

# MY SO PRACTICE TEST

DIVISION C - HIGH SCHOOL, GRADES 9-12

## PRACTICE TEST

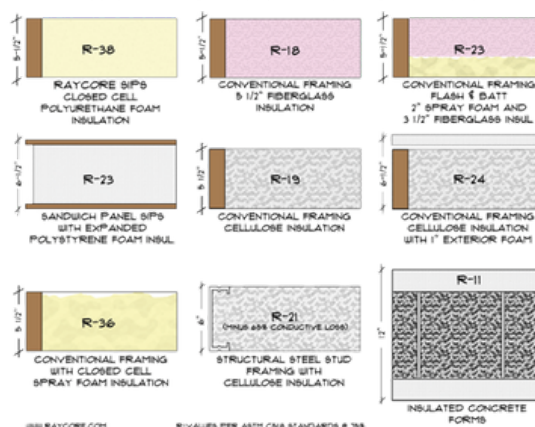
### Instructions

- You have 50 minutes to complete this test.
- You may write your answers directly in the test.
- You may use any notes or resources you have created or collected.
- You may use a calculator and scratch paper if necessary.
- Good Luck!

### Test Questions

- Which of the following is NOT a temperature scale?
  - Delisle
  - Faraday
  - Newton
  - Rømer
- Calculate the change in energy for a system where 15.6 kJ of heat flows into the system and 1.4kJ of work is done on the system.
  - 17.0 kJ
  - 17.0 kJ
  - 14.2 kJ
  - 14.2 kJ
- Based on the R Values table to the right, it can be assumed that the R value for conventional framing 5 1/2" Fiberglass insulation with 1" exterior foam will have an R-Value of ...
  - R-28
  - R-24
  - R-23
  - R-18

COMPARE INSULATION R-VALUES



4. The property that reflects random motions of particles in a particular substances.
  - a. Heat
  - b. Heat Capacity
  - c. Kinetic Energy
  - d. Temperature
5. A photovoltaic cell can be commonly found in which of the following locations
  - a. Cellular Phones
  - b. Nuclear Power Installations
  - c. Pocket Calculators
  - d. Wind Turbines
6. Which of the following kills more birds annually?
  - a. Wind Farms
  - b. Transportation Industry
  - c. Nuclear Power
  - d. Anything related to NASA
7. Tidal power....
  - a. Can be effectively used in any coastal location
  - b. Is only feebly near the equator
  - c. Requires very high tides
  - d. Can be found in place on 6 of the 7 continents
8. OTEC power would harness this feature of the earth
  - a. Overland wind currents like the Coriolis effect
  - b. Oxygen concentration differences created by plants in rainforests
  - c. Warm surface temperature in the ocean
  - d. Temperature/climate differences in Oregon
9. Geothermal energy would be common in this state.
  - a. Arizona
  - b. Maine
  - c. South Carolina
  - d. Wyoming
10. HDPE and LDPE could be recycled by...
  - a. Repurposing in current form
  - b. Melting and remodeling
  - c. Cutting into small pellets
  - d. Addition to other polymers
11. This type of waste could be mixed with yard-trimmings in composting programs.
  - a. Sewage
  - b. Paper pulp
  - c. Biological waste
  - d. Certain types of polymers

12. Which law of thermodynamics states the following: Two systems are in thermal equilibrium with each other if they are in thermal equilibrium with a third system?
- Zeroeth
  - First
  - Second
  - Third
13. Which law of thermodynamics states the following: The entropy of a system approaches a value that is constant as the temperature approaches absolute zero.
- Zeroeth
  - First
  - Second
  - Third
14. What form of heat transfer involves that transport of a fluid from one location to another?
- Advection
  - Convection
  - Diffusion
  - Radiation
15. What form of heat transfer involves that transport of a fluid from one location to another?
- Heat engine
  - Thermoelectric cooler
  - Thermal diode
  - Thermocouple
16. What material can have the lowest percentage in energy savings?
- Cardboard
  - Glass
  - Paper
  - Steel
17. Which of the following statements about temperature is correct?
- A system is at its coldest when temperature is in absolute zero
  - Temperature is inversely proportional to average kinetic in an ideal gas
  - Thermal motion does not have a value of zero when the temperature is absolute zero
  - The basic SI unit for temperature is Celcius
18. Which of the following can be recycled?
- Batteries
  - Food
  - Tires
  - All of the above
19. What form of recycling cleans and sorts each material before collection?
- Buy-back center
  - Curbside collection
  - Distribute recycling
  - Source separation

20. Which of the following countries is the largest hydroelectric producer?
- Brazil
  - China
  - India
  - United States
21. According to the Maxwellian speed distribution, as the temperature increases the number of molecules with speeds within a small interval near the most probable speed:
- Decreases at high temperatures and increases at low
  - Increases at high temperatures and decreases at low
  - Increases
  - Stays the same
  - Decreases
22. A piston/cylinder with a cross-sectional area of  $0.01 \text{ m}^2$  is resting on the stops. With an outside pressure of  $100 \text{ kPa}$ , what should be the water pressure to lift the piston?
- $178 \text{ kPa}$
  - $188 \text{ kPa}$
  - $198 \text{ kPa}$
  - $208 \text{ kPa}$
  - $218 \text{ kPa}$
23. With thermodynamics, one cannot determine \_\_\_\_\_.
- The speed of a reaction
  - The direction of a spontaneous reaction
  - The extent of a reaction
  - The value of the equilibrium constant
  - The temperature at which a reaction will be spontaneous
24. Kinetic Theory is based on an ideal gas model. The following statements about the ideal gas are true EXCEPT:
- The average molecular kinetic energy is directly proportional to the absolute temperature
  - All molecules move with the same speed
  - All molecules make elastic collisions with each other and the walls of the container
  - The attractive force between the molecules can be ignored
  - All molecule obey laws of classical mechanics
25. When two bodies are in thermal equilibrium with a third body, they are also in thermal equilibrium with each other. This statement is called:
- First law of thermodynamics
  - Kelvin Planck's Law
  - Second law of thermodynamics
  - Zeroth law of thermodynamics
  - None of the above

# ANSWER KEY

- |     |          |     |          |
|-----|----------|-----|----------|
| 1.  | <b>B</b> | 15. | <b>C</b> |
| 2.  | <b>A</b> | 16. | <b>C</b> |
| 3.  | <b>C</b> | 17. | <b>A</b> |
| 4.  | <b>D</b> | 18. | <b>D</b> |
| 5.  | <b>C</b> | 19. | <b>D</b> |
| 6.  | <b>B</b> | 20. | <b>B</b> |
| 7.  | <b>C</b> | 21. | <b>E</b> |
| 8.  | <b>C</b> | 22. | <b>C</b> |
| 9.  | <b>D</b> | 23. | <b>A</b> |
| 10. | <b>B</b> | 24. | <b>B</b> |
| 11. | <b>A</b> | 25. | <b>D</b> |
| 12. | <b>A</b> |     |          |
| 13. | <b>D</b> |     |          |
| 14. | <b>A</b> |     |          |