
(c) Same **(d)** Infinite

(48) Three resistors of resistance 2Ω, 3Ω and 5Ω are connected in series. Their equivalent resistance is **(BWP-2022)**

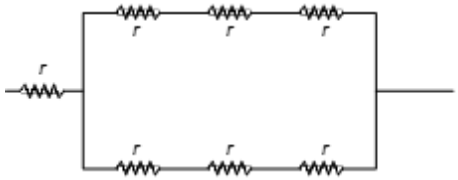
(a) 10Ω **(b)** 11Ω
(c) $\frac{1}{10}\Omega$ **(d)** $\frac{1}{11}\Omega$

ENTRY TEST MCQS

(49) A cell of negligible resistance and e.m.f 2 V is connected across a series combination of 2,3 and 5 ohms. The p.d. across the 3 Ω resistor is

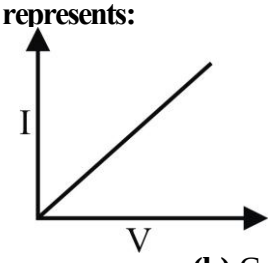
(a) 0.6 V **(b)** 2/3 V
(c) 1/3 V **(d)** 4/3 V

(50) Referring to the figure below, the effective resistance of the network



(a) 2r **(b)** 3r/2
(c) 5r/2 **(d)** 10r

(51) The slope of the following graph represents:



(a) Resistance **(b)** Conductance
(c) Impedance **(d)** All of these

Topic 13.5:

Resistivity and its Dependence upon Temperature

(52) Chose the relation which is not correct

(a) ampere = coulomb per second **(b)** volt = coulomb per joule
(c) Ohm = volt per ampere **(d)** 1coulomb = charge of 6.24×10^{18} electrons

(53) The resistance of a conductor at absolute zero is

(a) zero **(b)** negative
(c) positive **(d)** none of the above

(54) The Resistivity is expressed as

(a) $\rho = \frac{R}{LA}$ **(b)** $\rho = \frac{RA}{L}$

(c) $\rho = \frac{RL}{A}$ **(d)** $\rho = \frac{L}{RA}$

(55) Resistivity depends upon the……..
(a) length **(b)** area
(c) temperature **(d)** both a and b

(56) The S.I unit of temperature co-efficient of resistivity is
(a) K^{-1} **(b)** $C^{\circ -1}$
(c) $F^{\circ -1}$ **(d)** $K^{-1}m$

(57) The reciprocal of resistivity is called
(a) inductivity **(b)** conductivity
(c) both a and b **(d)** resistance

(58) The unit of resistivity is
(a) K^{-1} **(b)** ohm m
(c) ohm^{-1} **(d)** $ohm^{-1}m$

(59) Inspectors can easily check the reliability of a concrete bridge made with
(a) silver fibers **(b)** carbon fibers
(c) gold fibers **(d)** aluminium fibers

(60) The unit of conductivity is
(a) ohm x m **(b)** mho m^{-1}
(c) ohm^{-1} m^{-1} **(d)** both b and c

(61) The resistance of conductor does not depend upon
(a) current **(b)** length
(c) area **(d)** diameter

(62) Which of the following have the same temperature coefficient of resistivity
(a) iron and silver **(b)** platinum and silver
(c) iron and platinum **(d)** silver and gold

(63) The substance whose resistance decreases with increase in temperature have _____ temperature co-efficient
(a) negative **(b)** positive
(c) zero **(d)** infinite

(64) Which of the following metal has the lowest value of temperature coefficient of resistivity
(a) silver **(b)** gold
(c) copper **(d)** aluminium

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(65) When a wire of length 'ℓ' and resistance 'R' is cut into two equal parts then resistivity of each part **(SWL-2017)**
(a) becomes half **(b)** remains unchanged
(c) becomes two times **(d)** becomes four times

(66) The wire of resistance R is cut into two equal parts, the resistance of each part becomes R/2, what happens to its resistivity. **(DGK-2017)**
(a) becomes double **(b)** remains same
(c) becomes half **(d)** becomes 4 times

(67) A substance having the negative temperature coefficient of resistivity out of the following is: **(BWP-2017)**
(a) iron **(b)** tungsten
(c) carbon **(d)** gold

(68) If the length of the conductor is doubled and its cross sectional area is halved, its conductance will (SGD-2021)

(a) Increases four times **(b)** Becomes one-fourth
(c) Become one-half **(d)** Remains unchanged

ENTRY TEST MCQS

(69) Three resistances, each of 1Ω are joined in parallel. Three such combinations are put in series. The resultant resistance is

(a) 9Ω **(b)** 3Ω
(c) 1Ω **(d)** 1/3Ω

(70) Three 2-ohm resistors are connected to form a triangle. The resistance between any two corners is

(a) 6 Ω **(b)** $(\frac{3}{4})$ Ω
(c) 2 Ω **(d)** $(\frac{4}{3})$

Topic 13.6:

Colour Code of Carbon Resistance

(71) The colour code of carbon resistors consists of

(a) 3 bands **(b)** 4 bands
(c) 5 bands **(d)** 7 bands

(72) The first band of carbon resistor indicates

(a) zero digit **(b)** resistivity
(c) first digit of numerical value **(d)** tolerance

(73) The third band indicates

(a) zero digit **(b)** decimal multiplier
(c) first digit **(d)** tolerance

(74) Silver band shows the tolerance of

(a) ±10 % **(b)** ±5 %
(c) ±20 **(d)** ±25 %

(75) A zero ohm resistor indicated by single

(a) blue colour **(b)** black colour
(c) green colour **(d)** yellow colour

(76) The wounded wire over an insulating cylinder of rheostat made of

(a) silver **(b)** gold
(c) manganese **(d)** manganin

(77) The thermistor convert the change of temperature into

(a) heat energy **(b)** light energy
(c) solar energy **(d)** electrical voltage

(78) If there is no fourth band is located on carbon resistor then its tolerance will be

(a) ±10 % **(b)** ±5 %
(c) ±20 **(d)** ±25 %

(79) Why should a resistance be introduced in a circuit in series deliberately?

