QUIZIZZ

NAME : _____

CLASS : _____

DATE : _____

Sem 2 Physics Final Review

54 Questions

1. A spring is stretched back 0.52m using 13N of force. How much energy is stored in the spring?

- [ ] a) 6.76 J
- [ ] b) 3.38 J
- [ ] c) 4.32 J
- [ ] d) 91 J

2. How much energy is stored in a 12 kg box that is on a 2.5m high book shelf?

- [ ] a) 294 J
- [ ] b) 30 J
- [ ] c) 2.5 J
- [ ] d) 147 J

3. What are the proper units for energy?

- [ ] a) k
- [ ] b) N
- [ ] c) m/s
- [ ] d) J

4. If a spring is stretched twice as far, it will store ___ times as much energy elastically.

- [ ] a) 2
- [ ] b) 4
- [ ] c) 8
- [ ] d) 16

5. If a mass is lifted twice as far, it will store ___ times as much energy gravitationally.

- [ ] a) 2
- [ ] b) 4
- [ ] c) 8
- [ ] d) 16

6. If a mass is pushed twice as far across a surface, it will store ___ times as much energy thermally.

- [ ] a) 2
- [ ] b) 4
- [ ] c) 8
- [ ] d) 16

7. If a mass is moving twice as fast, it will have ___ times as much energy stored kinetically.

- [ ] a) 2
- [ ] b) 4
- [ ] c) 8
- [ ] d) 16

8. A 10 kg box is pushed across the floor with a coefficient of friction of 0.5 over a distance of 4m. How much thermal energy was dissipated (released)?

- a) 5 J
- b) 196 J
- c) 40 J
- d) 98 J

9. A 1000 kg car is moving 30 m/s. How much kinetic energy does it have?

- a) 1000 J
- b) 30,000 J
- c) 15,000 J
- d) 450,000 J

10. "Is the object moving?" determines if there is what kind of energy in the system?

- a) elastic
- b) gravitational
- c) thermal
- d) kinetic

11. "Has the object been stretched or compressed?" determines if there is what kind of energy in the system?

- a) elastic
- b) gravitational
- c) thermal
- d) kinetic

12. "Were there any frictional effects acting within the system?" determines if there is what kind of energy in the system?

- a) elastic
- b) gravitational
- c) thermal
- d) kinetic

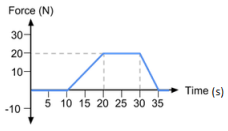
13. "Is the object above elevation zero?" determines if there is what kind of energy in the system?

- a) elastic
- b) gravitational
- c) thermal
- d) kinetic

14. A 1kg bowling ball has a velocity of 10 m/s. What velocity would a 2kg ball need to have to have an equivalent amount of momentum?

- a) 1 m/s
- b) 2 m/s
- c) 5 m/s
- d) 10 m/s

15. How much impulse is applied to a ball according to this graph? (hint: note that the impulse starts at t=10 seconds)



- a) 350 N*s
- b) 500 N*s
- c) 200 N*s
- d) 100 N*s

16. Airbags are a helpful safety measure in cars by reducing the force the human skull receives upon impact. It does this by:

- [ ] a) increases the amount of time to bring it to a stop
- [ ] b) decreases the impulse on the skull
- [ ] c) decreases the change in momentum of the skull
- [ ] d) all of these

17. Your friend is standing on a skateboard with frictionless wheels. Your friend throws a 5.0 kg bowlingball straight back at 10 m/s. Your friend has a mass of 50 kg. How fast will your friend roll away? (remember - total initial momentum must equal total final momentum)

- [ ] a) 10 m/s
- [ ] b) 1 m/s
- [ ] c) 2 m/s
- [ ] d) 500 m/s

18. Momentum is equal to:

- [ ] a) $m * c^2$
- [ ] b) m * a
- [ ] c) m * f
- [ ] d) m * v

19. Impulse is numerically equal to_____ (but has different units)

- [ ] a) period
- [ ] b) velocity
- [ ] c) force
- [ ] d) change in momentum
- [ ] e) pickles

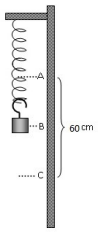
20. A transverse pulse moves _____ to the medium (the medium could be a string, slinky, etc.)

