In Pursuit of FAA *Part 107* Commercial Remote Drone Pilot Certification for Students

Timothy F. Slater, Ph.D.
University of Wyoming
timslaterwyo@gmail.com

Abstract
Career and technical educators are often looking for new embedded industry certification opportunities to offer their high school and college students. Of the thousands of opportunities available, schools are often limited by which equipment they have on hand on which students can learn or limited by the specific knowledge and skills of their CTE teachers. Commercial drone piloting certification—often known as FAA *Part 107* Remote Pilot's license—represents a unique opportunity for students to earn a government-sponsored industry certification without many of the barriers other industry certifications require. Students as young as 14-years of age can take the pilot's knowledge test (although it isn't valid for commercial operations until the pilot reaches 16-years of age) to earn the certification and no drone equipment nor actual drone flying experience is required. The test itself costs about $150+ and all study materials, including sample tests, are freely available online. For-pay learning modules are also available to students from a variety of sources.

Introduction

As a vital part of the nation's workforce development pipeline, modern, high-quality career and technical education programs—hereafter referred to as CTE—provide students with technical craft skills that allow them to rapidly enter the nation's workforce or position them to pursue advanced technical training (Dortch, 2014). One might mistakenly think that vocational, industrial, CTE-style courses are a passé thing of school days long gone by. However, upon inspection, what we find is that CTE courses are incredibly popular among high school and college students. Nearly 85% of U.S. high school students have taken at least one CTE course during their high school experience (Alvarado, 2023). The most popular of these CTE courses are usually a business-oriented or computer-oriented CTE-credited course.

One of the great promises of today's CTE is its unique ability to efficiently position graduating students to quickly move into working careers or into advanced technical training. Of the many ways a CTE student might demonstrate to a future employer that he or she is ready to enter the workforce, one of the most popular pathways for documenting student achievement and readiness is for schools to help students acquire a formal credential—an embedded industry certification (Webb, 2021). There are many, many industry certifications available to students: The U.S. Department of Labor's Certification Finder web site lists more than 5,000 active certifications available. There might actually be more opportunities for certifications for students as it appears that there is no definitive count of how many industry certifications are available. Prebil and McCarthy (2018) report that national surveys conducted by the U.S. Census Bureau, the Department of Education, and the Bureau of Labor Statistics consistently show that a stable 20 percent of U.S. adults hold at least one industry certification or license, with licenses being the most common.

As one of the newest high tech career opportunities needing a license, operating unmanned ariel vehicles systems (UAVs)—drone technology— is quickly becoming popular with CTE students (Lobo, et al., 2021; Slater, 2024). In the U.S., remote control drone flight is carefully regulated by the Federal Aviation Administration (FAA) and all individuals 16 years or older who wish to use drones for revenue generating, commercial activities are required to have a government-led, industry license. This license is acquired by passing a multiple-choice, written test, described in detail below, and is rapidly gaining popularity. Since its introduction in 2016, more than 300,000 FAA *Part 107* licenses have been awarded (Plaza, 2022). As this license is highly desirable among many CTE students, CTE teachers would benefit knowing how to best help their students prepare for and earn a drone operator's industry certification. The goal of this paper is to describe and document teaching strategies available to CTE teachers to help students earn their FAA "drone pilot" license.

Literature Review

The following literature review is intended to establish the importance of helping students acquire industry certifications and to outline the FAA *Part 107* Remote Pilot drone license requirements.

1. Industry Certifications

The inclusion of embedded industry certifications—external markers of student skill and knowledge acquisition—are a highly popular aspect of modern CTE programs. This is often because CTE programs with embedded industry certifications allow CTE students to earn two distinct types of credentials simultaneously: one issued by an educational entity and another issued by industry, government, or professional organization. Prebil and McCarthy (2018) attribute the industry certification as guaranteeing to employers a set of discrete craft skills and knowledge whereas the educational entity is essentially attesting to the completion of a broad program of study that includes both general and specialized course experiences. They emphasize that embedding industry certifications into CTE courses helps educators make sure their programs are aligned with current industry standards. Taken together, it seems that CTE educators would be abundantly enthusiastic to offer as many embedded industry certification opportunities as they can manage.