(a) to increase current **(b)** to decrease current

(c) to control current **(d)** none of these

(80) Why should different resistances be added in series in a circuit

(a) to increase voltage **(b)** to decrease voltage

(c) to divide voltage **(d)** all of the above

(81) Rheostat can be functioned as

(a) variable resister **(b)** potential divider

(c) both a and b **(d)** emf

(82) Thermistors are _____ resistors

(a) current **(b)** voltage

(c) heat sensitive **(d)** all

(83) Thermistors with high negative temperature coefficient are very accurate for measuring low temperature

(a) 10 K **(b)** 20 K

(c) 30 K **(d)** 40K

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(84) The numerical value of black color in carbon resistors is: **(LHR-2017)**

(a) 0 **(b)** 1

(c) 2 **(d)** 3

(85) Thermistors with high negative temperature coefficient are very accurate for **(AJK-2017)**

(a) 45 K **(b)** 10 K

(c) 75 K **(d)** 120 K

(86) In carbon resistors, which colour band indicates the tolerance of ± 10% ? **(RWP-2019)**

(a) White **(b)** Silver

(c) Gold **(d)** Violet

(87) If Fourth Band is missing on Carbon Resistor, its Tolerance is: **(BWP-2019)**

(a) ± 5 % **(b)** ± 10 %

(c) ± 20 % **(d)** ± 30 %

(88) Gold band show tolerance of colour. **(MTN-2022)**

(a) ± 50% **(b)** ± 10%

(c) ± 15% **(d)** ± 5%

(89) Thermistor with negative temperature coefficient are very accurate for measuring **(MTN-2022)**

(a) room temperature **(b)** high temperature

(c) low temperature 100K **(d)** low temperature 10K

(90) If there is a single black colour band around the body of a resistor then the value of its resistance will be **(DGK-2022)**

(a) Zero ohm **(b)** 10 ohm

(c) 100 ohm **(d)** Infinity

(91) A thermistor with positive temperature of co-efficient is heated then its resistance will_____. **(RWP-2022)**

(a) decrease **(b)** increase

(c) not be affected **(d)** become half

(92) A rheostat can be used as _____. **(RWP-2022)**

(a) potential divider **(b)** variable resistance

(c) amplifier **(d)** both (a) & (b)

(93) Colour code of 10Ω resistance with 5% tolerance is (SGD-2021)

(a) Black, black, Brown, Silver **(b)** Brown, black,
(c) Black, brown, black, Gold **(d)** Brown, brown, black, Gold

ENTRY TEST MCQS

(94) The thermistor has a

(a) Very small negative temperature coefficient
(b) Very small positive temperature coefficient
(c) Very large negative temperature coefficient
(d) Very large positive temperature coefficient

(95) A zero-ohm resistor is indicated by

(a) White band **(b)** Transparent band
(c) Black band **(d)** Red band

Topic 13.7:

Electrical Power and Power Dissipation in Resistors

(96) Electrical power is expressed as

(a) $V\frac{\Delta Q}{\Delta t}$ **(b)** $\frac{t}{W}$
(c) $\frac{V}{t}$ **(d)** $\frac{\Delta Q}{V\Delta t}$

(97) The unit of power is

(a) joule **(b)** watt
(c) Kelvin **(d)** ohm

(98) Power (P) dissipated in resistor is given by

(a) I^2R **(b)** V x I
(c) $\frac{V^2}{R}$ **(d)** all of these

(99) The rate at which the battery is supplying the electrical energy is the

(a) power output **(b)** power input
(c) electrical power **(d)** both a and c

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(100) Heat generated by a 50 watt bulb in one hour is: (FSD-2019)

(a) 36000 J **(b)** 48000 J
(c) 18000 J **(d)** 180000 J

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(101) When bulbs are connected in series then generally to find power, we give priority to the relation

(a) P = IV **(b)** $P=\frac{V^2}{R}$
(c) $P = I^2R$ **(d)** All

(102) The fuse rating for a fuse used in the plug of electric heater should be _____ heater current

(a) Much less than **(b)** Just less than
(c) Just greater than **(d)** Exactly equal to the

(103) There are two electric bulbs of 40 W and 100.W They are first connected in series and then in parallel across a source

(a) 40 W bulb will be brighter in series and 100 W in parallel

(b) 100 W bulb will be brighter in series and 40 W bulb in parallel
(c) 40 W bulb will be brighter in both the cares
(d) 100 W bulb will be brighter in both the cases

Topic 13.8:

Electromotive Force and Potential Difference

(104) The energy supplied to the unit charge by the battery is called
(a) voltage **(b)** emf
(c) capacitance **(d)** current

(105) Terminal potential difference of a battery is equal to its emf when its internal resistance is
(a) zero **(b)** neither zero nor infinity
(c) very high **(d)** very low

(106) Electromotive force and potential difference both measured in
(a) coulomb **(b)** farad
(c) ampere **(d)** volt

(107) When the internal resistance 'r' of a source is equal to the load resistance, 'R' the maximum power out put is given by
(a) $\frac{E}{r}$ **(b)** $\frac{E^2}{r}$
(c) $\frac{E^2}{4r}$ **(d)** $\frac{E}{2R}$

(108) The terminal potential difference V of a cell is
(a) E-Ir **(b)** E+Ir
(c) EI-r **(d)** EI+r

(109) The emf is always present when _____ current is drawn from the battery
(a) only maximum **(b)** only minimum
(c) only zero **(d)** zero or no

(110) The energy supplied to unit charge by the cell is given by
(a) $E = \frac{\Delta W}{\Delta Q}$ **(b)** $E = \frac{\Delta Q}{\Delta W}$
(c) $E = \Delta Q \times \Delta W$ **(d)** none of these

