

## Technology Bowl Challenge Written Test - Middle School

### True/False

Indicate whether the sentence or statement is true or false.

- \_\_\_ 1. Farming is a type of biotechnology.
- \_\_\_ 2. The output of a system may also include pollution.
- \_\_\_ 3. The process part of a system includes management.
- \_\_\_ 4. Traffic signals are an example of how communication is used to control machines.
- \_\_\_ 5. All electric devices emit electromagnetic radiation.
- \_\_\_ 6. Communication devices like computers help us protect our privacy.
- \_\_\_ 7. Telemarketing is the term used to describe buying goods through television shoppers' networks.
- \_\_\_ 8. Cellular phones use radio waves to transmit conversations.
- \_\_\_ 9. A patent ensures that no one can ever copy an invented object or process.
- \_\_\_ 10. Iron ore is one type of industrial material.
- \_\_\_ 11. Engineering involves predicting the future behavior of materials and systems.
- \_\_\_ 12. Although there are other considerations, most make-or-buy decisions are based on cost.
- \_\_\_ 13. Assembly operations are always done by automatic assembly machines.
- \_\_\_ 14. The level of quality must be set before production actually begins.
- \_\_\_ 15. One use of bar coding is to keep track of inventory.
- \_\_\_ 16. People will not be needed at all for automatic factories.
- \_\_\_ 17. The schedule must allow time for things like bad weather.
- \_\_\_ 18. If a building is to have a basement, the foundation walls will become the building's basement walls.
- \_\_\_ 19. Sometimes the soil may have to have certain chemicals added to it to make sure it is firm enough to support the structure.
- \_\_\_ 20. The cost of operating transportation support facilities is greater than the cost of operating the vehicles.
- \_\_\_ 21. Things done to actually cause the movement of passengers and cargo are called en-route services.
- \_\_\_ 22. Carrying your books to school would not be considered a form of transportation.
- \_\_\_ 23. Break bulk cargo is loose cargo, such as sand and gravel.
- \_\_\_ 24. Distribution pipelines are the main long-distance lines that transport the cargo.
- \_\_\_ 25. The same standard size container is used for containerization, no matter what mode of transportation is used.
- \_\_\_ 26. A jet way is one type of transportation vehicle that can be used in intermodal transportation.
- \_\_\_ 27. Most automobiles are powered by reciprocating, four-stroke cycle internal-combustion engines.
- \_\_\_ 28. Joseph Lister developed disinfectants, which saved the lives of many surgery patients.
- \_\_\_ 29. By changing the genetic code of an organism, scientists may be able to cure disease.
- \_\_\_ 30. Bio-ethics is a set of rules that guides the behavior of those working in bio-related fields.

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- \_\_\_ 31. During brainstorming, each solution must be carefully evaluated.
- \_\_\_ 32. The instrument panels on an airplane are an example of communication technology.
- \_\_\_ 33. The purpose of simulation is to "work the bugs out" of a solution before it is put into effect.
- \_\_\_ 34. The problem-solving process and the scientific method are completely different from each other.
- \_\_\_ 35. The superstructure of a building is usually below ground level.
- \_\_\_ 36. When roughing in utilities, the ductwork for HVAC is usually installed first.
- \_\_\_ 37. Cofferdams are temporary structures.
- \_\_\_ 38. Space shuttles can be called the first true space ships.
- \_\_\_ 39. Since space shuttles have powerful engines, they do not need the help of a booster rocket to get into space.
- \_\_\_ 40. Sewage includes only the solid wastes that are carried by sewers.

### Multiple Choice

*Identify the letter of the choice that best completes the statement or answers the question.*