- [ ] a) parallel
- [ ] b) perpendicular
- [ ] c) helically
- [ ] d) particularly

21. A longitudinal pulse moves _____ to the medium (the medium could be a string, slinky, etc.)

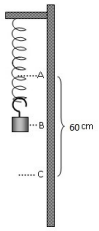
- [ ] a) parallel
- [ ] b) perpendicular
- [ ] c) helically
- [ ] d) particularly

22. What is the amplitude of the oscillation?



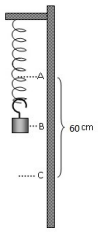
- [ ] a) 60 cm
- [ ] b) 120 cm
- [ ] c) 30 cm
- [ ] d) 240 cm

23. What is the period of the oscillation if it takes 4 seconds to travel from C to A?



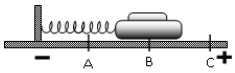
- [ ] a) 4 s
- [ ] b) 8 s
- [ ] c) 12 s
- [ ] d) 2 s

24. The equilibrium position is located at:



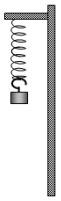
- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) above A

25. A simple harmonic oscillator, like the one pictured, will have its maximum velocity at _____.



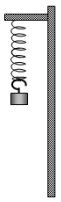
- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) between C and B

26. If the oscillating mass changes by a factor of 3, then the period changes by a factor of…



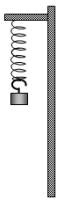
- [ ] a) 1 (no change)
- [ ] b) √3
- [ ] c) 3
- [ ] d) √1/3

27. If the amplitude changes by a factor of 3, then the period changes by a factor of…



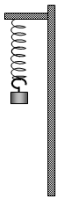
- [ ] a) 1 (no change)
- [ ] b) √3
- [ ] c) 3
- [ ] d) √1/3

28. If the spring constant changes by a factor of 3, then the period changes by a factor of…



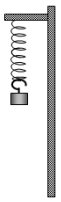
- [ ] a) 1 (no change)
- [ ] b) √3
- [ ] c) 3
- [ ] d) √1/3

29. If the mass completes 10 oscillations in 5 seconds, then the **frequency** of oscillation, *f*, is…



- [ ] a) 2
- [ ] b) 50
- [ ] c) 5
- [ ] d) 15

30. If the mass completes 10 oscillations in 5 seconds, then the **period** of oscillation, *T*, is…



- [ ] a) 1/2
- [ ] b) 50
- [ ] c) 5
- [ ] d) 15

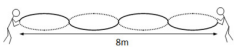
31. Period is defined as:

- [ ] a) seconds per oscillation
- [ ] b) oscillations per second
- [ ] c) ergs per minute
- [ ] d) meters per second

32. Frequency is defined as:

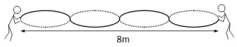
- [ ] a) seconds per oscillation
- [ ] b) oscillations per second
- [ ] c) ergs per minute
- [ ] d) meters per second

33. This standing wave has ____ nodes.



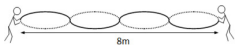
- [ ] a) 4
- [ ] b) 3
- [ ] c) 5
- [ ] d) 6

34. This standing wave has ____ antinodes.



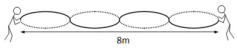
- ☐ a) 4
- ☐ b) 3
- ☐ c) 5
- ☐ d) 6

35. The wavelength of this standing wave is _____.



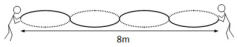
- ☐ a) 8m
- ☐ b) 4m
- ☐ c) 16m
- ☐ d) 2m

36. How much of a wave is represented in this diagram?



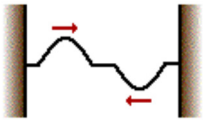
- ☐ a) 1 wave
- ☐ b) 2 waves
- ☐ c) 3 waves
- ☐ d) 2.5 waves

37. If this standing wave has a frequency of vibration of 5 Hz, the speed of the wave is:

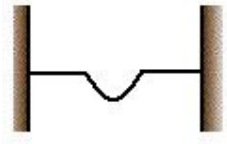


- [ ] a) 20 m/s
- [ ] b) 10 m/s
- [ ] c) 40 m/s
- [ ] d) 0.625 m/s

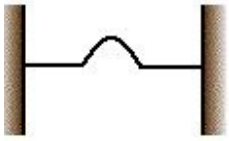
38. Two pulses are traveling in opposite directions along the same medium as shown in the diagram at the right. Which diagram below best depicts the appearance of the medium when each pulse meets in the middle?



