



DRONES

WORKSHOPS

For Farmers

The focus is primarily on how drones can be used in agricultural practices. Farmers participating in our program will learn:

- **How to fly a drone through real, hands-on experiences (“try before you buy”)**
- **How drones can be used in different agricultural applications**
- **The different types of drones, options and costs**
- **Laws and federal regulations for drone use**

January 28, 2020, 4pm to 7pm
Sinking Creek Baptist Church
2313 Elizabethton Hwy
Johnson City, TN





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Activity #1

METAR for Nashville Airport

KBNA 121953Z 29014KT 10SM BKN027 OVC035 12/08 A2981

TAF for Nashville Airport

KBNA 121730Z 1218/1318 23011KT 6SM -SHRA BR BKN015 OVC025 FM121900 29014KT
P6SM OVC025 FM122300 27008KT P6SM FEW250

METAR for Boston Airport

KBOS 122054Z 09014KT 1/2SM SN FZFG SCT006 OVC010 A3029

TAF for Boston Airport

KBOS 121743Z 1218/1324 07010KT P6SM VCSH OVC025 FM121900 09010KT 2SM -SN
OVC025 FM122100 09014KT 1/2SM SN OVC010 FM130100 10018KT 2SM -RAPL BR
OVC008 FM130500 08018KT 2SM -RA BR OVC008 FM131000 07004KT 1SM BR VCSH
OVC003 FM131400 26012KT 4SM BR BKN008 FM131600 25013KT P6SM BKN035



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Activity #2

Chart 1

1. You plan to fly your drone over a tower located at 35.62° N, 84.42° W. What is the maximum altitude you can fly?
2. What controlled airspace is the stadium in Knoxville located in?
3. At what altitude can you safely fly a drone at the stadium without a waiver?
4. What is the length of the longest runway at the Gatlinburg-Pigeon Forge airport?
5. You have been hired to inspect the railroad between Madisonville and Vonore. Do you need any special waivers to do so?
6. Assuming there are no changes in elevation, how tall is the tower right next to the McGhee Tyson Airport?

Chart 2

1. What frequency would you use to find out the weather conditions at the Murfreesboro airport?
2. What class airspace is the BOMAR-SHELBYVILLE airport and how high does it go?
3. If you flew your drone 10 nautical miles west of Norene, TN, what class airspace would you be in?
4. What is the height of tallest object between $86^{\circ}0'W$ and $86^{\circ}30'W$ and $35^{\circ}30'N$ and $36^{\circ}0'N$?