At the same time, CTE programs cannot simply offer just any industry certification opportunity to its students. Of the many barriers to implementation facing CTE programs, a CTE teachers' own limited professional knowledge can be a barrier to offering embedded industry certifications. As such, the industry certifications most often embedded in a particular school's CTE program often depend on the specific interests of its own teachers. More broadly, some industry certifications are expensive to offer (Joseph & Canney, 2019). Many certifications require specialized equipment (e.g., expensive industry-current manufacturing machines) on which to train students.

However, the most widely cited challenge identified by Zanville, Porter, and Ganzglass (2017) was attributed to the high cost of certification exams themselves. Certainly, schools would like to increase equity and diversity opportunities by covering the costs of certification exam fees for a wide diversity of interested students. However, these researchers report that most certification exam fees are born by the students and the students' families themselves. This is typically done

either by charging students an extra "course fee" or by requiring students to pay for these exams themselves (Castellano, Stone, & Stringfield, 2005). The situation parallels how College-Board Advanced Placement test fees are sometimes covered by schools, but most often by college bound students themselves (Rodriguez, et al., 2022).

Taken together, the consensus agreement among CTE educators is that embedded industry certifications are most often worth the investment as they ensure that what students are learning represents the most current knowledge and skill requirements of an identified CTE domain (Hendricks, et al., 2021). The biggest challenges to consistently offering one particular embedded industry certification program as compared to another has much to do with the existence of needed infrastructures at the school, and, perhaps more importantly, the ability to cover the certification fee costs. In such a scenario, CTE teachers would benefit greatly from having some self-contained, plug-and-play certification packages that they could offer students that would not take considerable time, resources, investment, and infrastructure that would otherwise detract from other certifications they offer AND one that is not overly expensive. One potential embedded industry certification available to CTE teachers where students can work largely independently and do not need any expensive specialized equipment to earn is that of a professional drone pilot certification offering.

2. Situating Drone Technology within CTE Career Clusters

Where do drone technology programs fit within CTE? The great breadth of possible CTE foci, and their associated embedded industry certifications, are so numerous that it is often easier for CTE educators to talk about "clusters" of CTE program domains rather than specific careers. Most commonly, CTE is subdivided into 16 major cluster areas, listed in Figure 1. Precisely which cluster area drones fit within is largely subjective, and based largely on the specific drone application CTE educators are talking about.

Figure 1. Advance CTE 2022 Career Cluster List.

1. Agriculture, Food & Natural Resources
2. Architecture & Construction
3. Arts, A/V Technology & Communications
4. Business Management & Administration
5. Education & Training
6. Finance
7. Government & Public Administration
8. Health Science
9. Hospitality & Tourism
10. Human Services
11. Information Technology
12. Law, Public Safety, Corrections & Security
13. Manufacturing
14. Marketing
15. Science, Technology, Engineering & Mathematics
16. Transportation, Distribution & Logistics

https://careertech.org/what-we-do/career-clusters/

On one hand, when thinking about drones in terms of being used as part of the aviation industry, drone technology can easily fit in the broad career cluster category of *Transportation, Distribution & Logistics*, but cluster categorization of drones can be more nuanced than this. One the other hand, *SkillsUSA*, for example, squarely places its commercial drone competitions in the *STEM* cluster instead of the *Transportation* cluster (Slater, Biggs, & Sanchez, 2021; Slater & Biggs, 2022).