(111) P_{out} will be maximum when
(a) R>r **(b)** R=r
(c)R<r **(d)** none of these

(112) The emf resembles to the
(a) current **(b)** heat
(c) potential difference **(d)** capacitance

(113) The unit of emf is
(a) ampere **(b)** volt
(c) joule **(d)** watt

(114) 1 watt =
(a) Js^{-1} **(b)** Js^{-2}
(c) $J^{-1}C^{-1}$ **(d)** NC^{-1}

(115) The internal resistance is offered by the
(a) conductor **(b)** circuit
(c) battery **(d)** external resistance

(116) The terminal potential (V_t) difference is equal to the emf when the circuit is

(a) close **(b)** open
(c) both a and b **(d)** none of these

(117) The emf is the _____ and _____ is its effect
(a) source and current **(b)** current and voltage
(c) cause and potential difference **(d)** potential difference and cause

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(118) For an open circuit, terminal potential difference 'V_t' is. **(RWP-2019)**
(a) $V_t = 2emf$ **(b)** $V_t = emf$
(c) $V_t > 2emf$ **(d)** $V_t < 2emf$

(119) During danger the 'eel' turn itself into a living battery. Then the potential difference between its head and tail can be upto: **(SGD-2022)**
(a) 600V **(b)** 440V
(c) 220V **(d)** 160 V

(120) When the internal resistance of source is equal to the load maximum power dissipated is. **(SGD-2022)**
(a) E/4r **(b)** $E/4r^2$
(c) $E^2/4r$ **(d)** $E^2/4r^2$

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(121) Maximum power is delivered by battery to a load resistance R when
(a) R = r **(b)** R > r
(c) R < r **(d)** R ≥ r

(122) A cell of emf E Volt and internal resistance r ohm is being charged with a current of *i* amp. Then the terminal potential difference is
(a) E **(b)** E – *i*r
(c) E + *i*r **(d)** E – *i*R

Topic 13.9:

Kirchhoff's Rule

(123) Kirchhoff's 1st rule follow the law of conservation of ----------
(a) energy **(b)** voltage
(c) mass **(d)** charge

(124) Kirchhoff's 2nd rule follow the law of conservation of ----------
(a) energy **(b)** voltage
(c) mass **(d)** charge

(125) If a source of emf is traversed from positive to negative the potential change will be
(a) positive **(b)** zero
(c) negative **(d)** constant

(126) The algebraic sum of potential changes for a complete circuit is zero, is a statement of
(a) Kirchhoff's 1st rule **(b)** Kirchhoff's 2nd rule
(c) Lenz's law **(d)** Faraday's law

(127) If a resistor is traversed in the direction of current the change in potential is
(a) positive **(b)** zero
(c) negative **(d)** constant

(128) The complex networks are analyzed by

(a) Ampere's law **(b)** Ohm's law
(c) Kirchhoff's rule **(d)** Lenz's law

(129) According to Kirchhoff's 2nd rule, if a source of emf is traversed from negative to positive then the potential change is
(a) positive **(b)** negative
(c) zero **(d)** none of these

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(130) Kirchhoff's second rule is based on: **(MTN-2019, GRW-2019, LHR-2021)**
(a) law of conservation of energy **(b)** law of conservation of mass
(c) law of conservation of charge **(d)** law of conservation of momentum

(131) Kirchhoff's first rule is a manifestation of law of conservation of: **(LHR-2021, GRW-2022)**
(a) Mass **(b)** Energy
(c) Charge **(d)** Kinetic energy

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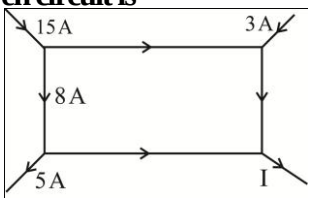
(132) The value of current I in the given circuit is



(a) 3 A **(b)** 13 A
(c) 23 A **(d)** –3 A

(133) If a source of emf is traversed from positive to negative the potential change will be
(a) Positive **(b)** Negative
(c) Zero **(d)** Constant

Topic 13.10:

Wheatstone Bridge

(134) Wheatstone bridge is used to determine the
(a) current **(b)** charge
(c) emf **(d)** resistance

(135) When the Wheatstone bridge is balanced then
(a) maximum current flows through the galvanometer
(b) minimum current flows through the galvanometer
(c) potential difference across galvanometer is maximum
(d) potential difference across galvanometer is zero.

(136) Wheat stone bridge is an arrangement consisting of
(a) 2 resistances **(b)** 3 resistances
(c) 4 resistances **(d)** 5 resistances

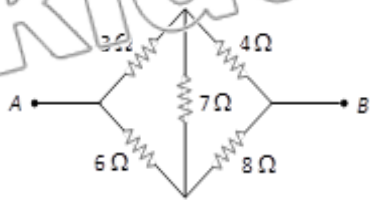
ENTRY TEST MCQS

(137) The condition for Wheatstone bridge to be balanced is given by

(a) $\frac{R_1}{R_2} = \frac{R_4}{R_3}$ **(b)** $\frac{R_1}{R_2} = \frac{R_3}{R_4}$

(c) $\frac{R_2}{R_1} = \frac{R_3}{R_4}$ **(d)** $\frac{R_3}{R_4} = \frac{R_1}{R_2}$

(138) In the given figure, equivalent resistance between A and B will



(a) 14/3 Ω **(b)** 3/14Ω

(c) 9/14Ω **(d)** 14/9Ω

Topic 13.11:

Potentiometer

(139) A potentiometer circuit gives continuously varying

(a) potential difference **(b)** current

(c) charge **(d)** capacitance

(140) A device which can measure the potential without drawing any current is called