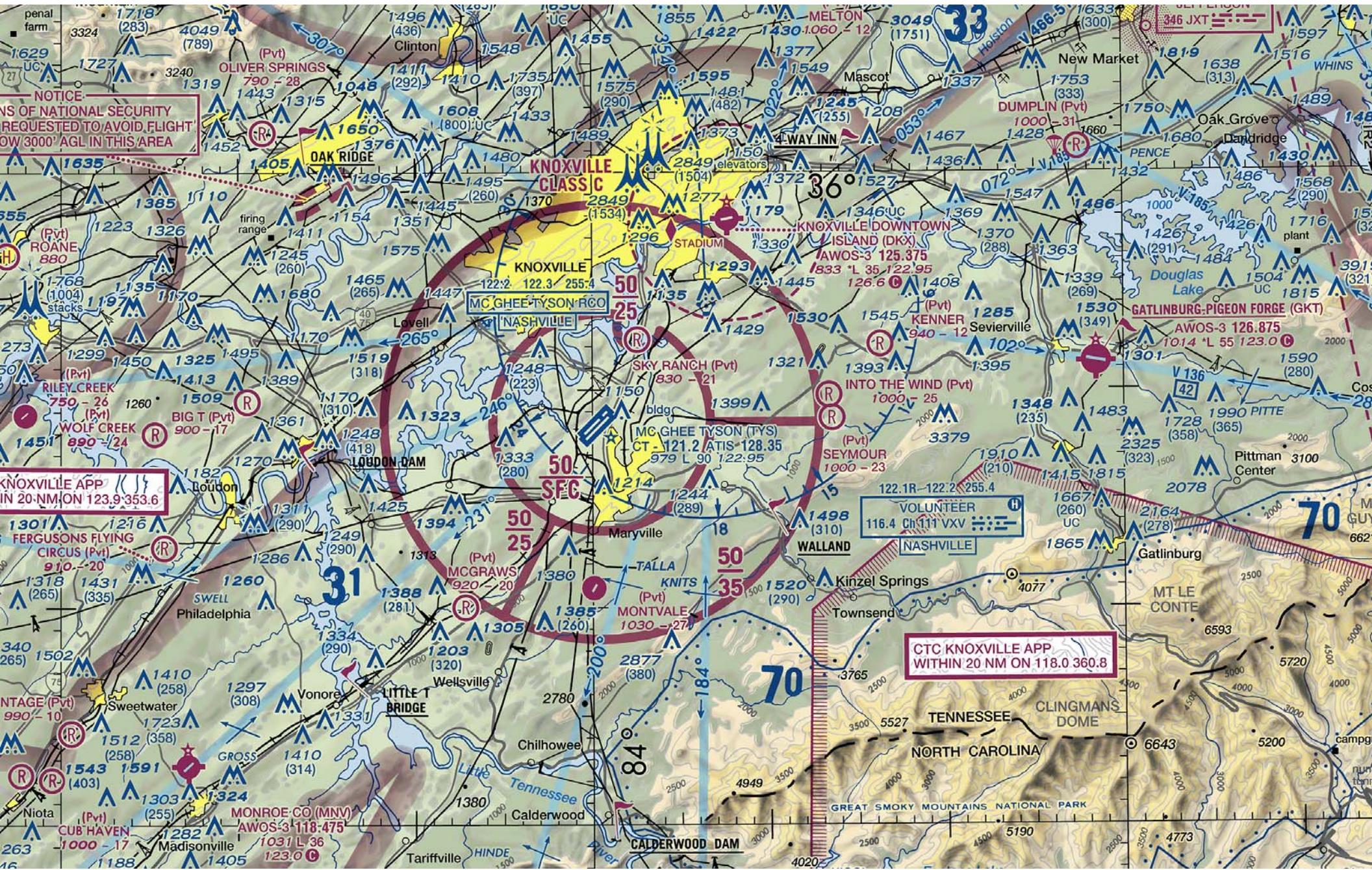


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5. You are travelling on interstate 40 East toward Nashville and decide to stop and fly your drone at a nearby park. Depending upon where you stop along the highway are there any concerns you should keep in mind?
6. How many VOR stations are identified on the map?

Chart 3

1. At what frequency can pilots call in and get advisory information for the McKeller-Sipes Regional airport in Jackson?
2. At $90^{\circ}0' W$ and $35^{\circ}21' N$ how much airspace is between the floor of Class E airspace and the floor of Class B airspace?
3. Which airport has a runway that is 3500 ft. long? Is it a controlled airport?
4. What class airspace is the McKeller-Sipes Regional airport?
5. A drone is being launched in an area that is 5 nm northwest of Brownsville, TN. What is the height of the nearest obstacle in MSL?
6. What is the location of the Wilson airport north of La Grange in latitude and longitude?