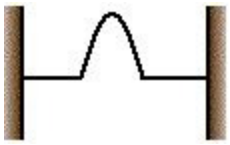
- [ ] a)



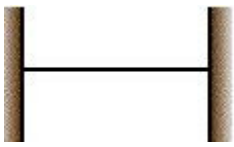
- [ ] b)



- [ ] c)



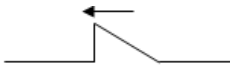
- [ ] d)



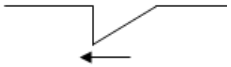
39. What would this pulse (it is moving left to right) look like after reflecting off of a free end?

☐ a)

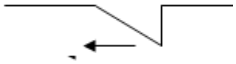
☐ b)



☐ c)



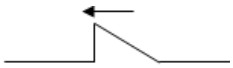
☐ d)



40. What would this pulse (it is moving left to right) look like after reflecting off of a fixed end?

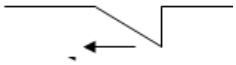
☐ a)

☐ b)



☐ c)

☐ d)



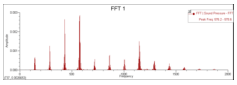
41. When two waves cancel each other out, it's called:

- [ ] a) constructive interference
- [ ] b) pass interference
- [ ] c) destructive interference
- [ ] d) equal intersection

42. When two add to each other, it's called:

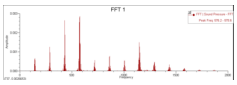
- [ ] a) constructive interference
- [ ] b) pass interference
- [ ] c) destructive interference
- [ ] d) equal intersection

43. This FFT graph shows a sound that was:



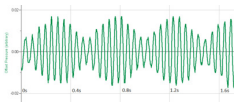
- [ ] a) produced by a tuning fork due to the regular intervals between all the peaks
- [ ] b) not produced by a tuning fork because the peak frequency is too high
- [ ] c) produced by a tuning fork due to the dominant frequency appearing in the audible range
- [ ] d) not produced by a tuning fork because of the multiple overtones

44. The FFT graph shows the fundamental frequency is _____ Hz and the peak frequency is _____ Hz



- [ ] a) 140, 560
- [ ] b) 560, 1880
- [ ] c) 140, 140
- [ ] d) 560, 560

45. Based upon the graph (time, in seconds, is the horizontal axis), what is the approximate beat frequency?



- [ ] a) 1 Hz
- [ ] b) 4.5Hz
- [ ] c) 2 Hz
- [ ] d) 6 Hz

46. Waves CAN transport _____ but CANNOT transport _____.

- [ ] a) force, acceleration
- [ ] b) energy, matter
- [ ] c) velocity, impulse
- [ ] d) matter, energy

47. For a tube that is open at both ends, what part(s) of a standing wave will occur at the ends?

- [ ] a) node at both ends
- [ ] b) antinode at both ends
- [ ] c) node at one end, antinode at the other
- [ ] d) a standing wave cannot be made this way

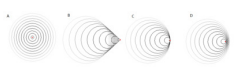
48. For a tube that is closed at both ends, what part(s) of a standing wave will occur at the ends?

- [ ] a) node at both ends
- [ ] b) antinode at both ends
- [ ] c) node at one end, antinode at the other
- [ ] d) a standing wave cannot be made this way

49. What is the smallest part of a standing sound wave that can be produced in a tube that is closed on one end and open on the other (like in your "Speed of Sound In Air" lab)?

