

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

PHYSICAL SETTING
PHYSICS

ANSWER SHEET

Student Current Electricity Key Sex: Male Female Grade
Teacher School

Record your answers to Part A and Part B-1 on this answer sheet.

Part A				Part B-1			
1	3	13	2	25	1	32	3
2	2	14	3	26	1	32	2
3	3	15	1	27	4	34	4
4	2	16	3	28	1	35	3
5	1	17	2	29	4	36	1
6	4	18	1	30	3	37	1
7	2	19	4	31	2	38	3
8	3	20	2			39	1
9	2	21	1			40	2
10	1	22	3				
11	4	23	2				
12	4	24	2				

Part A Score

Part B-1 Score

Write your answers to Part B-2 and Part C in your answer booklet.

The declaration below should be signed when you have completed the examination.

I do hereby affirm, at the close of this examination, that I had no unlawful knowledge of the questions or answers prior to the examination and that I have neither given nor received assistance in answering any of the questions during the examination.

Signature

PHYSICAL SETTING PHYSICS

ANSWER BOOKLET

Student Sex: Male
 Female

Teacher

School Grade

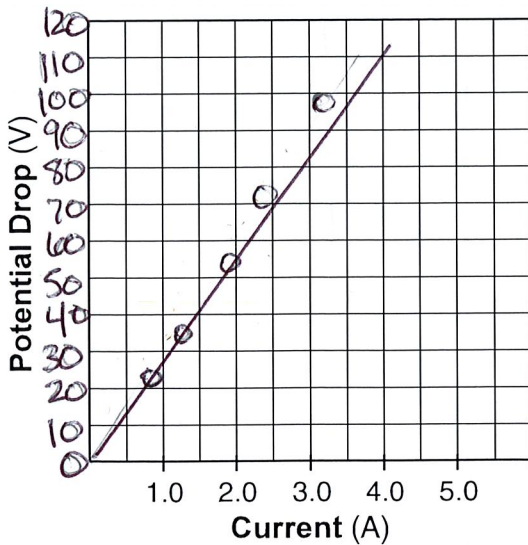
Answer all questions in Part B-2 and Part C. Record your answers in this booklet.

Part	Maximum Score	Student's Score
A	31	
B-1	9	
B-2	16	
C	15	
Total Written Test Score (Maximum Raw Score: 71)		<input type="text"/>
Final Score (From Conversion Chart)		<input type="text"/>
Raters' Initials:		
Rater 1		Rater 2

Part B-2

41-42
 -43

Potential Drop vs. Current



44-45

$$R = \frac{V}{I} = \text{slope} = \frac{\Delta y}{\Delta x}$$

$$R = \frac{(110V - 0V)}{(4A - 0A)}$$

$$R = 27.5 \Omega \text{ (Depends on graph)}$$

For Raters
 Only

41

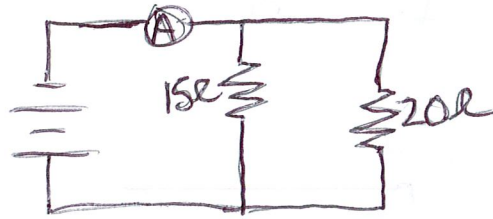
42

43

44

45

46-47



For Raters Only

46

47

48

49

48-49

$$\frac{G}{R_1 = 20\Omega} \quad \frac{U}{R_{eq}}$$

$$R_2 = 15\Omega$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_{eq}} = \frac{1}{20\Omega} + \frac{1}{15\Omega}$$

$$\frac{1}{R_{eq}} = .1167$$

$$R_{eq} = 8.57\Omega$$

50-51

$$\frac{G}{R = 1.2\Omega} \quad \frac{U}{P}$$

$$V = 12V$$

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

$$P = \frac{(12V)^2}{1.2\Omega}$$

$$P = 120W$$

50

51

52-53

$$\frac{G}{L = 25m} \quad \frac{U}{P}$$

$$A = 3.5 \times 10^{-6} m^2$$

$$R = .757\Omega$$

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

$$\rho = \frac{(.757\Omega)(3.5 \times 10^{-6} m^2)}{25m}$$

$$\rho = 1.06 \times 10^{-7} \Omega \cdot m$$

52

53

54

15

 Ω

$$V=IR \Rightarrow R = \frac{V}{I} = \frac{30V}{2A}$$

55-56

$$R_{eq} = 15\Omega$$

$$R_1 = 20\Omega$$

$$I = 2A$$

$$V = 30V$$

$$\frac{U}{R_2}$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{15\Omega} = \frac{1}{20\Omega} + \frac{1}{R_2}$$

$$\frac{1}{R_2} = \frac{1}{15\Omega} - \frac{1}{20\Omega}$$

$$\frac{1}{R_2} = .0167$$

$$R_2 = 60\Omega$$

For Raters
Only

54

55

56

Part C

For Raters Only

57-58

$\frac{Q}{\Delta t}$
 $V=120V$
 $P_1=150W$
 $I_2=.5A$
 $t=60s$

$I = \frac{\Delta q}{t} \Rightarrow \Delta q = It$
 $\Delta q = (.5A)(60s)$
 $\Delta q = 30C$

57

58

59

6

Ω

$R = \frac{V}{I} = \frac{12V}{2A}$

59

60-61

$\frac{Q}{A}$
 $R=6\Omega$
 $L=.10m$
 $\rho=150 \times 10^{-8} \Omega \cdot m$

$R = \frac{\rho L}{A} \Rightarrow A = \frac{\rho L}{R}$
 $A = \frac{(150 \times 10^{-8} \Omega \cdot m)(.1m)}{6\Omega}$

$A = 2.5 \times 10^{-8} m^2$

60

61

62-63

$\frac{U}{R}$
 $P=40W$
 $V=120V$

$P = \frac{V^2}{R} \Rightarrow R = \frac{V^2}{P}$
 $R = \frac{(120V)^2}{40W}$

$R = 360\Omega$

62

63

64

Power will remain the same

64

65

Resistance would increase

65

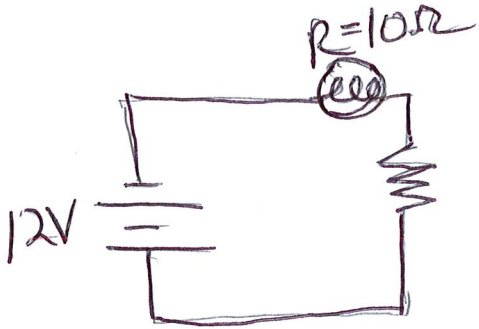
66

Resistance will be greater

66

For Raters Only

67



67

68

24 Ω

$$R = \frac{V}{I} = \frac{12V}{.5A}$$

68

69

14 Ω

$$R_{eq} = R_1 + R_2 \Rightarrow 24\Omega = 10\Omega + R_2$$

69

70-71

$$\frac{G}{R_1 = 10\Omega}$$
$$\frac{U}{P}$$
$$I = .5A$$

$$P = I^2 R$$
$$P = (.5A)^2 (10\Omega)$$
$$\boxed{P = 2.5W}$$

70

71