- \_\_\_ 41. Taking an X ray is an example of...
  - a. communication technology.
  - b. bio-related technology.
  - c. combined technology.
  - d. the interrelationship between science and technology.
- \_\_\_ 42. Genetic engineering involves...
  - a. using math to determine the strength of a structure.
  - b. studying the impacts of technology on human culture.
  - c. creating improved plant varieties in order to provide new food.
  - d. determining the effects of technology on the environment.
- \_\_\_ 43. Chlorofluorocarbons (CFCs)...
  - a. are a type of raw material.
  - b. add to our problem of too much garbage.
  - c. harm the earth's ozone layer.
  - d. are used extensively in manufacturing today.
- \_\_\_ 44. Which of the following is **not** a step of the problem-solving process?
  - a. Select the best solution.
  - b. State the problem clearly.
  - c. Form a hypothesis.
  - d. Develop possible solutions.
- \_\_\_ 45. Which of the following is **not** one of the three kinds of thinking skills?
  - a. creative thinking skills
  - b. decision-making skills
  - c. critical thinking skills
  - d. problem-solving thinking skills
- \_\_\_ 46. In order to select the best solution, all the possible solutions must be...
  - a. tested.
  - b. evaluated.
  - c. implemented.
  - d. simulated.
- \_\_\_ 47. Energy may come from...
  - a. inexhaustible sources.
  - b. nonrenewable sources.
  - c. renewable sources.
  - d. all of these.
- \_\_\_ 48. All the activities that need to take place for a system to give the expected result make up the...
  - a. resources.
  - b. input.
  - c. process.
  - d. output.

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- \_\_\_ 49. To get a printed version of a drawing made on a computer, you can use a device called a...
- a. modem.
  - b. plotter.
  - c. scanner.
  - d. copier.
- \_\_\_ 50. If you repeat a message into the phone because a friend did not understand it the first time, you are...
- a. providing input.
  - b. providing feedback.
  - c. changing the output.
  - d. reinforcing the impact.
- \_\_\_ 51. A communication channel is...
- a. the number at which you set your radio or TV dial.
  - b. a device used to send a message.
  - c. a special number or code assigned to a particular receiving device.
  - d. the path over which a message must pass.
- \_\_\_ 52. Which of the following is **not** an example of a computer input unit?
- a. mouse
  - b. keyboard
  - c. video monitor
  - d. modem
- \_\_\_ 53. Which of the following statements is **not** true about virtual reality?
- a. It is sometimes called telepresence.
  - b. You are able to interact with the computer.
  - c. It uses 3-D graphics.
  - d. The only real use for virtual reality is as entertainment.
- \_\_\_ 54. Which of the following statements about digital television is **not** true?
- a. Digital television offers better-quality transmission.
  - b. All television signals will be broadcast digitally by 2010.
  - c. Digital television is also known as HDTV.
  - d. Digital televisions are like televisions combined with computers.
- \_\_\_ 55. Which of the following is **not** true of optical fibers?
- a. They help reduce background noises.
  - b. Signals fade over long distances and need boosting.
  - c. They are made of flexible glass.
  - d. They are much better for handling high-speed data transmission than twisted-pair wires.
- \_\_\_ 56. If you were making an announcement for a club meeting and put the key words in larger letters to call attention to them, you would be using...
- a. proportion.
  - b. contrast.
  - c. perspective.
  - d. a logo.
- \_\_\_ 57. The part of the camera that controls how long light is allowed to reach the film is the...
- a. aperture.
  - b. shutter.
  - c. lens.
  - d. light meter.
- \_\_\_ 58. Casting molten metal in a mold is an example of...
- a. conditioning.
  - b. separating.
  - c. forming.
  - d. combining.
- \_\_\_ 59. At which stage of processing does a material increase in value?
- a. preprocessing
  - b. materials processing
  - c. postprocessing
  - d. all of these
- \_\_\_ 60. Producing as many quality products as possible in the least amount of time is called...
- a. on-demand production.
  - b. continuous production.
  - c. efficiency.
  - d. diversifying.
- \_\_\_ 61. Putting a coat of paint on a part is an example of...
- a. separating.
  - b. combining.
  - c. conditioning.
  - d. forming.

