

Time:____:____

Name: _____
School: _____
Contestant ID: _____

2013 NIFA Regionals Computer Accuracy Exam

The following test consists of 40 multiple choice questions. All questions are equally weighted. You will be given 60 minutes to complete the test. All answers must be recorded on the answer sheet within the allotted time or no credit will be given.

1. As you are on a 10 mile final, you have your aim point set in your windscreen right at the start of the runway but when you look down at your instruments you notice you are descending at 700fpm and 74TAS. You know the wind is 100 @9 and you are landing runway 15L. What is your descent angle?

A. 5.35°
B. 5.67°
C. 5.81°
D. 6.15°
2. Your instructor has taught you that you need to be stabilized by 500' what descent rate must you maintain to get stabilized at a 3.0° descent angle? (Assume the wind is constant through the descent).

A. 608 fpm
B. 699 fpm
C. 748 fpm
D. 763 fpm
3. If over the course of all the Regional competitions through the country judges drink 100 12-cup pots of coffee. How many liters of coffee do the judges drink?

A. 354.8 liters
B. 283.9 liters
C. 247.6 liters
D. 198.2 liters
4. You are looking for a new death defying experience so you take a 172 and decide to fly across the largest lake in the United States, Lake Superior. You will be flying across the length of it at 350sm. You will be cruising at 107kts with a wind at 200@22. Your true course is 265°. How far away from the west shore is the point at which it will take you the same amount of time to return back the way you came as it does to continue to the other side of the lake?

A. 138.71 nm
B. 159.51 nm
C. 165.65 nm
D. 190.49 nm
5. At what time in your trip across Lake Superior will you be at your equal time point?

A. 99.91 mins
B. 103.74 mins
C. 102.61mins
D. 119.31mins

6. What is the speed of sound at 10,000' MSL on a standard day?
- A. 662 knots
 - B. 640 knots**
 - C. 621 knots
 - D. 613 knots
7. It is a hot day in Denver, its 94° F outside. If the airport elevation is 5,431' feet and the altimeter is 29.72", what is the density altitude?
- A. 8,100'
 - B. 8,500'
 - C. 8,900'**
 - D. 9,300'
8. You are flying in your Piper Seminole, and you burn 80 gallons of avgas at an arm of 95" since the start of your trip. Your takeoff weight was 3739 lbs and CG was 89.2", which is 43% aft of your LEMAC of 73". What is your new CG in percent MAC?
- A. 45.5
 - B. 41.0**
 - C. 36.0
 - D. 35.5
9. The temperature in Denver is 36°C, what temperature do you tell your passengers in degrees Fahrenheit?
- A. 96° F
 - B. 97° F**
 - C. 98° F
 - D. 99° F
10. You have a young child who wants to be a pilot and they ask how fast they are going. You look down at your groundspeed and it reads 237kts. What speed in mph do you tell them?
- A. 208
 - B. 212
 - C. 265
 - D. 273**

Use the following information to answer questions 11 through 15.

| | | | |
|--------|--------|--------|---------|
| Winds: | 6,000' | 9,000' | 12,000' |
| | 220@18 | 250@26 | 290@38 |

Cruise Performance:

| | |
|-------------|-------------|
| 6,500' MSL | at 133 KTAS |
| 8,500' MSL | at 139 KTAS |
| 10,500' MSL | at 146 KTAS |
| 11,500' MSL | at 151 KTAS |

True Course: 322° outbound
Fuel on board: 42 US gallons
Fuel Burn: 11.3 GPH at all altitudes

11. Which altitude has the greatest radius of action?
 - A. 6,500' MSL
 - B. 8,500' MSL
 - C. 10,500' MSL
 - D. 11,500' MSL

12. How much fuel is used outbound at 8,500' MSL?
 - A. 2.2 gallons
 - B. 20.2 gallons
 - C. 21.8 gallons
 - D. 24.8 gallons

13. Which altitude has the slowest groundspeed?
 - A. 6,500' MSL outbound
 - B. 8,500' MSL inbound
 - C. 6,500' MSL inbound
 - D. 8,500' MSL outbound

14. What is the true heading outbound at 11,500' MSL?
 - A. 151°
 - B. 313°
 - C. 309°
 - D. 168°

15. How much more radius of action do you gain at the most favorable altitude instead of the least favorable altitude?
- A. 23 nm
 - B. 6 nm
 - C. 31 nm
 - D. 18 nm
16. A pilot tunes his ADF to the nearest NDB and notes a bearing change of 12 degrees after 2 minutes 18 seconds. How long would it take to turn and fly directly to the NDB at 93 knots?
- A. 11m 50s
 - B. 17.8 minutes
 - C. 11.5 minutes
 - D. 3m 8s
17. Your flight plan for a TAS of 151 knots. What IAS must you fly to achieve this at your planned cruise altitude of 6,500' MSL where you are indicating a temperature of ISA+17°C? The altimeter is 30.02".
- A. 240 kph
 - B. 130 knots
 - C. 151 mph
 - D. 139 knots
18. You have been flying for 83 minutes on a true course of 250° indicating 97 knots on your way home from Oshkosh when you look down and notice you have drifted 6 NM north of your course. If you have 72 NM left to get home, how much will you have to turn to arrive directly over your home field? It is 73° at your cruising altitude of 4,500' MSL and the winds are 160° true at 22 knots.
- A. 7.5° right
 - B. 7.5° left
 - C. 5° right
 - D. 5° left
19. How much fuel will be needed for a 318 NM flight if you want to land with 30 minutes of reserve fuel? Your aircraft cruises at 122 knots TAS while burning 9.2 gallons per hour. Your TC is 157° and the wind is 341° at 37 knots.
- A. 15.4 Imperial gallons
 - B. 23.2 Imperial gallons
 - C. 19.3 Imperial gallons
 - D. 18.6 Imperial gallons

Use the following information to answer questions 20 through 23.