In the end, which specific cluster drones go in depends specifically on how the drone is being used. When using drones to distribute commercial materials, drones would be clustered in *Transportation*. Alternatively, if a drone is being used to distribute fertilizers or pesticides to fields, then this is clearly part of the *Agriculture, Food, & Natural Resources* cluster. Or, if a drone is distributing medicine, then it is part of *Health Science*. At the same time, drones making videos to support journalism would be part of the *Arts, A/V Technology & Communications* cluster, but a drone making videos documenting community festivals would be part of the *Hospitality & Tourism* cluster. Whereas a drone used by a building construction firm to monitor materials usage would be part of the *Architecture & Construction* cluster, a drone used specifically for film making sits in the *Arts, A/V Technology & Communications* cluster. Law enforcement entities (*Law, Public Safety, Corrections & Security* cluster) and real estate agents (*Marketing* cluster) also make use of drones. In this sense, drones nearly defy career cluster classification, which is judged to be a good thing because it becomes easier for the CTE teacher to justify the inclusion of drones in their CTE programs and drone licensure as part of a schools embedded industry certification offerings.

3. Nature of the FAA Part 107 Remote Pilot License Test

Anyone flying a drone outdoors over the age of 16 for any revenue generating commercial purpose is required to hold a valid FAA *Part 107* Remote Pilot commercial drone license. This government-sponsored certification is named after the specific FAA rules and regulations document that established it—*Part 107*. (National Archives, 2023). This is a knowledge only exam. In other words, to earn this *Part 107* commercial drone license, one does not need to own a drone, or even have any actual experience flying a drone. Because there is no requirement for purchasing equipment or need for special practice or manufacturing facilities, this becomes a relatively low-cost option for an additional CTE program's embedded industry certification offering. Students who have earned a *Part 107* certification do have operational limits they must adhere to, which are listed in Figure 2.

Figure2. Operational Limitations for Pilots Flying with a *Part 107* Certification

Part 107 Pilots:

- must operate within 400' above ground level or above a structure
- must operate an aircraft less than 55 lbs (take-off weight)
- may not fly a UAV from a moving land or "water-borne" vehicle, unless it is being flown over a sparsely populated area
- may not operate a UAV at night
- may not fly during periods of civil twilight—within 30-minutes of sunrise or sunset—unless the UAV has lighted anti-collision lighting visible for at least 3 statute miles
- must only fly a drone within a visual line of sight without binoculars
- may not operate in restricted or prohibited areas without first obtaining permission from the using or controlling agency, and
- may not carry hazardous materials

To be eligible to take the *Part 107* Remote Pilot exam, students must: be at least 14 years old,

be able to read, speak, write, and understand English, and state that they are in a physical and mental condition to safely fly a drone (FAA, 2023). For CTE educators, it is is important to note that a 14-year old student can take the test, but the *Part 107* certification isn't valid for commercial, revenue generating flying until the pilot reaches the age of 16 years of age. Figure 3, reproduced from the FAA UAS website (FAA, 2023), lists the categories of questions covered by the examination.

Figure 3. *Part 107* Unmanned Aircraft General–Small (UAG) Knowledge Test Topic Areas

- Applicable regulations relating to small unmanned aircraft system rating privileges, limitations, and flight operation
- Airspace classification and operating requirements, and flight restrictions affecting small unmanned aircraft operation
- Aviation weather sources and effects of weather on small unmanned aircraft performance
- Small unmanned aircraft loading and performance
- Emergency procedures
- Crew resource management
- Radio communication procedures
- Determining the performance of small unmanned aircraft
- Physiological effects of drugs and alcohol
- Aeronautical decision-making and judgment
- Airport operations
- Maintenance and preflight inspection procedures
- Operation at night

The *Part 107* exam itself is a rigorous exam, but well within the reach of teenagers who have committed to studying and learning the material (Slater, 2024). The test is 60 multiple choice-style questions, with three possible answers each. Example items from the FAA are provided in the Appendix. The test must be completed within 120 minutes and is done by appointment at specific testing centers, often associated with larger airports. Test takers are provided a "booklet" of maps and sectional charts needed to complete the exam. A simple calculator is allowed; but cell phones are not allowed. The passing score is 70% correct. If a student does not pass the test, one must wait 14 days to attempt the exam again. Each time a student takes the exam, there is a $150+ fee.