- [ ] a) 1/4
- [ ] b) 1/2
- [ ] c) 3/4
- [ ] d) 1

50. Which of these Doppler simulations represents an object moving slower than the speed of the waves?



- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) D

51. Which of these Doppler simulations represents an object that is not moving?

- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) D

52. Which of these Doppler simulations represents an object that is moving faster than the speed of the waves?

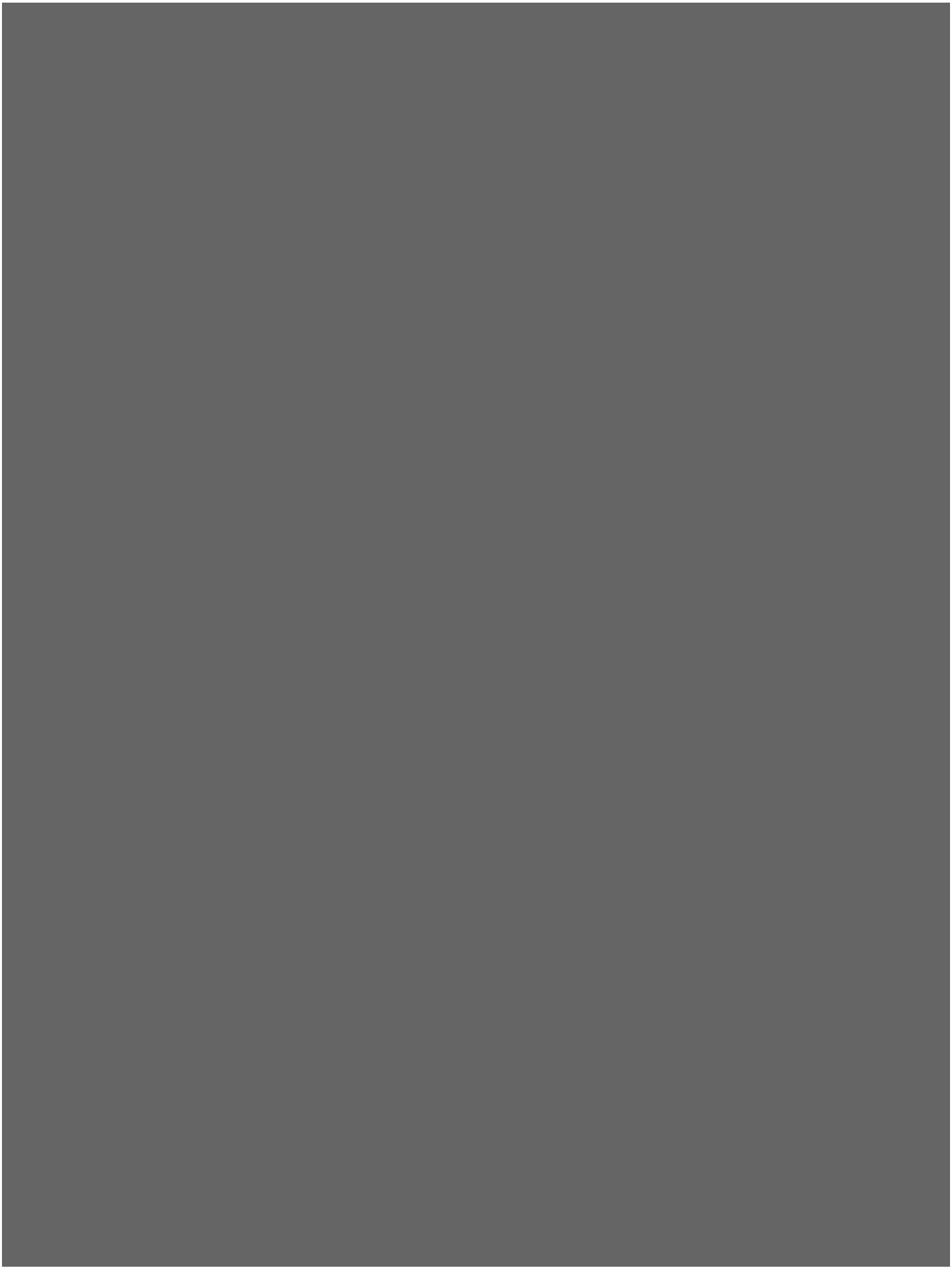
- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) D

53. Which of these Doppler simulations represents an object that is moving the same as the speed of the waves?

- [ ] a) A
- [ ] b) B
- [ ] c) C
- [ ] d) D

54. A student is safely standing at the side of the train station when a train goes by with its horn sounding. If the horn is emitting a frequency of 400 Hz, what could be the frequency the student hears as the train moves away from the student?

- [ ] a) 385 Hz
- [ ] b) 400 Hz
- [ ] c) 415 Hz
- [ ] d) none of these

Answer Key

1. b
2. a
3. d
4. b
5. a
6. a
7. b
8. b
9. d
10. d
11. a
12. c
13. b
14. c
15. a
16. a
17. b
18. d
19. d
20. b
21. a
22. c
23. b
24. b
25. b
26. b
27. a
28. d
29. a
30. a
31. a
32. b
33. c
34. a
35. b
36. b
37. a
38. d
39. b
40. c
41. c
42. a
43. d
44. a
45. c
46. b
47. b
48. a
49. a
50. d
51. a
52. b
53. c
54. a