1. Which of the following best describes what you must have to fly an unmanned aircraft system professionally? Select all that apply. (1.C)

1. A remote pilot certificate
2. A TSA license
3. Be at least 16 years of age
4. Understand English
5. Have at least 40 hours logged

2. Which best describes aerospace? (1.A)

1. The industry involved with the design and manufacturing of aircraft and spacecraft   
   that operate both outside and inside Earth’s atmosphere.
2. The flight of unmanned aircraft within Earth’s atmosphere.
3. Any structure that can maneuver through the air.
4. The design, development, production, operation, and use of aircraft within Earth’s atmosphere.

3. The International Space Station \_\_\_\_\_\_\_. (1.D)

1. has been orbiting the earth for more than 40 years
2. has humans living on it for one week at a time, maximum
3. is an orbiting research laboratory
4. Is where satellites are built

4. What is the difference between a UAV and a UAS? (1.C)

1. A UAV and a UAS are different names for a drone
2. A UAV is a drone and a UAS is a research laboratory
3. A UAV is one component of a UAS
4. A UAV is a satellite and a UAS is not

5. An engineer works on a Boeing 787 pilot seat. The Boeing 787 is a commercial jet airliner.   
Which industry does the engineer work for? (1.A)

1. Space industry
2. Aviation industry
3. Glider industry
4. Pilot industry

6. What are reconnaissance aircraft used for? (1.B)

1. Acquiring information about an area for military purposes
2. Transporting mail cargo overseas
3. Launching air-to-ground weaponry to disable enemy forces
4. Surveying U.S. borders in search of whale migration

7. How is general aviation’s primary purpose described? (1.B)

1. Accomplishing every mission involving cargo for compensation on unscheduled routes
2. Accomplishing every mission not covered by the commercial airlines or military
3. Accomplishing every mission except unmanned aircraft systems
4. Accomplishing every mission involving carrying passengers on scheduled routes

8. The purpose of military aviation is to \_\_\_\_\_\_\_. (1.B)

1. defend the nation and its interests
2. transport soldiers and military supplies
3. protect the U.S. coastline
4. build effective fighter jets and bombers

9. An unmanned aircraft system includes which of the following? Select all that apply. (1.C)

a. Pilot  
b. Human passenger  
c. Controllers and sensors

d. Unmanned aircraft vehicle

e. Parachutes

10. Which of the following statements are true? Select all that apply. (1.A)

1. Aviation and aerospace deal with all spacecraft outside Earth’s atmosphere.
2. Aviation is a part of aerospace.
3. Aviation deals with pilots and aerospace deals with spacecraft.
4. Aviation deals with all aircraft within Earth’s atmosphere.
5. Aviation deals with all aircraft and spacecraft.

11. True or false. Current space exploration research includes studying Earth. (1.D)

12. Which of the following are safety guidelines for flying unmanned aircraft systems? Select all that apply. (1.C)

1. Fly at or below 400 feet
2. Do not fly over people
3. Keep within visual line of sight
4. Fly below 50 mph
5. Fly over large crowds

13. Which type of technology would be best suited for studying and exploring the surface of the   
planets and moons in our solar system? (1.D)

1. Rover
2. Satellite
3. Space-based telescope
4. Drones

14. Which of these strategies do engineers use to develop solutions to a problem? (1.A)

1. Assume the outcome will be the same after each test.
2. Conduct only one test.
3. Design new models.
4. Use different measurements in results.

15. What strategies do commercial airlines use to maximize profit? Select all that apply. (1.B)

1. Provide flights to all major cities.
2. Add more seats on airplanes.
3. Negotiate for better prices on fuel and equipment.
4. Use smaller airplanes on less popular routes.
5. Lease passenger aircraft to the military for secret missions.

16. What is one reason law enforcement uses general aviation aircraft? (1.A)

1. To transport suspects to jail
2. To assist law enforcement officers on the ground with suspect apprehension
3. To escort passenger airliners in an emergency
4. For aerial spraying during a fire

17. Which statement is true about the engineering practices? (1.A)

1. They can be used many times or used only once.
2. They can be used many times, used only once, or not used at all.
3. They must all be used, but not necessarily in order.
4. They must all be used in order.

18. Among other things, space exploration seeks to determine if other planets have \_\_\_\_\_\_\_. (1.D)

1. water
2. toxic waste
3. mountains
4. oxygen

19. Engineering practices fit within three spheres of activity – investigate, evaluate, and \_\_\_\_\_\_\_\_\_\_\_\_\_\_. (1.A)

1. articulate
2. measure
3. develop solutions
4. collect data

20. Fill in the blank. The Karman line represents the boundary between Earth and outer space. (1.D)

21. Identify and explain two areas of space exploration that are being pursued today. (1.D)

* Launch vehicles for deep space – traveling further into space than ever before
* Studying Earth – using space to increase our understanding of Earth
* Living in space – determining if space can be a new habitat for humans
* Studying the Solar System – learning about how the solar system formed
* Studying the Universe – learn about planets beyond our solar system and understanding how the Universe was formed
* Space tourism – determining how people can travel to space for recreational and business purposes
* Space mining – gathering raw materials from asteroids and other planets

22. Describe an important safety consideration when operating an unmanned aircraft system. (1.C)

Possible answers include keeping your UAS in sight at all times, remaining well clear of and not interfering with manned aircraft operations, seeing and avoiding other aircraft and obstacles at all times, not intentionally fly over people, contacting the airport and control tower before flying within five miles of an airport or heliport, ensuring the operating environment is safe, checking and following all local laws and ordinances before flying over private property.

23. Passenger airlines redesign seats and cabins to fit more people in each airplane. Describe a positive and a negative consequence that these changes have on the passengers. (1.B)

Airplane cabins designed to fit more people can make passengers feel crowded and uncomfortable. However, this could lower costs for the customer.

24. Identify four of the eight engineering practices discussed in class. (1.A)

* Define problems
* Develop and use models
* Plan and carry out investigations
* Analyze and interpret data
* Use mathematics and computational thinking
* Construct explanations and design solutions
* Engage in argument from evidence
* Develop and use new models
* Carry out investigation
* Obtain, evaluate, and communicate information

25. Describe two different ways that UAS can contribute to society. (1.C)

Possible answers could include tasks that are dirty, dull, or dangerous such as search and rescue, surveillance, photography, agricultural purposes, security, scientific research, fire-fighting, or warfare.