A *Part 107* remote drone pilot license is valid for 24-months. After two years, the certification can be renewed online by taking a shorter, review test online. For anyone involved in flying drones with revenue-generating applications, this *Part 107* certification is not optional. It is worth noting that hobbyists who wish only to fly for personal entertainment or educators who are flying for purposes of teaching, earning an online FAA *T.R.U.S.T.* Safety Certificate is now required (Slater & Sanchez, 2021).

4. Teaching Strategies

In the United States, for example, numerous education programs are available to help students pass the FAA *Part 107* Remote Pilot drone licensure test. Costing around $300 USD each and lasting 16-36 hours, the reportedly most popular of these include: (*i.*) University of Delaware:

Ground School and Part 107 Test Prep; (*ii.*) Pilot Institute: Part 107; (*iii.*) Drone Pilot Ground School; (*iv.*). DARTDrones Flight School; and (*v.*) Drone U (Slater, 2023). It is certainly not required that students pay for, enroll in, and take a formal class, although it likely makes studying more organized and efficient. Indeed, there are many online videos and websites available at not cost for students to use for studying.

Experienced suggests that the minimum amount of studying time needed to pass the test is about 20 hours; but, 40 hours is probably a more reasonable goal for high school students. There are numerous aviation terms that students are unlikely to have encountered before that need to be learned. The rules and regulations sections are mostly based on numbers to be memorized: For example: how high (400'), how far from clouds (3,000' horizontally), how long (8 hours after alcohol), and how much (report filed if over $500 in damages). Similarly, the weather questions are based on things to be memorized: For example, questions like, what happens to performance when humidity increases, temperature increases, air density increases, or wind increases?

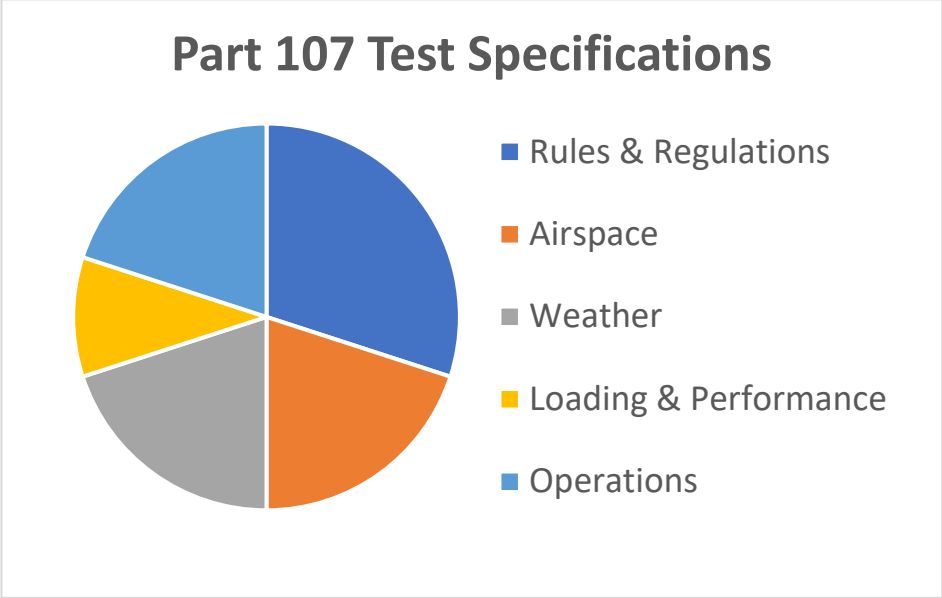

Figure 4. Distribution of Test Questions for the *Part 107* Remote Pilot Exam

Unquestionably, students struggle the most with map reading and answering questions about the aviation sectional charts about airspace and operations. This is most likely because students unnecessarily get in a hurry and make silly mistakes. There is more than enough time to complete the exam even for traditionally slow test takers. For questions involving the operations and airspace maps, and there are quite a few, amounting to nearly one half of the test, students have all the information they need to correctly answer the question directly on the map and, most importantly, using the legend that defines all of the symbols. Nevertheless, this is where students have the most difficulty, and it is in the domains of airspace and operations where they should get the most practice before taking the actual test.

