

Instructor(s): *Detweiler*PHYSICS DEPARTMENT
Test #1

PHY 2020

September 18, 2015

Name (print, last first): _____ Signature: _____

*On my honor, I have neither given nor received unauthorized aid on this examination.***YOUR TEST NUMBER IS THE 5-DIGIT NUMBER AT THE TOP OF EACH PAGE.**

- (1) **Code your test number on your answer sheet (use lines 76–80 on the answer sheet for the 5-digit number).** Code your name on your answer sheet. **DARKEN CIRCLES COMPLETELY.** Code your UFID number on your answer sheet.
 - (2) Print your name on this sheet and sign it also.
 - (3) Do all scratch work anywhere on this exam that you like. **Circle your answers on the test form.** At the end of the test, this exam printout is to be turned in. No credit will be given without both answer sheet and printout.
 - (4) **Blacken the circle of your intended answer completely, using a #2 pencil or blue or black ink.** Do not make any stray marks or some answers may be counted as incorrect.
 - (5) **The answers are rounded off. Choose the closest to exact. There is no penalty for guessing. If you believe that no listed answer is correct, leave the form blank.**
 - (6) Hand in the answer sheet separately.
-

1. On your pink answer sheet, did you correctly bubble in your test number in rows 76–80, and also bubble in your name and your UF ID number? Also, did you print and sign your name at the top of your test, and will you hand in the “white sheets?” before leaving the room? This question counts, and the correct answer is “Yes”.

(1) Yes (2) No (3) X (4) X (5) X

2. A motorist drives along a straight road at a constant speed of 40 m/s. After 10 s, how far has she traveled in meters?

(1) 400 (2) 300 (3) 200 (4) 100 (5) 40

3. A motorist drives along a straight road at a constant speed of 30 m/s. After 10 s, how far has she traveled in meters?

(1) 300 (2) 400 (3) 200 (4) 100 (5) 40

4. A motorist drives along a straight road at a constant speed of 20 m/s. After 10 s, how far has she traveled in meters?

(1) 200 (2) 400 (3) 300 (4) 100 (5) 40

5. A rabbit is dashing through the forest. Its position as a function of time is given by $x(t) = (3\text{ m} + v_0 t)$, where $v_0 = 4\text{ m/s}$. What is the magnitude of the rabbit's speed (in m/s) when $t = 4\text{ s}$?

(1) 20 (2) 18 (3) 24 (4) 2 (5) 32

6. A rabbit is dashing through the forest. Its position as a function of time is given by $x(t) = (3\text{ m} + v_0 t)$, where $v_0 = 4\text{ m/s}$. What is the magnitude of the rabbit's speed (in m/s) when $t = 2\text{ s}$?

(1) 18 (2) 6 (3) 24 (4) 2 (5) 32

7. A rabbit is dashing through the forest. Its position as a function of time is given by $x(t) = (3\text{ m} + v_0 t)$, where $v_0 = 4\text{ m/s}$. What is the magnitude of the rabbit's speed (in m/s) at $t = 3\text{ s}$?