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- \_\_\_ 62. Which of the following **cannot** be done using a computer?
- a. analyze a product's design before any parts are made
  - b. make a working drawing
  - c. make a mock-up
  - d. perform a value analysis
- \_\_\_ 63. Analyzing a prototype to see if it works as predicted is called...
- a. structural analysis.
  - b. functional analysis.
  - c. value analysis.
  - d. failure analysis.
- \_\_\_ 64. A product that can be varied by adding certain basic units, such as a car body that can be equipped with a 4-, 6-, or 8-cylinder engine, is an example of...
- a. interchangeability of parts.
  - b. modular design.
  - c. design for assembly.
  - d. standardization.
- \_\_\_ 65. A(n) \_\_\_?\_\_\_ drawing shows parts in their proper places and how they fit together.
- a. detail
  - b. schematic
  - c. thumbnail
  - d. assembly
- \_\_\_ 66. Which of the following is **not** true of a pilot run?
- a. It serves as training time for workers.
  - b. Engineers speed up and slow down equipment to see the effect on production.
  - c. Its main purpose is to find and correct production problems.
  - d. Production is delayed if corrections must be made.
- \_\_\_ 67. After they are completed, electronic products are operated for several hours. This process is called...
- a. debugging.
  - b. go/no go testing.
  - c. burn in.
  - d. automatic processing.
- \_\_\_ 68. The \_\_\_?\_\_\_ helps make sure proper inventory levels are maintained.
- a. planning department
  - b. purchasing department
  - c. WIP
  - d. production schedule
- \_\_\_ 69. The type of packaging a product gets might be determined by...
- a. how fragile the item is.
  - b. if the product is a food item that could deteriorate.
  - c. consumer demands.
  - d. all of these.
- \_\_\_ 70. A large discount store is one kind of...
- a. retail store.
  - b. wholesale operation.
  - c. original equipment manufacturer.
  - d. direct sales operation.
- \_\_\_ 71. An example of a computerized quality-control device is a(n)...
- a. flexible machining center.
  - b. AGVs.
  - c. coordinate measuring machine.
  - d. programmable controller.
- \_\_\_ 72. The "hand" of a robot is called a(n)...
- a. gripper.
  - b. programmable controller.
  - c. working envelope.
  - d. end effector.
- \_\_\_ 73. The "curing" of concrete is the...
- a. process of smoothing it.
  - b. chemical reaction that makes it hard and strong.
  - c. drying process.
  - d. process of placing it.
- \_\_\_ 74. Which of the following is **not** true of steel?
- a. made from iron and carbon
  - b. can be formed into various structural shapes
  - c. resistant to corrosion
  - d. rapidly loses strength when exposed to very high temperatures

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- \_\_\_ 75. Which of the following is **not** considered when choosing a lot on which to build?
- a. the design of the planned structure
  - b. zoning laws
  - c. climate conditions
  - d. shape of the lot
- \_\_\_ 76. Measuring and marking the site in order to identify the boundaries of the property is called...
- a. staking out a claim.
  - b. laying out the site.
  - c. surveying.
  - d. finishing the site.
- \_\_\_ 77. The sizes and locations of driveways, sidewalks, and patios are...
- a. indicated on the working drawings.
  - b. marked by the surveyor.
  - c. determined by the landscape architect.
  - d. all of these.
- \_\_\_ 78. The part of the dam that blocks the flow of water is the...
- a. embankment.
  - b. outlet works.
  - c. spillway.
  - d. lock.
- \_\_\_ 79. A classification yard is where...
- a. freight is loaded onto or unloaded from trains.
  - b. train cars are sorted according to type.
  - c. communication facilities for rail companies are housed.
  - d. train cars are sorted according to destination.
- \_\_\_ 80. Containerization...
- a. reduces the amount of cargo handling.
  - b. saves labor and money.
  - c. reduces chances for theft of cargo.
  - d. all of these.
- \_\_\_ 81. Which of the following is **not** true of linear-motion engines?
- a. no moving parts needed to transfer power to vehicle
  - b. very limited choice of fuels
  - c. very expensive to manufacture
  - d. directional change of motion not possible
- \_\_\_ 82. Hybrids are an example of   ?  , which is also called artificial selection.
- a. cloning
  - b. aeroponics
  - c. selective breeding
  - d. gene softening
- \_\_\_ 83.   ?  , also called ergonomics, is the design of equipment and environments to promote human health, safety, and well being.
- a. The built environment
  - b. Human factors engineering
  - c. Machine design
  - d. Bio-engineering
- \_\_\_ 84. The path over which electric current or impulses flow in a communication device is called a...
- a. bit.
  - b. circuit.
  - c. byte.
  - d. modem.
- \_\_\_ 85. Pascal, FORTRAN, COBOL, and BASIC are all names of...
- a. digital libraries.
  - b. machine languages.
  - c. programming languages.
  - d. computers.
- \_\_\_ 86. The part of the camera that controls the amount of light that can reach the film is the...
- a. lens.
  - b. shutter.
  - c. light meter.
  - d. aperture diaphragm.
- \_\_\_ 87. The   ?   drawing shows two or more different views drawn at right angles to one another.
- a. isometric
  - b. oblique
  - c. multi-view
  - d. perspective
- \_\_\_ 88. A system that senses your head, eye, hand, and finger movements and responds to them is...
- a. computerized tomography.
  - b. virtual reality.
  - c. CD-ROM.
  - d. myoelectric.