(a) Wheat stone bridge

(b) galvanometer

(c) potentiometer

(d) voltmeter

(141) In potentiometer the ratio of emf 's to cells is equal to the corresponding ratio of their

(a) balance lengths **(b)** balance currents

(c) both a and b **(d)** none of these

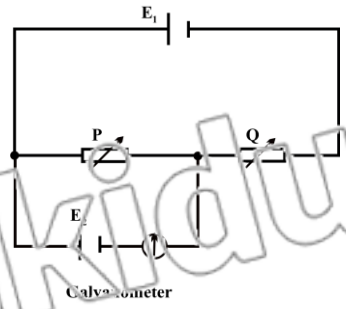
(142) The relation for potentiometer is given

(a) $\frac{E_1}{E_2} = \frac{l_1}{l_2}$ **(b)** $\frac{E_2}{E_1} = \frac{l_1}{l_2}$

(c) $\frac{E_1}{E_2} = \frac{l_2}{l_1}$ **(d)** $E_1 l_1 = E_2 l_2$

ENTRY TEST MCQS

(143) Two cells of e.m.f E_1 and E_2 and of negligible internal resistance are connected with two variable resistors as shown in the diagram.



When the galvanometer deflection is zero, the values of both resistances are P and Q. what is the value of the ratio $\frac{E_2}{E_1}$?

(a) $\frac{P}{Q}$ **(b)** $\frac{Q}{(P+Q)}$

(c) $\frac{P}{(P+Q)}$ **(d)** $\frac{(P+Q)}{P}$

ANSWER KEYS

(Topical Multiple Choice Questions)

1	B	21	A	41	B	61	A	81	C	101	C	121	A	141	A
2	C	22	D	42	B	62	C	82	C	102	C	122	C	142	A
3	B	23	D	43	D	63	A	83	A	103	A	123	D	143	C
4	A	24	A	44	D	64	B	84	A	104	B	124	A		
5	A	25	C	45	A	65	B	85	B	105	A	125	C		
6	B	26	C	46	A	66	B	86	B	106	D	126	B		
7	B	27	A	47	A	67	C	87	C	107	C	127	C		
8	B	28	C	48	A	68	B	88	D	108	A	128	C		
9	A	29	B	49	A	69	C	89	D	109	D	129	A		
10	C	30	C	50	C	70	D	90	A	110	A	130	A		
11	B	31	C	51	B	71	B	91	B	111	B	131	C		
12	A	32	A	52	B	72	C	92	D	112	C	132	B		
13	C	33	A	53	A	73	B	93	C	113	B	133	B		
14	C	34	A	54	B	74	A	94	C	114	A	134	D		
15	C	35	A	55	C	75	B	95	C	115	C	135	D		
16	B	36	B	56	A	76	D	96	A	116	B	136	C		
17	B	37	A	57	B	77	D	97	B	117	C	137	B		
18	D	38	B	58	B	78	C	98	D	118	B	138	A		
19	A	39	A	59	B	79	C	99	D	119	A	139	A		
20	C	40	A	60	D	80	C	100	D	120	C	140	C		

KIPS TOPICAL SHORT QUESTIONS

13.1 ELECTRIC CURRENT

(1) How current flows through a metallic conductor.

Ans: In the absence of electric field, the free electrons in conductor are in random motion, which depends upon the temperature.

When electric field is set up in a conductor by a source which establishes constant potential difference across the conductor, the free electrons modify their random motion in such a way that they drift slowly opposite to field. Thus, a net directed motion of charges takes place along the wire and a current begins to flow through it.

(2) What is the difference between conventional current and electronic current?

Ans: Conventional current:

It is defined as that current which passes from a point at higher potential to a point at a lower potential as it represents the movement of positive charges.

Electronic current:

The current due to motion of negative charges (or electrons) that flows from the negative terminal of the battery to the positive terminal in the electrical circuit is called electronic current.

(3) What is the unit of electric current? Define it.

Ans: The SI unit of current is ampere.

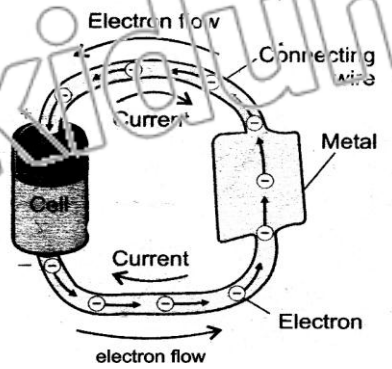
$$\text{As } I = \frac{\Delta Q}{\Delta t}$$

$$1 \text{ ampere} = \frac{1 \text{ coulomb}}{1 \text{ sec}}$$

Current through the conductor is said to be one ampere if current flows at the rate of one coulomb per second.

(4) What is conventional current? **GRW-2012**

Ans: The current due to flow of an equivalent positive charge is called conventional current. It is directed from positive terminal of the battery (higher potential) to the negative terminal of the battery (lower potential)



(5) A charge of 90 coulomb passes through a wire in one hour and fifteen minutes. What is current in wire? **MTN-2013**

Ans: Given data is

Amount of charge is Q = 90 C

Time t = 1 hour and 15 minute = 60+15 = 75 minutes = 75 × 60 sec = 4500 sec

Where $I = \frac{Q}{T} = \frac{90}{4500} = 0.02\,A$

(6) Define drift velocity and also write its value at room temperature. SWL-2019

Ans: The velocity with which the free electrons get drifted towards the positive terminal under the action of applied electric field is called drift velocity of the free electrons.

The electrons get displaced from lower to higher potential with only a small velocity known as a drift velocity. The value of drift velocity is of order 10^{-3} m/sec.