(1) 24 (2) 6 (3) 18 (4) 2 (5) 32

18. Bob throws a baseball straight up, with an initial speed $v_0 = 20$ m/s. How high does the baseball go?
- (1) 20 m (2) 45 m (3) 5 m (4) 15 m (5) 30 m
19. Bob throws a baseball straight up, with an initial speed $v_0 = 30$ m/s. How high does the baseball go?
- (1) 45 m (2) 5 m (3) 20 m (4) 15 m (5) 30 m
20. A boy, whose weight at rest is 200 N, stands on a scale in an elevator that starts from rest and accelerates upward with a constant acceleration $a = 2$ m/s². What is his apparent weight, as he reads on the scale, during his elevator ride?
- (1) 240 N (2) 260 N (3) 280 N (4) 220 N (5) 200 N
21. A boy, whose weight at rest is 200 N, stands on a scale in an elevator that starts from rest and accelerates upward with a constant acceleration $a = 3$ m/s². What is his apparent weight, as read on the scale, during his elevator ride?
- (1) 260 N (2) 240 N (3) 280 N (4) 220 N (5) 200 N
22. A boy, whose weight at rest is 200 N, stands on a scale in an elevator that starts from rest and accelerates upward with a constant acceleration $a = 4$ m/s². What is his apparent weight, as read on the scale, during his elevator ride?
- (1) 280 N (2) 260 N (3) 240 N (4) 220 N (5) 200 N
23. In a demonstration two identical balls were released at the same time and rolled down a straight track and a curvy track. Which track won the race?
- (1) curvy (2) straight (3) they tied (4) X (5) X
24. The quantity 50 kg m/s² describes something about an object. Which of the following could this quantity refer to?
- (1) force (2) acceleration (3) momentum (4) energy (5) speed
25. Complete the following sentence: A bowling ball and a ping pong ball fall with the same acceleration in a vacuum on the surface of the earth
- (1) even though the force of gravity is different on the two objects.
(2) because the force of gravity is the same on the two objects.
(3) X
(4) only in a dark room.
(5) only on the North or South poles.
26. In a demonstration, you saw a heavy ball hanging from a thin string with a second string dangling below. When I very quickly jerked the lower string
- (1) only the bottom string broke.
(2) only the top string broke.
(3) both strings broke.
(4) neither string broke.
(5) the ball landed on my foot.

27. Then when I very slowly pulled on the lower string

- (1) only the top string broke.
- (2) only the bottom string broke.
- (3) both strings broke.
- (4) neither string broke.
- (5) the ball landed on my foot.

28. A rope is tied around a sturdy oak tree, and you pull on the rope with a force of 100 N. What is the magnitude of the force that the tree exerts on the rope?

- (1) 100 N
- (2) 0 N
- (3) 50 N
- (4) 200 N
- (5) 150 N

29. The water in the Zambezi river flows with a speed of 2 m/s. Tarzan can swim in still water with a speed of 3 m/s. Tarzan dives in the water and swims to Jane who is standing 50 m downstream from where Tarzan starts. How long does it take Tarzan to reach Jane?

- (1) 10 s
- (2) 50 s
- (3) 25 s
- (4) 16.7 s
- (5) 33.3 s

30. Then Tarzan turns around and swims upstream. How long does it take Tarzan to swim back to his initial starting point?

- (1) 50 s
- (2) 10 s
- (3) 25 s
- (4) 16.7 s
- (5) 33.3 s

31. Which of Newton's laws was demonstrated with the milk jug rocket demonstration that we saw yesterday?

- (1) Newton's third law
- (2) Newton's second law
- (3) Newton's first law
- (4) X
- (5) X

32. In class one day, I held a basketball, with a smaller styrofoam ball on top, at a height of about 1.5 m. When I dropped them together the highest that the styrofoam ball went was about

- (1) at the ceiling
- (2) 1.5 m
- (3) 0.5 m
- (4) 2 m
- (5) It didn't go up at all.

33. A 5 kg block starts at rest and then is pushed with a steady, constant force of 10 N. How fast is the block moving after 10 s? There is no friction.

- (1) 20 m/s
- (2) 100 m/s
- (3) 50 m/s
- (4) 5 m/s
- (5) 75 m/s

34. How far did the block move in that time?

- (1) 100 m
- (2) 20 m
- (3) 50 m
- (4) 5 m
- (5) 75 m

35. If you hold a mass of 1 kg in your right hand and a weight of 1 N in your left hand, which is heavier?

- (1) 1 kg
- (2) 1 N
- (3) They are the same.
- (4) Neither.
- (5) X

THE FOLLOWING QUESTIONS, NUMBERED IN THE ORDER OF THEIR APPEARANCE ON THE ABOVE LIST, HAVE BEEN FLAGGED AS CONTINUATION QUESTIONS: 12 14 16 27 30 34 FOLLOWING GROUPS OF QUESTIONS WILL BE SELECTED AS ONE GROUP FROM EACH TYPE

TYPE 1

Q# S 2

Q# S 3

Q# S 4

TYPE 2

Q# S 5

Q# S 6

Q# S 7

TYPE 3

Q# S 8

Q# S 9

Q# S 10

TYPE 4

Q# S 11 12

Q# S 13 14

Q# S 15 16

TYPE 5

Q# S 17

Q# S 18

Q# S 19

TYPE 6

Q# S 20

Q# S 21

Q# S 22