After determining which study resources are to be used—the free ones findable by searching "*Part 107* test preparation" on YouTube are highly recommended—a proposed preparation

schedule sequence motivated by a student-kept learning journal that seems to work well for many students is as follows:

- Module 1-First Steps (*three hours*): Watch 180-minutes worth of "Part 107 test preparation" YouTube videos
- Module 2-First Practice Tests (*four hours*): Search and use several "Part 107 Practice Test" looking for ones with answers & explanations
- Module 3-Reading (*five hours*): Read the "FAA the Remote Pilot Study Guide (PDF)"
- Module 4-Second Practice Tests (*four hours*): Search and use several "Part 107 Practice Test"
- Module 5-Final Test Preparation (*two hours*): Search and watch/read several "most missed Part 107 drone questions"
- Module 6-Find a testing site and sign up/register for Part 107 exam (*two hours*): Search for "Part 107 Testing Center Locations"

Although the teaching strategy of collaborative learning teams and community of practice groups theoretically should work well for helping students prepare to take the *Part 107 Remote Pilot* exam, experience repeatedly suggests that students working individually at their own pace seems to yield the best results. In the end, this is likely because we are talking about obtaining rote and procedural knowledge via repetition rather than developing any deep conceptual understanding that depends on cognitive flexibility. Where students might be able to work together best is perhaps by competing with one another on comparing practice test scores.

Discussion & Conclusions

Given the pressure on CTE educators to provide as many opportunities as possible for students to earn industry certifications, the low cost and no equipment needed remote drone pilot certification seems to be ideal. In this scenario, a teacher does not need to have any specific knowledge about drones nor provide students with any authentic flight experiences. Moreover, the nature of the knowledge needed to pass the exam lends itself well for self-motivated students who work well in an independent learning environment. Taken together, this drone pilot program readily adds an actual government-sponsored industry certification with minimal investments from already overworked and overburdened supervising classroom teacher.

Once students have obtained their *Part 107* Remote Pilot drone certification, they are now ready to enter work-based learning programs—such as working alongside local real estate agents—or create their own entrepreneurial businesses (Slater & Sanchez, 2023). In terms of needed future research, although one casually hears about schools where most of all students in a particular CTE or robotics class have completed their *Part 107*, there is no indication in the scholarly literature base of how prevalent this is, due in part to the *Part 107* certificate only being very recently established, in 2016. Moreover, there is no published data on the number or the nature of students who have earned their *Part 107* certificate who might be using it for commercial purposes in any way. In much the same way, education researchers have no idea what skills acquired during the pursuit of a drone piloting certificate have transferability to any specific CTE career cluster at all. In other words, at this point, the drone education research agenda is still largely uncharted and ripe for education researchers to pursue.

References

Alvarado, V. (2023). Research roundup: CTE equity and special populations. *CTE Policy Watch ACTE Blog*. April 21, 2023. https://ctepolicywatch.acteonline.org/2023/04/research-roundup-cte-equity-and-special-populations.html

Castellano, M., Stone III, J. R., & Stringfield, S. (2005). Earning industry-recognized credentials in high school: Exploring research and policy issues. *Journal of Career and Technical Education*, *21*(2), 7-34. https://files.eric.ed.gov/fulltext/EJ1069518.pdf

Dortch, C. (2014). Career and technical education (CTE): A primer. *Congressional Research Service Report for Congress, CRS Report Number R42748*, https://ecommons.cornell.edu/bitstream/handle/1813/79159/CRS_Career_and_Technical_Education2.pdf?sequence=1

FAA (2023, July 27). Become a drone pilot. *FAA.gov Website*. https://www.faa.gov/uas/commercial_operators/become_a_drone_pilot