(7) How many electrons pass through an electric bulb in one minute if the 30 mA current is passing through it? SWL-2019

Ans: Where the current is given by $I = \frac{Q}{T}$

$Q = ne$

$I = \frac{Q}{T} \Rightarrow Q = IT$

$I = 30\,mA$

$T = 1min = 60\,s$

$Q = ne = 30 \times 10^{-3} \times 60 = 1.8\,C$

$n = \frac{1.8}{e} = \frac{1.8}{1.6 \times 10^{-19}} = 1.125 \times 10^{19}$

PAST PAPER SHORT QUESTION

(8) What is unit of electric current? Define it. **SWL-2017**

(9) Define drift velocity and also write its value at room temperature. **SWL-2019**

(10) How many electrons pass through an electric bulb in one minute if the 300 mA current is passing through it? **SWL-2019**

(11) How many electrons pass through an electronic bulb in 2 minutes if the current passing through it? **MTN-2022 (G-I)**

(12) A charge 9C passes through a conductor in one hour. What is the current in the conductor? **RWP-2022 (G-I)**

13.2, 13.3 SOURCE OF CURRENT, EFFECTS OF CURRENT

(13) Write about any two sources of current.

Ans: Sources of current are given will:

(i) Cell converts chemical energy into electrical energy.

(ii) Electric generators convert mechanical energy into electrical energy.

(14) Name two different effects of current.

Ans: Effects of Current:

- Heating effect
- Magnetic effect
- Chemical effect

(15) How the heating effect produce when current flows through the conductor?

Ans: It is produced as a result of the elastic collisions of free electrons against lattice atoms in a conductor.

PAST PAPER SHORT QUESTION

(16) How the heating effect produces when current flows through the conductor?
SGD-2017 (G-I), RWP-2019 (G-I)

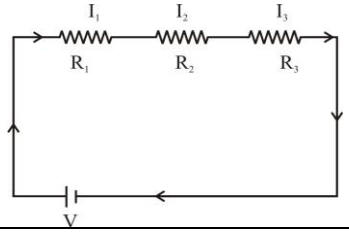
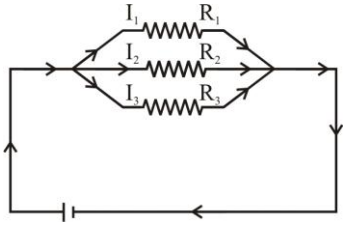
(17) Write four sources of current. **BWP-2017 (G-I), MTN-2019 (G-II), LHR-2022 (G-II)**

(18) What is meant by a current source? Explain with example. **DGK-2022 (G-II)**

13. 4 OHM'S LAW

(19) What is series and parallel combinations of resistors?

Ans:

SERIES COMBINATION	PARALLEL COMBINATION
• Resistances connected end to end are called series combination of resistances. i.e. 	• Resistances connected side by side are called parallel combination of resistance. i.e. 
• There is a single path of current.	• There are more than one path of current.
• Current through each resistance is same i.e. $I_1 = I_2 = I_3 = I$	• Sum of currents through all resistances is equal to the net current of the circuit. i.e. $I = I_1 + I_2 + I_3$
• Sum of potential difference across each is equal to the potential difference of the battery i.e. $V = V_1 + V_2 + V_3$	• Potential difference across each resistance is same as that of battery i.e. $V_1 = V_2 = V_3 = V$
• Equivalent resistance of series combination is $R_{eq} = R_1 + R_2 + R_3 .....$	• Equivalent resistance of parallel combination is $1/R_{eq} = 1/R_1 + 1/R_2 + 1/R_3 + ...$
• Equivalent resistance is greater than the maximum of all resistances combined in series i.e.	• Equivalent resistance is less than the minimum of all resistances combined in parallel i.e. $R_{eq} > R_1, R_{eq} > R_2 .....R_{eq} > R_{max.}$

$R_{eq} > R_1, R_{eq} > R_2 ..... R_{eq} > R_{max.}$	

(20) Give some examples of flow of current in which Ohm's law is not valid

Ans: Examples for which Ohms law is not valid:

(i) Current passing through the filament of a bulb. The resistance (R) of the filament goes on increasing with the rise of temperature and thus it does not obey Ohm's law.

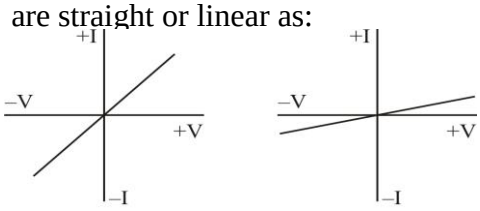
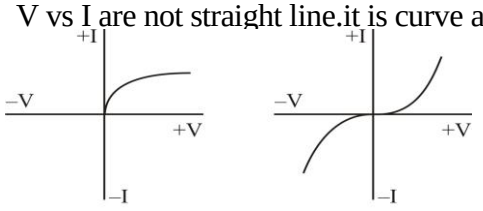
(ii) Current through electronic tube does not obey the Ohm's law.

(iii) Current through ionic conductor does not obey the Ohm's law.

(iv) Semi conductor materials do not obey Ohm's law.

(21) What is difference between ohmic and non-ohmic substances?

Ans:

OHMIC SUBSTANCES	NON OHMIC SUBSTANCES
• Ohmic substances obey the Ohm's law.	• Non ohmic substances do not obey ohm's law.
• Slope of graph remains same at all points.	• Slope of the graph is not same at all points.
• Examples of ohmic substances are pure metals.	• Examples of non ohmic substances are tungsten filament and semi conductor diode.
• Graphs of ohmic substances for V vs I are straight or linear as:  Pure metals	• Graphs of none ohmic substances for V vs I are not straight line.it is curve as:  Tungsten Semi Conductor

(22) Write down the value of equivalent resistance for three resistors R_1, R_2 and R_3 when joined in (a) series, and (b) parallel. **LHR, GRW-2012**

Ans: (a) Series:

In case of series joining, the equivalent resistance R will be

$$R_e = R_1 + R_2 + R_3$$

(b) Parallel:

In case of parallel joining, the equivalent resistance R is found as follows:

$$\frac{1}{R_e} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\frac{1}{R_e} = \frac{R_2R_3 + R_1R_3 + R_1R_2}{R_1R_2R_3}$$

$$\Rightarrow \quad R_e = \frac{R_1R_2R_3}{R_1R_2 + R_2R_3 + R_3R_1}$$

(23) Why resistance of a conductor inversely proportional to the area of cross-section of conductor?