NOTICE
 AREAS OF NATIONAL SECURITY
 REQUESTED TO AVOID FLIGHT
 BELOW 3000' AGL IN THIS AREA

KNOXVILLE APP
 WITHIN 20 NM ON 123.9 353.6

CTC KNOXVILLE APP
 WITHIN 20 NM ON 118.0 360.8



Chart 2

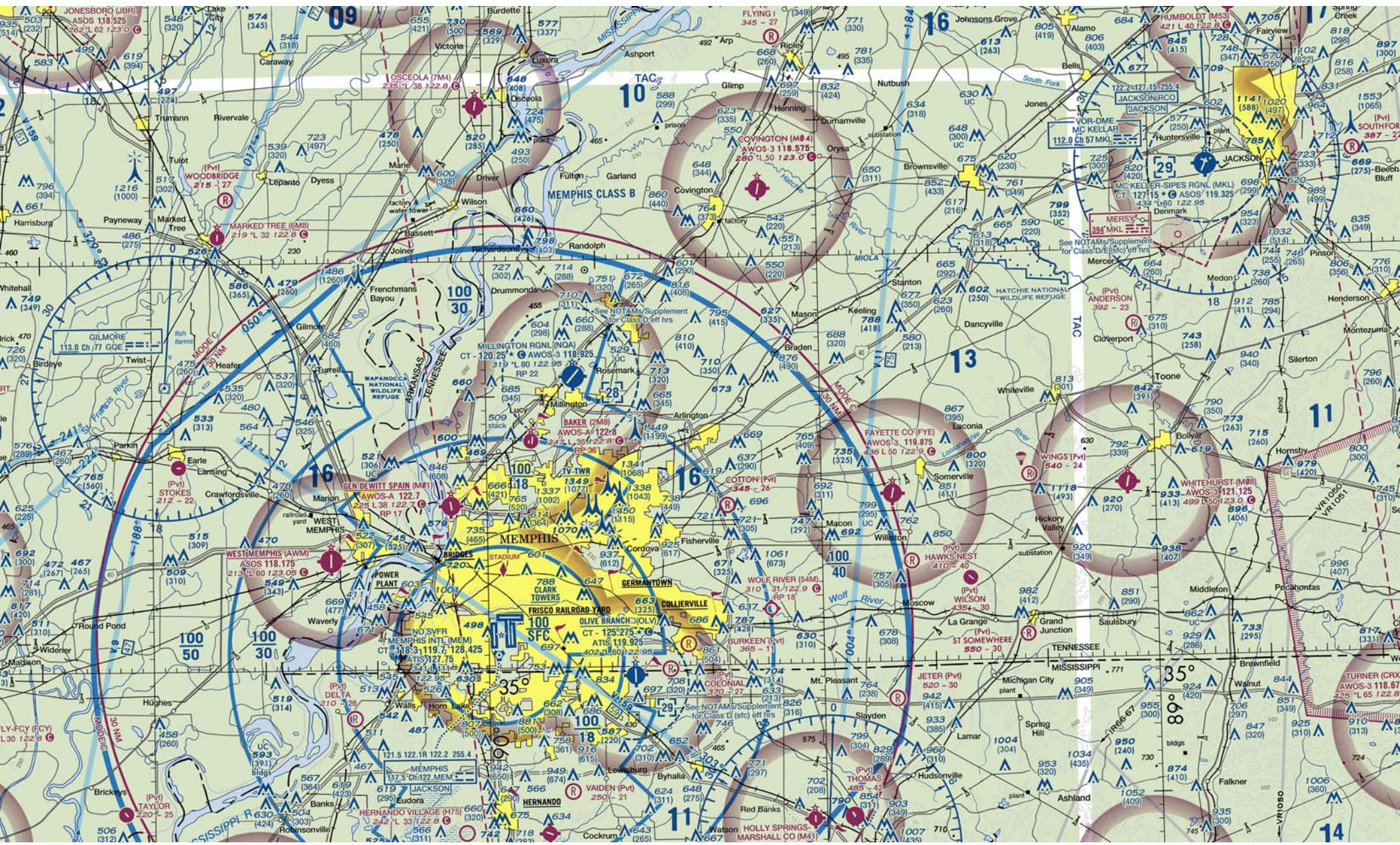


Chart 3

1. According to 14 CFR part 107 the remote pilot in command (PIC) of a small unmanned aircraft planning to operate within Class C airspace
 - A) must use a visual observer.
 - B) is required to file a flight plan.
 - C) is required to receive ATC authorization.

2. To ensure that the unmanned aircraft center of gravity (CG) limits are not exceeded, follow the aircraft loading instructions specified in the
 - A) Pilot's Operating Handbook or UAS Flight Manual.
 - B) Aeronautical Information Manual (AIM).
 - C) Aircraft Weight and Balance Handbook.

3. When operating an unmanned airplane, the remote pilot should consider that the load factor on the wings may be increased any time
 - A) the CG is shifted rearward to the aft CG limit.
 - B) the airplane is subjected to maneuvers other than straight-and-level flight.
 - C) the gross weight is reduced.

4. A stall occurs when the smooth airflow over the unmanned airplane's wing is disrupted and the lift degenerates rapidly. This is caused when the wing
 - A) exceeds the maximum speed.
 - B) exceeds maximum allowable operating weight.
 - C) exceeds its critical angle of attack.

5. Which is true regarding the presence of alcohol within the human body?
 - A) A small amount of alcohol increases vision acuity.
 - B) Consuming an equal amount of water will increase the destruction of alcohol and alleviate a hangover.
 - C) Judgment and decision-making abilities can be adversely affected by even small amounts of alcohol.