FAA (2021). Where can I find study materials for the Part 107 aeronautical knowledge test? *FAA.gov Website*. https://www.faa.gov/faq/where-can-i-find-study-materials-part-107-aeronautical-knowledge-test

Hendricks, A., Myran, S., Katsioloudis, P. J., Owings, W., & Kaplan, L. (2021). Career and technical education industry credentials and its potential impact on a state's economy. *The Journal of Applied Business and Economics*, *23*(8), 1-10. https://www.researchgate.net/profile/Anjanette-Hendricks/publication/364188197_Career_and_Technical_Education_Industry_Credentials_and_Its_Potential_Impact_on_a_State's_Economy/links/633e2453ff870c55ce0293cc/Career-and-Technical-Education-Industry-Credentials-and-Its-Potential-Impact-on-a-States-Economy.pdf

Joseph, M., & Canney, M. (2019). Funding for value: Maximizing the impact of career and technical education funding. *A Playbook for State Policymakers: Foundation for Excellence in Education (ExcelinEd)*. https://files.eric.ed.gov/fulltext/ED609961.pdf

Lobo, D., Patel, D., Morainvile, J., , P., & Abichandani, P. (2021). Preparing students for drone careers using active learning instruction. *IEEE Access*, *9*, 126216-126230. https://ieeexplore.ieee.org/iel7/6287639/6514899/09530413.pdf

National Archives (2023, November 29). Title 14-Aeronatucs & Space, Chapter I, Subchapter F, Part 107, PART 107—Small Unmanned Aircraft Systems. *Code of Federal Regulations*. https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-107

Plaza, J. (2022). The growing number of drone pilots. *Commercial UAV News*, August 8, 2022. https://www.commercialuavnews.com/international/the-growing-number-of-drone-pilots

Prebil, M., & McCarthy, M. A. (2018). Building Better Degrees Using Industry Certifications: Lessons from the Field. *New America*. https://www.newamerica.org/education-policy/reports/building-better-degrees-using-industry-certifications/

Rodriguez, A., Rodriguez-Wilhelm, D., Lebioda, K., Kapp, R., & Wilson, N. (2022). Skin in the game: A policy implementation study of how school-level bureaucrats set and rationalize Advanced Placement exam fees for low-income students. *Research in Higher Education*, *63*, 369–399. https://link.springer.com/article/10.1007/s11162-021-09652-w

Slater, T. F. & Biggs, C. N. (2022). Using drones to teach modern earth science. *The Earth Scientist, 39*(1), 19-23. https://www.researchgate.net/publication/372366152_Using_drones_to_teach_modern_earth_science

Slater, T. F., Biggs, C. N., & Sanchez, R. L. (2021). Positive influence of education partnerships for teaching integrated STEM through drone competition. *Journal of Astronomy & Earth Sciences Education*, 8(2), 113-124. https://clutejournals.com/index.php/JAESE/article/download/10409/10456

Slater, T. F., & Sanchez, R. L. (2023). Work-based Learning Infrastructure for Using Drones in Real Estate. *The CTE Journal*, *11*(2). 9-pages. https://www.thectejournal.com/uploads/1/0/6/8/10686931/slater_fall_2023.pdf

Slater, T. F. & Sanchez, R. L. (2021). *Teaching Integrated STEM with Drones: Classroom-ready Lesson Plans for an Integrated STEM+Arts Curriculum*. Pono Publishing, ISBN: 979-8769835230, https://amzn.to/3urVaBm

Slater, T. F. (2024). Identifying an implementation framework for integrating drones into STEM and Career Technology Education CTE programs. *Drones*, *8*(1), 33-39. https://www.preprints.org/manuscript/202311.0505/download/final_file

