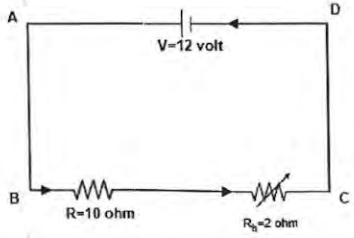
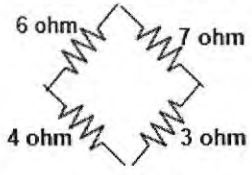
Assignment for HSC Examinees, 2022

Subject: Physics | Paper: 2nd | Subject Code: 175 | Level: HSC

Assignment Number	Assignment	Learning Outcomes	Guidelines (cues/steps or stages)
06 Chapter-03: Current Electricity	Title: **Current flow through circuit related problems** In figure-1, a fixed valued resistance of (R=10 ohm) and a resistance (R_h = 2 ohm which can be changed as per necessity) are connected with an electric cell of 12 Volt. In figure-2, four fixed valued resistances of (6 ohm, 4 ohm, 7 ohm, 3 ohm) are connected.   Fig-2 a) In fig-1, determine the current flow of the circuit. b) What is the potential drop across R? c) Draw a graph of potential drop across R versus R_h for the	**Learners will be able to** - explain the Joule's law of heating effect in electric current. - analyze the mathematical relation of internal resistance of cell and electromotive force. - determine the current flow of the circuit and the potential difference by using Kirchhoff's law.	Current Electricity chapter

Assessment Criteria /Rubric

	Indicators	Rating Scale 3	Rating Scale 2	Rating Scale 1	Score
(a)	Determining current flow	-	Presenting the acceptable answer with necessary information and mathematical formula	Presenting mathematical formula only /only concept	
(b)	Determining potential drop	-	Presenting the acceptable answer with necessary information and mathematical formula	Presenting mathematical formula only /only concept	
(c)	Drawing graph and determining the value of R_h from the graph for which the potential drop will be maximum	Presenting graphs with determining necessary information / data and proper scaling	Presenting graphs with determining necessary information / data	Just presenting concept	
(d)	Drawing graph heat vs R_h and determining the value of R_h from this graph for which the produced maximum heat across R_h	Presenting graphs with determining necessary information / data and proper scaling	Presenting graphs with determining necessary information / data	Just presenting concept / just drawing graph	
(e)	In case of variable, potential drop	Presenting the acceptable answer and logic with necessary mathematical formula	Presenting only the acceptable answer with necessary mathematical formula	Presenting concept only	
(f)	Determining temperature and determining resistance	Determining temperature and resistance with necessary information and mathematical formula	Determining temperature only with necessary mathematical formula	Presenting concept only	
				Total	

Total marks for this assignment: 16

	different values of R_h (from 2 to 20). Determine the value of R_h from the graph for which the potential drop will be the maximum. d) Draw a graph of the produced heat across R_h per second for different values of R_h versus R_h, and determine the value of R_h from this graph for which the produced heat across R_h will be the maximum. e) Will there be any change in potential drop across R if the circuit of fig-2 is connected with AB part of fig-1 – give logic by doing mathematical analysis. f) In the connected state of the circuit of fig-2 with AB part of fig-1, is it possible to increase the temperature of 5 kg water for the current flow of 5s? How much resistance is required to increase the temperature of water in half of the previous time?		

Marks Obtained	Comments
13-16	Excellent
11-12	Very good
8-10	Good
Less than 8	Needs Improvement