Ans: When area of cross section is large, the collision chance of free charge carriers i.e. electrons against lattice atoms is small which means smaller resistance, and vice-versa. For this reason the resistance of a conductor is inversely proportional to its area of cross-section.

(24) How many ways resistance can be arranged in electrical circuit?

Ans: A resistance can be arranged either in series combination or in parallel combination is an electrical circuit.

(25) State OHM's law and write its formula.

Ans: "The current flowing through a conductor is directly proportional to the potential difference across its ends provided the physical state such as temperature etc. of the conductor remains constant".

If V be the potential difference applied and I be the current then

$V \propto I$

or $V = IR$

Here R = constant of proportionality and is called resistance.

(26) Define resistance. Also define its unit.

Ans: Resistance:

It is the opposition offered by the atoms of the conductor to the flow of charge.

Unit:

In SI system, unit of resistance is ohm (Ω)

Resistance is said to be 1Ω if a current of 1A flows through the conductor when a potential difference of 1V is applied across its ends.

$$R = \frac{V}{I}$$

$$1\Omega = \frac{1V}{1A}$$

PAST PAPER SHORT QUESTION

(27) Define resistance. Also define its unit. **BWP-2017 (G-I)**

(28) State ohm's law and write its formula. **DGK-2017 (G-I)**

(29) What are the difficulties in testing whether filament of a lighted bulb obeys Ohm's law?

SWL- 2017, DGK-2017 (G-I), LHR-2017 (G-I), LHR-2022 (G-I), MTN-2022 (G-II)

(30) Do bends in a wire affect its electrical resistance? Explain.

LHR-2022 (G-II), GRW-2022 (G-I), RWP-2022 (G-I)

(31) What are ohmic and non-ohmic conductors? Give examples. **GRW-2022 (G-II)**

(32) Differentiate between ohmic and non-ohmic device with example . **DGK-2022 (G-I)**

13.5 RESISTIVITY AND ITS DEPENDENCE UPON TEMPERATURE

(33) Why there are more chances for burning out a thinner region of filament of lighted bulb than the thicker one?

Ans: As $R \propto \frac{1}{A}$, hence resistance of thinner region is larger than thicker one. Hence, more heat is produced in thinner region, which may burn it out.

(34) How does the resistance of a conductor changes with length?

Ans: We know that $R = \frac{\rho L}{A}$

As $R \propto L$

Hence, resistance increases with increases in length as electrons have to suffer more collisions.

(35) What is resistivity and how it depend upon temperature?

Ans: Resistivity: It is defined as

"The resistance of a meter cube of a material."

$$\rho = \frac{RA}{L}$$

It unit is Ωm

Dependence on Temperature: Within certain limits:

(i) Resistivity increases with increase of temperature of conductor.

(ii) Resistivity decreases with increase of temperature of semiconductor.

(iii) Resistivity remains constant with change of temperature of insulator.

(36) What is temperature co-efficient of resistance?

Ans: It is defined as

Change in resistance per unit original resistance per degree rise in temperature or fractional change in resistance per Kelvin.

If R_o and R_t are resistance at 0°C and t°C respectively then.

$$\alpha = \frac{R_t - R_o}{R_o t}$$

Here α is the temperature coefficient of resistance.

Unit:

Its unit is C^{-1} or K^{-1}

(37) Give two substances having negative temperature co efficient. Also define temperature co efficient. GRW-2016 (G-I)

Ans: Substances like carbon and semiconductors possess negative value of α. Their resistance decreases with increase in temperature.

Change in resistance per unit original resistance per degree rise in temperature or fractional change in resistance per Kelvin.

If R_o and R_t are resistance at 0°C and t°C respectively then.

$$\alpha = \frac{R_t - R_o}{R_o t}$$

Here α is the temperature coefficient of resistance. It is defined as:

(38) Differentiate between resistance and resistivity give their unit. SGD-2012

Ans: Resistivity:

"The resistance of a meter cube of a material."

$$\rho = \frac{RA}{L}$$

Its unit is Ωm

Resistance:

It is the opposition offered by the atoms of the conductor to the flow of charge.

In SI system, unit of resistance is ohm (Ω)

(39) A wire of length 10 m has resistance 100Ω. If the wire is stretched to increase its length three times. What will be its new resistance? FSD-2016 (G-I)

Ans: The given length of the wire is 10 m has a resistance 100 ohm. When the wire is stretched three times the new length is 30m and the new resistance is 900 ohm because area of the wire is also be decrease three time.

$$R = \rho\frac{L}{A} \Rightarrow R \propto \frac{L}{A}$$

$$R' \propto \frac{3L}{A/3} \Rightarrow R' \propto \frac{9L}{A} \Rightarrow R' = 9R$$

PAST PAPER SHORT QUESTION

(40) Define temperature coefficient of resistance and write its formula.
LHR-2019 (G-II), LHR-2022 (G-I), RWP-2022 (G-I)

(41) What is temperature coefficient of resistance? **SWL-2017, LHR -2021 (G-II)**

(42) Why does the resistance of a conductor rise with temperature?
SGD-2017 (G-I) & (G-II), DGK-2017 (G-I), LHR -2021 (G-II)

(43) What is difference between resistivity and conductivity?
GRW-2022 (G-I), BWP-2022 (G-II)

(44) Why does the resistance of a conductor rise with temperature?
GRW-2022 (G-II), DGK-2022 (G-I, II)

(45) A wire of length 5m has resistance. If the wire is stretched to increase its length three times. What will be its new resistance? **MTN-2022 (G-I)**

