

ST. LAWRENCE HIGH SCHOOL A JESUIT CHRISTIAN MINORITY INSTITUTION



SOLUTION TO WORK SHEET 15

Subject : PHYSICS

CLAS	S : XII						13.6.20	
Chapte	er : Current Electricity			Topic : KVL, KCL and application, concept of potentiometer.				
Multip	ple Choice Question :						1 x 15 = 15	
1.	KCL follows from which conservation law?							
	a) charge	b)	energy	c)	momentum	d)	all of these	
	Ans : (a) charge							
2.	KVL follows from which conservation law?							
	a) charge	b)	energy	c)	mass	d)	momentum	
	Ans : (b) energy							
3.	The area of cross section of the potentiometer wire is 10^{-6} m ² , specific resistance 10^{-7} $_{\Omega}$ -m. If 0.1A flows in the wire, potential gradient along the wire is —							
	(a) 10^{-2} Vm^{-1}	(b)	$10^{-3} Vm^{-1}$	(c)	$10^{-4} Vm^{-1}$	(d) 10 ⁻⁶	Vm^{-1}	
	Ans. : (a) 10^{-2} Vm ⁻¹							
4.	Which instrument measures (a) wheatstone bridge Ans. : (c) potentiometer	emf (b)	of a cell most acc ammeter	curately (c)	? potentiometer	(d) voltn	neter	
5.	Kirchhoff's laws are valid f	for						
	(a) linear circuits only			(b)	non-linear circuits	s only		
	(c) both linear and non-linear circuits			(d) none of the above				
	Ans. : (c) both linear and n	on-li	near circuits					
6.	In the circuit of the figure, the current l_2 exceeds the current l_1 , by a factor of							
	+5V •	$l_{l_{i}}^{00 \text{ k}}$	l_2 l_2 d_2 d_2 d_3 d_4 d_5 d_5 d_6 d_7					

(a) 12 Ans. : (d) 120 (c) 100

(d) 120

(b) 20

7. In the circuit shown in the figure, if the potential at point A is taken to be zero, the potential at point B is



8. In the given network the magniture of currents is shown here. The current l will be



9. In the circuit shown in the figure, the potential of point A with respect to point B is



Ans. : (c) -1.5V

10. In the circuit of Figure, the source of emf E has negligible internal resistance. C is the midpoint of the potentiometer wire AB. The resistance of the voltmeter V is not very high compared to that of the potentiomenter wire. Then the voltmeter reading will be



Ans. : (d) less than $\frac{E}{2}$

11.	For a potentiometer wire of fixed length, the potential gradient can be decreased by								
	(a) increasing the current by the potentiometer wire								
	(b) reducing the current in the potentiometer wire								
	(c) decreasing the value of attached resistances								
	(d) none of the above								
	Ans. : (b) reducing the current in the potentiometer wire								
12.	If the resistivity of a p the potentiometer wire	the resistivity of a potentiometer wire be ρ and area of cross-section be A. If I is the current through potentiometer wire then what will be the potential gradient along the wire?							
	(a) I/ρ A	(b) $I \rho / A$	(c) IA/ρ	(d) IA ρ					
	Ans. : (b) $I \rho / A$								
13.	A potentiometer consists of a wire of length 4m and resistance 10_{Ω} . It is connected to a cell of emf 2V. The potential difference per unit length of the wire will be								
	(a) 0.5 Vm^{-1}	(b) $2 Vm^{-1}$	(c) 5 Vm^{-1}	(d) 10 Vm^{-1}					
	Ans. : (a) 0.5 Vm ⁻¹								
14.	The material of a wire	material of a wire of a potentiometer is							
	(a) copper	(b) steel	(c) manganin	(d) aluminium					
	Ans. : (c) manganin								
15.	Potentiometer measures potential more accurately because								
	(a) it uses sensitive galvanometer for null deflection								
	(b) it uses high resistance potentiometer wire								
	(c) it measures the p	c) it measures the potential in the closed circuit							
	(d) it measures the potential in the open circuit								

Ans. : (d) it measures the potential in the open circuit

Ambarnath Banerjee