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- \_\_\_\_\_ 89. The automatic guided vehicle system (AGVS) and the automated storage and retrieval system (AS/RS) are used for...
- a. space travel.
  - b. material handling.
  - c. bookkeeping.
  - d. vehicle engineering.
- \_\_\_\_\_ 90. A process chart shows...
- a. why a prototype failed.
  - b. the plant layout.
  - c. the sequence of manufacturing steps for a product.
  - d. how all the parts of a product fit together.
- \_\_\_\_\_ 91. The working drawings that show the finished appearance of the outside of the structure, as viewed from ground level, are...
- a. site plans.
  - b. elevations.
  - c. scale drawings.
  - d. renderings.
- \_\_\_\_\_ 92. The supports at the ends of a bridge are called...
- a. piers.
  - b. trusses.
  - c. piles.
  - d. abutments.
- \_\_\_\_\_ 93. Contractors usually employ \_\_\_?\_ who are responsible for obtaining the right materials at the right time.
- a. purchasing agents
  - b. subcontractors
  - c. architects
  - d. monitors
- \_\_\_\_\_ 94. The most common railroad car is the...
- a. hopper.
  - b. boxcar.
  - c. liquified gas car.
  - d. hoist car.
- \_\_\_\_\_ 95. James Watson worked on the structure of...
- a. hospitals.
  - b. propagation.
  - c. sewage facilities.
  - d. DNA.
- \_\_\_\_\_ 96. The technique used in reproducing a living organism is called...
- a. growth.
  - b. adaptation.
  - c. propagation.
  - d. conversion.
- \_\_\_\_\_ 97. Bioethics has to do with...
- a. rules or standards.
  - b. adaptation.
  - c. cloning.
  - d. inputs.
- \_\_\_\_\_ 98. Which of the following is used as scaffolding in tissue engineering?
- a. steel
  - b. prostheses
  - c. polymers
  - d. cotton
- \_\_\_\_\_ 99. A \_\_\_?\_ is an offspring of two plants or animals and has characteristics of both.
- a. recombinant
  - b. hybrid
  - c. species
  - d. clone
- \_\_\_\_\_ 100. The design of tools, machines, and furniture that promote human safety and well-being is called...
- a. ergonomics.
  - b. controlled environment engineering.
  - c. bioengineering.
  - d. integrated management.

## Technology Bowl Challenge Written Test - Middle School

### Technology Bowl Challenge Written Test - Middle School Answer Section

#### TRUE/FALSE

1. T
2. T
3. T
4. T
5. T
6. F
7. F
8. T
9. F
10. F
11. T
12. T
13. F
14. T
15. T
16. F
17. T
18. T
19. T
20. T
21. F
22. F
23. F
24. F
25. F
26. F
27. T
28. T
29. T
30. T
31. F
32. T
33. T
34. F
35. F
36. T
37. T
38. T
39. F
40. F

## Technology Bowl Challenge Written Test - Middle School

### MULTIPLE CHOICE

41. B
42. C
43. C
44. C
45. D
46. B
47. D
48. C
49. B
50. A
51. D
52. C
53. D
54. C
55. B
56. B
57. B
58. C
59. B
60. C
61. B
62. C
63. B
64. B
65. D
66. D
67. C
68. B
69. D
70. A
71. C
72. D
73. B
74. C
75. C
76. C
77. A
78. A
79. D
80. D
81. B
82. C
83. B

## Technology Bowl Challenge Written Test - Middle School

- 84. B
- 85. C
- 86. D
- 87. C
- 88. B
- 89. B
- 90. C
- 91. B
- 92. D
- 93. A
- 94. B
- 95. D
- 96. C
- 97. A
- 98. C
- 99. B
- 100. A