

Towheed Iranian School
(International Section)
Second Term, Final Exams, 2015-2016

Mark
50

Subject: physics

Date: 12/6/2016

Name: _____

Grade: 9 , Section: A D

Exam time: 80 min

SI prefixes are provided on the last page. You can separate it, if you want.

Multiple choice. Circle the letter of best answer.[10]

1. A vision problem that happens when light is focused in front of the retina is
 - a. farsightedness.
 - b. nearsightedness.
 - c. color deficiency.
 - d. None of the above

2. Surgical eye correction works by
 - a. replacing the patient's cornea.
 - b. reshaping the patient's cornea.
 - c. replacing the patient's retina.
 - d. reshaping the patient's retina.

3. What causes color deficiency?
 - a. One or more types of cones respond to the wrong color.
 - b. One or more types of rods respond to the wrong color.
 - c. The irises respond to the wrong color.
 - d. The irises change color.

4. Polarized light consists of
 - a. intense light of only one color and wavelength.
 - b. light waves that vibrate in only one plane.
 - c. a mirror that can reflect light completely.
 - d. a lens that can refract light completely

5. Which statement about models is not correct?
- a. Models describe only part of reality.
 - b. Models help build hypotheses.
 - c. Models explain the most fundamental features of various phenomena.
 - d. Models manipulate a single variable or factor in an experiment.
6. The SI base unit used to measure mass is the
- a. gram.
 - b. pound.
 - c. kilogram.
 - d. kelvin.
7. What term describes a set of particles or interacting components considered to be a distinct physical entity for the purpose of study?
- a. system
 - b. model
 - c. hypothesis
 - d. controlled experiment
8. If repeated measurements agree closely but differ widely from the accepted value, these measurements are
- a. neither precise nor accurate.
 - b. accurate, but not precise.
 - c. both precise and accurate.
 - d. precise, but not accurate.
9. The height of the Burj Khalifa is 830 m, what is the best order-of-magnitude estimate in meters of the height of the Burj Khalifa?
- a. 1
 - b. 10
 - c. 100
 - d. 1000
10. Suppose that two quantities, A and B, have different dimensions. Which of the following arithmetic operations could be physically meaningful?
- a. $A + B$
 - b. $(A-B)/B$
 - c. $A \times B$
 - d. $A - B$

Matching: Match between each subject and an it's corresponding area of physics, write the letter in space the provided. [5]

- 11. _____heat and temperature
- 12. _____behavior of submicroscopic particles
- 13. _____light
- 14. _____specific types of repetitive motions
- 15. _____ motion and its causes, interactions between objects

- A. Quantum mechanics
- B. Vibrations and wave phenomena
- C. Thermodynamics
- D. Mechanics
- E. Optics

Essay questions

16. What is hologram? [1]

17. What is total internal reflection? [1]

18. Mention two differences between laser light and nonlaser light. [2]

19. Report the number of significant figures in each of the following values. [3]

- | | |
|----------------|-------------------------|
| 56000 | 0.0037 |
| 2.00010 | 3.0×10^7 |
| 0.003040 | 8.00 |

20. Round each of the following numbers to the indicated number of significant figures. [6]

- 26.59 to two significant figures
- 285.45 to four significant figures
- 0.006750 to two significant figures
- 362600 to two significant figures
- 6.992 to three significant figures
- 1.466 to three significant figures

21. Complete the following conversions.

5.3 Gg to g _____ [1]

70 ns to s _____ [1]

54 Mm to cm _____ [2]

84 mL to cm^3 _____ [1]

$3.5 \times 10^8 \mu\text{J}$ to dJ _____ [2]

6045670 mm^2 to m^2 _____ [2]

$5.4 \times 10^{-9} \text{km}^3$ to m^3 _____ [2]

$5.94 \frac{\text{cal}}{\text{s}}$ to $\frac{\text{kcal}}{\text{min}}$ _____ [2]

22. A student measures the mass of a sample as 8.54 g. Calculate the percentage error, given that the correct mass is 8.22 g. [2]

23. Carry out the following calculation. (Hint: answer should be rounded appropriately) [3]

$$2.2 \times 2.55 =$$

$$125.1 - 0.23 + 2.129 =$$

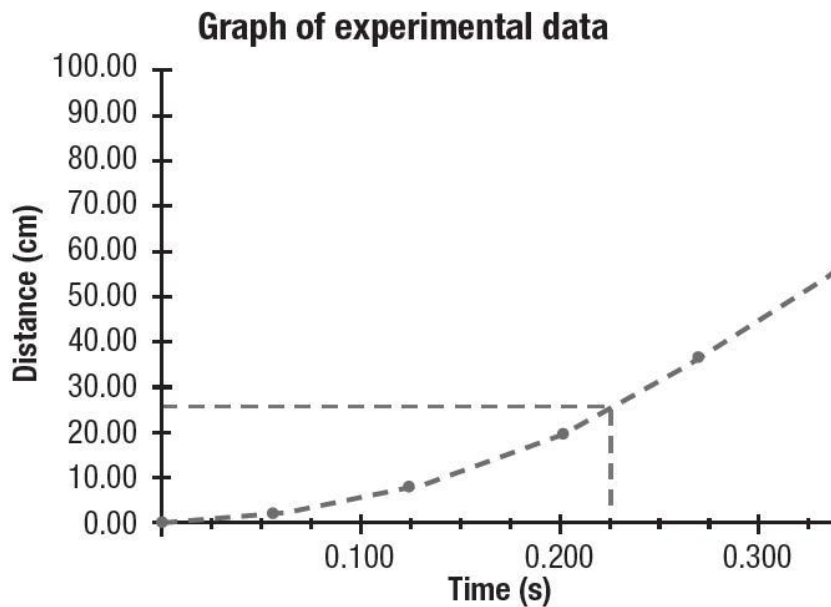
$$50.1 \div 5.2302 =$$

24. A student wants to calculate the volume (m^3) of a metal sample from its density (kg/m^3) and mass (kg) by the given formula. Use dimensional analysis to determine whether this equation might be valid. [2]

$$volume = \frac{mass}{density}$$

Graph:

The graph below shows the relationship between time and distance for a ball dropped vertically from rest. Use the graph to answer questions 25 and 26.



25. About how far has the ball fallen after 0.200 s?

- a. 5.00 cm
- b. 10.00 cm
- c. 20.00 cm
- d. 30.00 cm

26. Which of the following statements best describes the relationship between the variables?

- a. For equal time intervals, the change in position is increasing.
- b. For equal time intervals, the change in position is decreasing.
- c. For equal time intervals, the change in position is constant.
- d. There is no clear relationship between time and change in position.

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SI PREFIXES

Prefix	Unit abbreviation	Exponential factor	Meaning
tera	T	10^{12}	1 000 000 000 000
giga	G	10^9	1 000 000 000
mega	M	10^6	1 000 000
kilo	k	10^3	1000
hecto	h	10^2	100
deka	da	10^1	10
		10^0	1
deci	d	10^{-1}	1/10
centi	c	10^{-2}	1/100
milli	m	10^{-3}	1/1000
micro	μ	10^{-6}	1/1 000 000
nano	n	10^{-9}	1/1 000 000 000
pico	p	10^{-12}	1/1 000 000 000 000
femto	f	10^{-15}	1/1 000 000 000 000 000
atto	a	10^{-18}	1/1 000 000 000 000 000 000