(46) Distinguish between Resistivity and conductivity. **BWP-2022 (G-II)**

(47) A wire of length 10m has resistance 100 Ω. If the wire is stretched to increases its length three times. What will be its new resistance? **RWP-2022 (G-II)**

13. 6 COLOUR CODE FOR CARBON RESISTANCE

(48) What would be the resistance of the two carbon wires having following colour bands?
a) Orange, Green, Black, Silver
b) White, Violet, Red, Golden

Ans: **a)** The resistance of first wire be

Orange	Green	Black	Silver	
3	5	-	±10%	= 35W (± 10%)

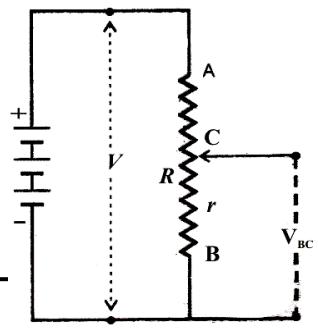
b) The resistance of second wire be

White	violet	Red	Golden	
9	7	00	±5%	= 9700Ω (±5%)

(49) What will be tolerance if there is no fourth colour?
Ans: It will be 20% if there is no fourth colour band printed on carbon resistor.

(50) How is a rheostat used as a potential divider? **LHR-2013**
Ans: **Rheostat:**
It is a wire wound around a variable resistance consisting of a bar wire of manganin wound around an insulating cylinder.

Potential Divider:
It can be used as a potential divider if battery is connected b/w A and B of rheostate. Current through wire is $I = \frac{V}{R}$ R = resistance of wire AB. The potential difference across B and C of wire AB is given by



Use of rheostat as potential divider

$V_{BC} = Ir$

$= \frac{V}{R} r$

r is the resistance between B and C

$V_{BC} = \frac{r}{R} . V$

When sliding contact C is at B then r=0, V_{BC}=0. When sliding contact moves away from B, value of r increases due to increase of length of wire due to which potential between BC increases. If contact be at A, r=R then V_{BC}=V. In their way, potential between B and C continuously varies.

(51) What is meant by tolerance of a resistor? Write the value of tolerance of silver and gold. FSD-2019 (G-I)

Ans: By the tolerance we mean that the possible variation from marked value.

The ring at the second end determines the tolerance or percentage accuracy as following

Silver ± 10%

Gold ± 5%

If there is no fourth band, tolerance will be ± 20%

(52) What is thermistor? Give its applications. SGD 2013, RWP-2019 (G-I)

Ans: A thermistor is a heat sensitive resistor usually made from semiconductor. One type of thermistor has negative temperature co-efficient of resistance that is its resistance falls when its temperature is increased. Thermistors with high negative temperature coefficient are used for resistance thermometer in very low temperature measurement of the order of 10K. Thermistors with positive temperature co-efficient are also available.

PAST PAPER SHORT QUESTION

(53) Describe a circuit which will give a continuously varying potential.
LHR- 2017 (G-I), SGD-2017, DGK-2017, RWP-2022 (G-II)

(54) What is meant by tolerance of a resistor? Write the values of tolerance of silver and gold.
FSD-2019 (G-I)

(55) What is thermistor? Give its applications. **RWP-2019 (G-I)**

(56) How does Rheostat work as variable resistor? **GRW-2022 (G-II)**

(57) Calculate the resistance of a carbon resistor of a carbon resistor with first bond Red, second bond, Violet, third bond Orange and fourth bond have Silver colour. **MTN-2022 (G-II)**

(58) Colour code of carbon resistors, usually consists of four bands. Starting from left, interpret the different colour bands with example. **DGK-2022 (G-II)**

13.7 ELECTRICAL POWER AND POWER DISSIPATION IN RESISTORS

(59) Find the heat dissipated through a bulb of 60w in two hours?

Ans:

Heat = P × t

= 60 × 2 × 3600

= 4.32×10^5 Joule

(60) Write the unit of a) conductivity b) electric power c) EMF d) Temperature coefficient of resistance.

Ans: a) Conductivity :- $Ohm^{-1}\ m^{-1}$ or mho m^{-1} or siemen

b) Electric Power :- Watt

c) emf :- Volt = $\frac{Joule}{Coulomb}$

d) Temperature Coefficient of resistance :- K^{-1}

(61) An ordinary bulb is marked 60 watts 200 volts. What is the resistance? (FSD 2014)

Ans: Given data is

P = 60W

V = 200V

As we know that the formula of power is

$$P = \frac{V^2}{R}$$

$$R = \frac{V^2}{P} = \frac{(200)^2}{60} = 666.6\Omega$$

PAST PAPER SHORT QUESTION

(62) Is the filament resistance lower or higher in a 500 W, 220 V light bulb than in a 100 W, 200 V bulb?

LHR-2017 (G-I), DKG-2017 (G-II), LHR-2022 (G-II), GRW-2022 (G-I), BWP-2022 (G-I, II)

(63) Prove that : Volt × Ampere = Watt. **LHR-2022 (G-I)**

13. 8 ELECTROMOTIVE FORCE & TERMINAL POTENTIAL DIFFERENCE

(64) What do you understand by close circuit and open circuit?

Ans: A circuit having external resistance zero (R=0) from which current flows is known as close circuit.

A circuit having infinite external resistance (R=∞) from which no current flows is known as open circuit.

(65) Differentiate between EMF and P.D?

Ans:

EMF	POTENTIAL DIFFERENCE
• It is a potential difference across the source when no current flows	• It is a potential difference across the source when some current flows.
• emf is the cause.	• Potential Difference is an effect of emf.
• It can never be zero.	• It may be zero
• It is given by the relation. E = V + Ir	• It is given by the relation. V = E – Ir
• Voltmeter connected with source measures emf with open circuit.	• Voltmeter connected with source measures Potential Difference with closed circuit.