Webb, M. S. (2021). *Educational Practices that Prepare Career and Technical Education Students with Industry-Ready Skills* (Doctoral dissertation, Walden University). https://search.proquest.com/openview/1e3c74062db95d4015410ba6c7e69db0/1?pq-origsite=gscholar&cbl=18750&diss=y&casa_token=NxXOeqS_J_0AAAAA:PcA_LPe5Q1gty0vn6SYOnJK5C8YdBERfTFfveLJu50I8Ta7lc2HvGloNG_OJK_DhPy02Gf7rLCc

Zanville, H., Porter, K., & Ganzglass, E. (2017, January). Report on phase I study: Embedding industry and professional certifications within higher education. Indianapolis, IN: Lumina Foundation. https://www.luminafoundation.org/files/resources/report-on-phase-i-study-embedding-industry-professional-certifications-within-higher-education-january-2017.pdf

Appendix. Sample *14 CFR Part 107* Exam Questions Provided by FAA

Note: All references to Refer to FAA-CT-8080-2H is a provided document *Airman Knowledge Testing Supplement for Sport Pilot, Recreational Pilot, Remote Pilot, and Private Pilot* (FAA-CT-8080-2H) available online at: https://www.faa.gov/training_testing/testing/supplements

1. What are characteristics of a moist, unstable air mass?

A. Turbulence and showery precipitation.
B. Poor visibility and smooth air.
C. Haze and smoke.

2. 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.

3. 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.

4. 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.

5. (Refer to FAA-CT-8080-2H, Figure 22, area 2.) At Coeur D`Alene which frequency should be used as a Common Traffic Advisory Frequency (CTAF) to monitor airport traffic?

A. 122.05 MHz.
B. 135.075 MHz.
C. 122.8 MHz.

6. 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.

7. (Refer to FAA-CT-8080-2H, Figure 2.) If an unmanned airplane weighs 33 pounds, what approximate weight would the airplane structure be required to support during a 30° banked turn while maintaining altitude?

A. 34 pounds.
B. 47 pounds.
C. 38 pounds.

8. (Refer to FAA-CT-8080-2H, Figure 23, area 3.) What is the floor of the Savannah Class C airspace at the shelf area (outer circle)?

A. 1,300 feet AGL.
B. 1,300 feet MSL.
C. 1,700 feet MSL.

9. (Refer to FAA-CT-8080-2H, Figure 20, area 3.) With ATC authorization, you are operating your small unmanned aircraft approximately 4 SM southeast of Elizabeth City Regional Airport (ECG). What hazard is indicated to be in that area?

A. High density military operations in the vicinity.

B. Unmarked balloon on a cable up to 3,008 feet AGL.
C. Unmarked balloon on a cable up to 3,008 feet MSL.

10. (Refer to FAA-CT-8080-2H, Figure 21.) You have been hired by a farmer to use your small UA to inspect his crops. The area that you are to survey is in the Devil`s Lake West MOA, east of area 2. How would you find out if the MOA is active?

A. Refer to the chart legend.
B. This information is available in the Small UAS database.
C. Refer to the Military Operations Directory.

11. 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).

12. Identify the hazardous attitude or characteristic a remote pilot displays while taking risks in order to impress others?

A. Impulsivity.
B. Invulnerability.
C. Macho.

13. (Refer to FAA-CT-8080-2H, Figure 26, area 4.) You have been hired to inspect the tower under construction at 46.9N and 98.6W, near Jamestown Regional (JMS). What must you receive prior to flying your unmanned aircraft in this area?

A. Authorization from the military.
B. Authorization from ATC.
C. Authorization from the National Park Service.

14. (Refer to FAA-CT-8080-2H, Figure 20, area 5.) How would a remote PIC "CHECK NOTAMS" as noted in the CAUTION box regarding the unmarked balloon?

A. By utilizing the B4UFLY mobile application.
B. By contacting the FAA district office.
C. By obtaining a briefing via an online source such as: 1800WXBrief.com.

15. 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.

16. 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.

17. 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.

18. (Refer to FAA-CT-8080-2H, Figure 26, area 2.) While monitoring the Cooperstown CTAF you hear an aircraft announce that they are midfield left downwind to RWY 13. Where would the aircraft be relative to the runway?