6. When using a small UA in a commercial operation, who is responsible for briefing the participants about emergency procedures?
 - A) The FAA inspector-in-charge.
 - B) The lead visual observer.
 - C) The remote PIC.

7. To avoid a possible collision with a manned airplane, you estimate that your small UA climbed to an altitude greater than 600 feet AGL. To whom must you report the deviation?
 - A) Air Traffic Control.
 - B) The National Transportation Safety Board.
 - C) Upon request of the Federal Aviation Administration.

8. Under what condition should the operator of a small UA establish scheduled maintenance protocol?
 - A) When the manufacturer does not provide a maintenance schedule.
 - B) UAS does not need a required maintenance schedule.
 - C) When the FAA requires you to, following an accident.

9. According to 14 CFR part 107, the responsibility to inspect the small UAS to ensure it is in a safe operating condition rests with the
- A) remote pilot-in-command.
 - B) visual observer.
 - C) owner of the small UAS.
10. Identify the hazardous attitude or characteristic a remote pilot displays while taking risks in order to impress others?
- A) Impulsivity.
 - B) Invulnerability.
 - C) Macho.
11. You are a remote pilot for a co-op energy service provider. You are to use your UA to inspect power lines in a remote area 15 hours away from your home office. After the drive, fatigue impacts your abilities to complete your assignment on time. Fatigue can be recognized
- A) easily by an experienced pilot.
 - B) as being in an impaired state.
 - C) by an ability to overcome sleep deprivation.
12. Safety is an important element for a remote pilot to consider prior to operating an unmanned aircraft system. To prevent the final "link" in the accident chain, a remote pilot must consider which methodology?
- A) Crew Resource Management.
 - B) Safety Management System.
 - C) Risk Management.
13. When adapting crew resource management (CRM) concepts to the operation of a small UA, CRM must be integrated into
- A) the flight portion only.
 - B) all phases of the operation.
 - C) the communications only.
14. You have been hired as a remote pilot by a local TV news station to film breaking news with a small UA. You expressed a safety concern and the station manager has instructed you to `fly first, ask questions later.` What type of hazardous attitude does this attitude represent?
- A) Machismo.
 - B) Invulnerability.
 - C) Impulsivity.
15. A local TV station has hired a remote pilot to operate their small UA to cover news stories. The remote pilot has had multiple near misses with obstacles on the ground and two small UAS accidents. What would be a solution for the news station to improve their operating safety culture?
- A) The news station should implement a policy of no more than five crashes/incidents within 6 months.
 - B) The news station does not need to make any changes; there are times that an accident is unavoidable.
 - C) The news station should recognize hazardous attitudes and situations and develop standard operating procedures that emphasize safety.

16. The most comprehensive information on a given airport is provided by

- A) the Chart Supplements U.S. (formerly Airport Facility Directory).
- B) Notices to Airmen (NOTAMS).
- C) Terminal Area Chart (TAC).

17. According to 14 CFR part 107, who is responsible for determining the performance of a small unmanned aircraft?

- A) Remote pilot-in-command.
- B) Manufacturer.
- C) Owner or operator.

18. Which technique should a remote pilot use to scan for traffic? A remote pilot should

- A) systematically focus on different segments of the sky for short intervals.
- B) concentrate on relative movement detected in the peripheral vision area.
- C) continuously scan the sky from right to left.

19. Under what condition would a small UA not have to be registered before it is operated in the United States?

- A) When the aircraft weighs less than .55 pounds on takeoff, including everything that is on-board or attached to the aircraft.
- B) When the aircraft has a takeoff weight that is more than .55 pounds, but less than 55 pounds, not including fuel and necessary attachments.
- C) All small UAS need to be registered regardless of the weight of the aircraft before, during, or after the flight.

20. According to 14 CFR part 48, when must a person register a small UA with the Federal Aviation Administration?

- A) When the small UA is used for any purpose other than as a model aircraft.
- B) All civilian small UAs weighing greater than .55 pounds must be registered regardless of its intended use.
- C) Only when the operator will be paid for commercial services.

21. According to 14 CFR part 48, when would a small UA owner not be permitted to register it?

- A) If the owner is less than 13 years of age.
- B) All persons must register their small UA.
- C) If the owner does not have a valid United States driver's license.

