

Pre Evaluation Technology Challenge 2005



Directions For Numbers 1-25 : Read each of the following multiple-choice items and the possible answers carefully. Mark the letter of the correct answer on your answer sheet or as instructed by your teacher. **Remember: Make no marks on this test.**

1

What is the basis for all complex machines and technical systems?

- A Nuts and bolts
- B Wires
- C Simple machines
- D Computers

2

Thinking about possible solutions to a problem is called:

- A Creativity.
- B Brainstorming.
- C Designing.
- D Prototyping.

3

A gear is based on the same principle as which simple machine?

- A Inclined plane
- B Screw
- C Lever
- D Wedge

4

A working model used to test a design concept by making the actual observations and necessary adjustments is called a:

- A Design.
- B Project.
- C Model.
- D Prototype.

5

What identifies the desired elements and features of a product or system?

- A Criteria
- B Constraints
- C Controls
- D Commands

6

The process of applying creative skills in the development of an invention or innovation is a definition of:

- A Art.
- B Design.
- C Technology.
- D Science.

7

Hydraulic and pneumatic systems use what to perform work?

- A Fluids
- B Levers
- C Gears
- D Electronics

8

What type of current is used primarily in electronic devices due to the fact that many components work more efficiently with it?

- A Peak
- B Direct
- C Alternating
- D Rip

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9 Which systems require a reservoir storage facility?

- A Mechanical
- B Electrical
- C Hydraulic
- D Pneumatic

10 The modification of the natural environment in order to satisfy perceived human needs and wants is a definition of:

- A Art.
- B Science.
- C Technology.
- D Mathematics.

11 What is the first step in the design process?

- A Researching the idea
- B Defining the problem
- C Brainstorming
- D Making a model or prototype

12 Rube Goldberg's cartoons demonstrated performing simple activities with:

- A Criteria based machines.
- B Extremely complex machines.
- C Design briefs.
- D Levers and inclined planes.

13 Which system uses air to perform work?

- A Mechanical
- B Electrical
- C Hydraulic
- D Pneumatic

14 The ability to do work is?

- A Energy
- B Power
- C Friction
- D Voltage

15 All electronic circuits need a power supply, conductor, and a:

- A Lever.
- B Hydraulic.
- C Pneumatic.
- D Load.

16 How many volts will two 1.5 V batteries placed in series produce?

- A 0
- B 1.5
- C 3
- D 9

17 A light bulb draws 1.5 Amps. The voltage on the circuit is 6 Volts. Using $E = IR$, what is the resistance?

- A 3 Amps
- B 3 Ohms
- C 4 Amps
- D 4 Ohms

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- 18** Given a lever with an 8' effort arm and a 4' resistance arm, how many pounds of force would you need to move a 120 lb load?
(Hint: $L = (F * E) / R$)
- A 24
 - B 60
 - C 120
 - D 240
- 19** Given a mechanical advantage of 3 and an applied force of 60 lbs, what is the load (in pounds)? (Hint: $MA = L / F$)
- A 20
 - B 60
 - C 180
 - D 240
- 20** How many volts will two 1.5 V batteries placed in parallel produce?
- A 0
 - B 1.5
 - C 3
 - D 9
- 21** The number of times a resistance force is greater than the effort force is called the:
- A Resistance ratio.
 - B Effort ratio.
 - C Mechanical advantage.
 - D Horse power.
- 22** Whose law of fluid systems states pressure is applied equally to all parts?
- A Pascal
 - B Boyle
 - C Charles
 - D Bernoulli
- 23** In electronics, what is the flow of electrons called?
- A Voltage
 - B Current
 - C Resistance
 - D Ohm
- 24** Which of the following is **NOT** a type of electrical circuit?
- A Series
 - B Parallel
 - C Combination
 - D Microchip
- 25** Whose law of fluid systems states the higher the speed of a flowing fluid, the lower the pressure?
- A Pascal
 - B Boyle
 - C Charles
 - D Bernoulli

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?	⊙	Answer/ Scale	Objective	?	⊙	Answer/ Scale	Objective
1	1	C	TC20.03 Technology	14	14	A	TC20.03 Technology
2	2	B	TC20.03 Technology	15	15	D	TC20.03 Technology
3	3	C	TC20.03 Technology	16	16	C	TC20.01 Math
4	4	D	TC20.03 Technology	17	17	D	TC20.01 Math
5	5	A	TC20.03 Technology	18	18	B	TC20.01 Math
6	6	B	TC20.03 Technology	19	19	C	TC20.01 Math
7	7	A	TC20.03 Technology	20	20	B	TC20.01 Math
8	8	B	TC20.03 Technology	21	21	C	TC20.02 Science
9	9	C	TC20.03 Technology	22	22	A	TC20.02 Science
10	10	C	TC20.03 Technology	23	23	B	TC20.02 Science
11	11	B	TC20.03 Technology	24	24	D	TC20.02 Science
12	12	B	TC20.03 Technology	25	25	D	TC20.02 Science
13	13	D	TC20.03 Technology				

Minimum points
required to achieve
mastery category

Total questions on test: 25

Objectives measured: 3	Items	Points	●	◐	Questions measuring this objective
TC20.03 Technology	15	15	11	10	1 2 3 4 5 6 7 8 9 10 11
TC20.03 Technology					12 13 14 15
TC20.01 Math	5	5	4	3	16 17 18 19 20
TC20.02 Science	5	5	4	3	21 22 23 24 25
Totals		25	19	16	

TC20

? = Test Question Number ⊙ = line on GP Form

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Items used in test

?	Item name	?	Item name	?	Item name
1	TC20.03.00.03	10	TC20.03.00.11	18	TC20.01.00.03
2	TC20.03.00.13	11	TC20.03.00.01	19	TC20.01.00.05
3	TC20.03.00.06	12	TC20.03.00.08	20	TC20.01.00.02
4	TC20.03.00.10	13	TC20.03.00.04	21	TC20.02.00.03
5	TC20.03.00.09	14	TC20.03.00.14	22	TC20.02.00.01
6	TC20.03.00.12	15	TC20.03.00.15	23	TC20.02.00.05
7	TC20.03.00.02	16	TC20.01.00.04	24	TC20.02.00.04
8	TC20.03.00.07	17	TC20.01.00.01	25	TC20.02.00.02
9	TC20.03.00.05				

TC20

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