(66) Under what condition, the terminal voltage is greater than EMF of the battery?

Ans: When battery is being charged by some other source of emf, then terminal voltage of that battery will be greater than its emf.

(67) What is electromotive force and give its units? LHR-2013

Ans: In order to maintain a constant current through a circuit, source of energy is required to supply power equal to that which is dissipated as heat in resistance. The strength of such a force is called as electromotive force. Also we can define emf as energy supplied to unit charge by the cell

A device which converts non-electric energy into the electric energy is called a soruce of electromotive force.

The unit of emf is joule/coulomb which is volt (V).

PAST PAPER SHORT QUESTION

(68) Distinguish between EMF & Terminal Potential. **GRW-2019 (G-I), BWP-2022 (G-II)**

(69) Explain why the terminal potential difference of a battery decreases when the current drawn from it is increased? **LHR -2021 (G-I), MTN-2022 (G-I)**

(70) What is the difference between electromotive force and terminal potential difference? **DGK-2017 (G-II)**

(71) What is meant by an electromotive force (emf)? Give its unit. **RWP-2022 (G-II)**

13. 9 KIRCHHOFF'S RULES

(72) State Kirchhoff's 1st and 2nd rule.

Ans: Kirchhoff's First Rule

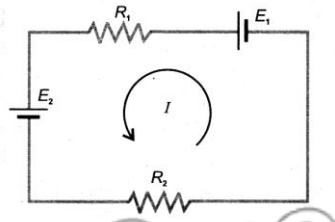
It states that algebraic sum of currents meeting at a point is zero. This is called Kirchhoff's current law. Kirchhoff's 1st rule is also known as Kirchhoff's point rule.

$$\sum I = 0$$

Kirchhoff's Second Rule

It is stated as:

Algebraic Sum of voltage changes across a closed circuit or loop must be equal to zero.



According to law of conservation of energy, the total change in energy of our system is zero.

Thus $+E_1\ \Delta Q - IR_1\ \Delta Q - E_2\ \Delta Q - IR_2 \Delta Q = 0$

Or $E_1 - IR_1 - E_2 - IR_2 = 0$

(73) Is the principle of conservation of energy applicable to electrical circuits?

Ans: Yes, principle of conservation of energy is applicable to electrical circuits. It is usually applied in the form of Kirchoff's voltage law, which states that algebraic sum of all the potential drops in a closed loop is zero

i.e. $\sum V = 0$

PAST PAPER SHORT QUESTIONS

(74) State Kirchhoff's 1st and 2nd rules and write their mathematical forms.

MIRPUR (AJK) 2017, SGD-2017 (G-II), FSD-2019 (G-I), DGK-2022 (G-I)

(75) State Kirchhoff's First Rule. And write its mathematical form.

MTN-2019 (G-I)

(76) State Kirchhoff's 2nd rule and write its mathematical relation.

DGK-2017 (G-II), BWP-2019 (G-II), GRW-2019 (G-II)

13.10 WHEATSTONE BRIDGE

(77) In balanced condition Wheatstone bridge galvanometer shows no deflections, why?

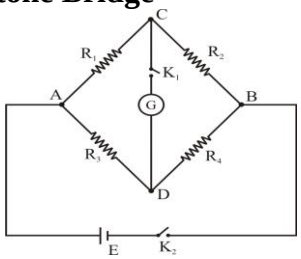
Ans: This is so because both the terminals of a galvanometer are at the same potential, hence no current flows through the galvanometer.

(78) Why a voltmeter can not read the exact value of EMF of a cell?

Ans: When a voltmeter is connected across a cell, it draws some current from the cell. Hence, a small potential drop takes place and actual EMF of the cell decreases.

(79) Draw the circuit diagram of a Wheatstone bridge and write down its balancing condition.

Ans: Circuit Diagram of Wheatstone Bridge



When circuit is on, and galvanometer G shows no deflection, then bridge is said to be balanced and the condition for this is

$$\frac{R_1}{R_2} = \frac{R_3}{R_4}$$

(80) When a Wheatstone bridge is balanced, no current flows through the galvanometer. Why?

Ans: It is due to same potentials at the two terminals of the galvanometer when resistances R_1, R_2, R_3, R_4 are selected such that $\frac{R_1}{R_2} = \frac{R_3}{R_4}$.

PAST PAPER SHORT QUESTION

(81) What is Wheatstone bridge? How can it be used to determine an unknown resistance?

LHR -2021 (G-I)

13. 11 POTENTIOMETER

(82) Why should the potentiometer wire be long and uniform in diameter?

Ans: Potential difference is directly proportional to the length of the wire i.e. $V \propto l$
So, long wire of uniform diameter supports high value of P.D. which can be used to balance the P.D across a circuit.

(83) What is potentiometer? Give its principle?

Ans: Definition: An instrument which measures P.D. without drawing any current form the circuit.
Principle: The P.D. across a uniform conductor is directly proportional to its length when a constant current is flowing through it.

(84) How can you compare emf of two cells with the help of a potentiometer?

Ans: Suppose E_1 & E_2 are emf's of two cells to be compared. For this purpose potentiometer is balanced by connecting E_1 & E_2 separately. Let l_1 is the balancing length for E_1 & E_2 is the balancing length for E_2. These two emf's will be compared by the following formula:

$$\frac{E_1}{E_2} = \frac{l_1}{l_2}$$

That emf is proportional to balancing length in potentiometer.

(85) Why potentiometer is an accurate measuring instrument?

Ans: Potentiometer is an accurate measuring instrument because it draws no current from battery whose emf is required to be measured, and when no current is being drawn from battery then its terminal potential difference equals to its emf.

PAST PAPER SHORT QUESTION

(86) Describe a circuit which will give a continuously varying potential.

LHR- 2017 (G-I), SGD-2017, DGK-2017, RWP-2022 (G-II)