22. According to 14 CFR part 107, how may a remote pilot operate an unmanned aircraft in Class C airspace?

- A) The remote pilot must have prior authorization from the Air Traffic Control (ATC) facility having jurisdiction over that airspace.
- B) The remote pilot must monitor the Air Traffic Control (ATC) frequency from launch to recovery.
- C) The remote pilot must contact the Air Traffic Control (ATC) facility after launching the unmanned aircraft.

23. According to 14 CFR part 107, what is required to operate a small UA within 30 minutes after official sunset?
- A) Use of anti-collision lights.
 - B) Must be operated in a rural area.
 - C) Use of a transponder.
24. You have received an outlook briefing from flight service through 1800wxbrief.com. The briefing indicates you can expect a low-level temperature inversion with high relative humidity. What weather conditions would you expect?
- A) Smooth air, poor visibility, fog, haze, or low clouds.
 - B) Light wind shear, poor visibility, haze, and light rain.
 - C) Turbulent air, poor visibility, fog, low stratus type clouds, and showery precipitation.
25. What effect does high density altitude have on the efficiency of a UA propeller?
- A) Propeller efficiency is increased.
 - B) Propeller efficiency is decreased.
 - C) Density altitude does not affect propeller efficiency.
26. What are characteristics of a moist, unstable air mass?
- A) Turbulence and showery precipitation.
 - B) Poor visibility and smooth air.
 - C) Haze and smoke.
27. What are the characteristics of stable air?
- A) Good visibility and steady precipitation.
 - B) Poor visibility and steady precipitation.
 - C) Poor visibility and intermittent precipitation.
28. While operating your small UA, it accidentally strikes your crewmember in the head causing him to lose consciousness. When should this accident be reported?
- A) No accidents need to be reported.
 - B) When requested by the UA owner.
 - C) Within 10 days of the accident.
29. A small UA must be operated in a manner which
- A) does not endanger the life or property of another.
 - B) requires more than one visual observer.
 - C) never exceeds 200 feet AGL
30. You plan to release golf balls from your small UA at an altitude of 100 feet AGL. You must ensure the objects being dropped will
- A) not create an undue hazard to persons or property.
 - B) land within 10 feet of the expected landing zone.
 - C) not cause property damage in excess of \$300.

31. After having dinner and wine, your client asks you to go outside to demonstrate the small UAs capabilities. You must
- A) pass a self-administered sobriety test before operating a small UA.
 - B) not operate a small UA within 8 hours of consuming any alcoholic beverage.
 - C) ensure that your visual observer has not consumed any alcoholic beverage in the previous 12 hours.
32. During a flight of your small UA, you observe a hot air balloon entering the area. You should
- A) yield the right-of-way to the hot air balloon.
 - B) ensure the UA passes below, above, or ahead of the balloon.
 - C) expect the hot air balloon to climb above you altitude.
33. According to 14 CFR part 107, what is the maximum groundspeed for a small UA?
- A) 87 knots.
 - B) 87 mph.
 - C) 100 knots.
34. Upon request by the FAA, the remote pilot-in-command must provide
- A) a logbook documenting small UA landing currency.
 - B) a remote pilot certificate with a small UAS rating.
 - C) any employer issued photo identification.
35. The refusal of a remote PIC to submit to a blood alcohol test when requested by a law enforcement officer
- A) is grounds for suspension or revocation of their remote pilot certificate.
 - B) can be delayed for a period up to 8 hours after the request.
 - C) has no consequences to the remote pilot certificate.
36. What precautions should a remote PIC do to prevent possible inflight emergencies when using lithium-based batteries?
- A) Store the batteries in a freezer to allow proper recharging.
 - B) Follow the manufacturer's recommendations for safe battery handling.
 - C) Allow the battery to charge until it reaches a minimum temperature of 100 °C.
37. When a remote pilot-in-command and a visual observer define their roles and responsibilities prior to and during the operation of a small UA is a good use of
- A) Crew Resource Management.
 - B) Authoritarian Resource Management.
 - C) Single Pilot Resource Management
38. What actions should the operator of an sUAS do if the manufacturer does not provide information about scheduled maintenance?
- A) The operator should contact the FAA for a minimum equipment list.
 - B) The operator should establish a scheduled maintenance protocol.
 - C) The operator should contact the NTSB for component failure rates for their specific sUAS.