Tear Here

The University of the State of New York

REGENTS HIGH SCHOOL EXAMINATION

PHYSICAL SETTING
PHYSICS

ANSWER SHEET

Student ..... Forces Key ..... Sex: ☐ Male ☐ Female Grade .....

Teacher ..... School .....

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

Part A

1	3	13	1	25	2
2	1	14	4	26	3
3	4	15	1		
4	3	16	3		
5	1	17	2		
6	3	18	1		
7	3	19	2		
8	1	20	4		
9	3	21	1		
10	1	22	1		
11	1	23	3		
12	1	24	2		

Part A Score ☐

Part B-1

27	4
28	4
29	1
30	4
31	2
32	4

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

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REGENTS HIGH SCHOOL EXAMINATION

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	26	
B–1	6	
B–2	7	
C	18	

Total Written Test Score (Maximum Raw Score: 57) ☐

Final Score (From Conversion Chart) ☐

Raters' Initials:

Rater 1 ..... **Rater 2** .....

Part B–2

For Raters Only

33-34

G

$m = .5\,kg$

$a = 3\,\frac{m}{s^2}$

U

F

$a = \frac{F}{m}$

$F = ma$

$F = (.5kg)(3\,\frac{m}{s^2})$

$F = 1.5\,N$

33 ☐

34 ☐

35 850 N

$F_g = F_N \cos\theta \quad \theta = 0^\circ \quad \cos(0) = 1$

$F_g = F_N$

35 ☐

36-37

G

$\mu_k = .05$

$F_N = 850N$

U

F_{f_k}

$F_f = \mu F_N$

$F_f = (.05)(850N)$

$F_f = 42.5N$

36 ☐

37 ☐

Part B–2

For Raters Only

38-39

G

$F = -6000N$

$m = 1200kg$

$V_i = 10\frac{m}{s}$

$V_f = 0\frac{m}{s}$

U

① t

② $a = -5\frac{m}{s^2}$

① $V_f = V_i + at$

$t = \frac{V_f - V_i}{a} = \frac{0\frac{m}{s} - 10\frac{m}{s}}{-5 m/s}$

$t = 2s$

② $a = \frac{F}{m}$

$a = \frac{-6000N}{1200kg}$

$a = -5\frac{m}{s^2}$

38 ☐

39 ☐

Part C

For Raters Only

40-41

G

$a = -2 \frac{m}{s^2}$

$m = 10\,kg$

U

$F = ?$

$a = \frac{F_{net}}{m} \Rightarrow F_{net} = ma$

$F = (10kg)(-2\frac{m}{s^2})$

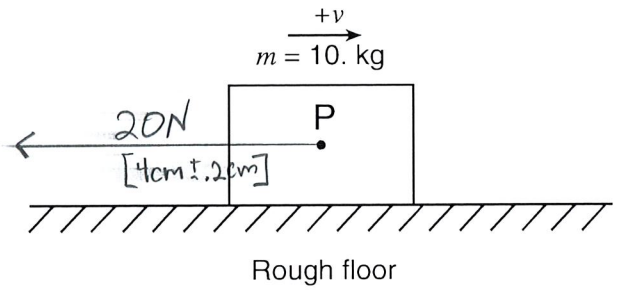
$F_{net} = -20N$

magnitude of $F_{net} = 20N$

40 ☐

41 ☐

42-43



42 ☐

43 ☐

44-45

G

$F_f = 20N$

$\theta = 0°$

$m = 10kg$

$g = 9.81 \frac{m}{s^2}$

U

① μ

② $F_N = 98.1N$

① $F_f = \mu F_N \Rightarrow \mu = \frac{F_f}{F_N} = \frac{20N}{98.1N}$

$\mu = .20$

② $F_N = F_g \cos\theta = mg\cos\theta$

$F_N = (10kg)(9.81\frac{m}{s^2})\cos(0°)$

$F_N = 98.1N$

44 ☐

45 ☐

46-47

G

$m = 10kg$

$\mu = .15$

$g = 9.81 \frac{m}{s^2}$

U

① F_f

② F_N

① $F_f = \mu F_N = (.15)(98.1N)$

$F_f = 14.7N$

② $F_N = F_g \cos\theta = mg\cos\theta$

$F_N = (10kg)(9.81\frac{m}{s^2})\cos(0°)$

$F_N = 98.1N$

46 ☐

47 ☐

Part C

For Raters Only

47 ☐

48 ☐

49 ☐

51 ☐

52 ☐

532 ☐

54 ☐

55 ☐

56 ☐

57 ☐

48 20N N $F_{net} = 0N = F_1 + F_f$

$F_1 = 20N = F_f$

49-50

G

$m = 5kg$

$g = 9.81 \frac{m}{s^2}$

U

F_g

$F_g = mg = (5kg)(9.81 \frac{m}{s^2})$

$F_g = 49.05N$

51-52

G

$F_g = 49.05N$

$F_f = 20N$

U

① μ

① $F_f = \mu F_N \Rightarrow \mu = \frac{F_f}{F_N} = \frac{20N}{49.05N}$

② $F_N = 49.05N$ $F_N = F_g \cos\theta = 49.05N \cos 0° = 49.05N$

$\mu = .41$

53 1.96 N $F_g = mg = (.2kg)(9.81 \frac{m}{s^2})$

54-55

G

$F_g = F_N = 1.96N$

$\mu_K = .36$

U

F_f

$F_f = \mu F_N$

$F_f = (.36)(1.96N)$

$F_f = .71N$

56 3.29 N $F_{net} = F_1 + F_f = 4N + -.71N = 3.29N$

57 The velocity will increase

[$V \rightarrow$, $F_{net} \rightarrow = a \rightarrow$, so V increases]