A. The aircraft is East.
B. The aircraft is South.
C. The aircraft is West.

19. 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.

20. 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.

21. 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.

22. 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.

23. 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.

24. (Refer to FAA-CT-8080-2H, Figure 21.) What airport is located approximately 47 (degrees) 40 (minutes) N latitude and 101 (degrees) 26 (minutes) W longitude?

A. Mercer County Regional Airport.
B. Semshenko Airport.
C. Garrison Airport.

25. (Refer to FAA-CT-8080-2H, Figure 12.) What are the current conditions for Chicago Midway Airport (KMDW)?

A. Sky 700 feet overcast, visibility 1-1/2SM, rain.
B. Sky 7,000 feet overcast, visibility 1-1/2SM, heavy rain.
C. Sky 700 feet overcast, visibility 11, occasionally 2SM, with rain.

26. (Refer to FAA-CT-8080-2H, Figure 12.) The wind direction and velocity at KJFK is from

A. 180° true at 4 knots.
B. 180° magnetic at 4 knots.
C. 040° true at 18 knots.

27. 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.

28. 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.

29. 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.

30. (Refer to FAA-CT-8080-2H, Figure 59, area 2.) The chart shows a gray line with "VR1667, VR1617, VR1638, and VR1668." Could this area present a hazard to the operations of a small UA?

A. No, all operations will be above 400 feet.
B. Yes, this is a Military Training Route from the surface to 1,500 feet AGL.
C. Yes, the defined route provides traffic separation to manned aircraft.

31. (Refer to FAA-CT-8080-2H, Figure 26.) What does the line of latitude at area 4 measure?

A. The degrees of latitude east and west of the Prime Meridian.
B. The degrees of latitude north and south of the equator.
C. The degrees of latitude east and west of the line that passes through Greenwich, England.

32. 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.

33. 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.

34. 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.

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

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

36. 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.

37. 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.

38. 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.

39. 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.

40. When may a remote pilot reduce the intensity of an aircraft’s lights during a night flight?

A. At no time may the lights of an sUAS be reduced in intensity at night.
B. When a manned aircraft is in the vicinity of the sUAS.

C. When it is in the interest of safety to dim the aircraft's lights.

41. What must a person, who is manipulating the controls of a small unmanned aircraft, do if the standard remote identification fails during a flight?

A. Land the aircraft as soon as practicable.
B. Notify the nearest FAA Air Traffic facility.
C. Activate the aircraft's navigation lights.

42. Where must a small unmanned aircraft's serial number be listed when using either standard remote identification or a broadcast module?

A. The aircraft's Document of Compliance.
B. The manufacturer's Method of Compliance.
C. The Certificate of Aircraft Registration.

43. When preparing for a night flight, what should an sUAS pilot be aware of after assembling and conducting a preflight of an aircraft while using a bright flashlight or work light?
A. Once adapted to darkness, a persons eyes are relatively immune to bright lights.
B. It takes approximately 30 minutes for a persons eyes to fully adapt to darkness.
C. The person should use a flash light equipped with LED lights to facilitate their night vision.

44. To conduct Category 1 operations, a remote pilot in command must use a small unmanned aircraft that weighs
A. 0.55 pounds or less.
B. 0.65 pounds or less.
C. 0.75 pounds or less.

45. Which Category of small unmanned aircraft must have an airworthiness certificate issued by the FAA?
A. 4.
B. 3.
C. 2.

46. Your surveying company is a title sponsor for a race team at the Indianapolis 500. To promote your new aerial surveying department, you decide to video part of the race using a small UA. The FAA has issued a Temporary Flight Restriction (TFR) for the race in the area you plan to fly. In this situation

A. you may fly your drone in the TFR since your company is sponsoring a team at the race.
B. the TFR applies to all aircraft; you may not fly in the area without a Certificate of Waiver or Authorization.
C. flying your drone is allowed if you notify all non-participating people of the closed course UA operation.