Wind (true): 285° at 27 knots at cruise, calm winds for climb and descent

Standard temperature and pressure

Variation: 7W

Magnetic heading: 159°

Total distance: 206 statute miles

Total fuel burn: 14.48 US gallons

Departure elevation: 1,350'

Destination elevation: 820'

Climb: 10m15s and 2.27 US gallons of fuel 84 knot groundspeed.

Cruise: 127.5 knot groundspeed

Descent: 8m21s and 0.86 US gallons of fuel 800 fpm descent rate. 122 knot groundspeed

20. How many miles did the aircraft fly in cruise?

A. 167 nm

B. 148 sm

C. 170 sm

D. 129 nm

21. What was the true course and indicated airspeed in cruise?

A. 143° and 108 kts

B. 144° and 132 kts

C. 155° and 101 kts

D. 143° and 97 kts

22. What was the climb rate and descent fuel burn rate?

A. 800 fpm and 13.3 gph

B. 600 fpm and 6.2 gph

C. 440 fpm and 5.8 gph

D. 600 fpm and 22 gph

23. What is the total flight time in cruise?

A. 1h9m29s

B. 1h28m6s

C. 1h15m

D. 1h22m2s

24. You recently departed in an aircraft that is fully loaded at 6290 lbs for takeoff. After flying for 45 minutes burning fuel at a rate of 35 gph, you find yourself in an unusual attitude and observe the aircraft in a 75° bank. How much does the aircraft weigh?
- A. 6,268 pounds
 - B. 6,255 pounds
 - C. 6,132 pounds**
 - D. 6,159 pounds

You load your aircraft as follows:

| | Weight | Arm | Moment |
|---------------|--------|----------|--------|
| BEW: | 6125 | | 420930 |
| Front Pax: | () | 21" aft | 8400 |
| Rear Pax: | 230 | 42" aft | 9660 |
| Nose Baggage: | 200 | 12" fore | () |
| Aft Baggage: | 230 | 120" aft | 27600 |
| Fuel: | () | 36" aft | 25920 |

25. How much does the front passenger weigh?
- A. 400 pounds**
 - B. 386 pounds
 - C. 412 pounds
 - D. 392 pounds
26. What is the moment of the cargo in the nose baggage compartment?
- A. 2388
 - B. 2400
 - C. -2388
 - D. -2400**
27. What is your ramp CG?
- A. 61.4"
 - B. 62.0"**
 - C. 62.4"
 - D. 62.8"
28. How much fuel do you calculate is on board?
- A. 720 gallons
 - B. 120 kilograms
 - C. 120 gallons**
 - D. 120 liters

29. You find yourself ahead of the 63.5" forward CG limit. How many pounds of bags will you have to remove from the nose baggage to bring us within limits?
- A. 233
 - B. 157**
 - C. 132
 - D. 124
30. You set out to build some flight time and explore in a new Skycatcher. It has a total fuel capacity of 25.46 gallons. Each wing tank holds 0.73 gallons of unusable fuel. You plan you fly outbound from your home airport on a true course of 260° at 4,500'. The winds at 3,000' are $080^\circ @ 25$ knots and at 6,000' are $130^\circ @ 7$ knots. If you lean for an economy cruise, the Skycatcher will sip fuel at an incredible 3.7 gph and maintain a blistering 78 KTAS. How long can you fly until needing fuel if you wish to land with a 30 min reserve?
- A. 5:58**
 - B. 6:28
 - C. 6:44
 - D. 6:14
31. Referring to the Skycatcher question above, how far away will you be when you need fuel?
- A. 595 NM
 - B. 610 NM
 - C. 543 NM**
 - D. 570 NM
32. A new model of European airport tug can tow airplanes around the ramp at a maximum speed of 7.7 meters/second. Your FBO has a ramp speed limit of 10 miles per hour. What percentage of the tug's maximum speed can you tow at?
- A. 67%
 - B. 1.7%
 - C. 1.4%
 - D. 58%**

33. Your company requires the following descent profile: 2,000 fpm from cruise to 10,000' MSL and then a 3.0° slope at 230 KTAS to touchdown. You are cruising at FL230 at 312 KTAS on the 056° course direct to Razorback. ATC instructs you to "cross Razorback at 4,000." How many miles from Razorback should you begin your descent to meet the restriction using the prescribed profile. Winds are a steady 3325 at all altitudes and the temperature is standard.
- A. 52.4nm
B. 59.7nm
C. 53.5nm
D. 49.9nm
34. Your old flight instructor, Wings McGee takes off from the local airport in his old Skymaster. He cruises at 287 kph and departed 27 minutes ago. You depart from the local airport in your Pilatus PC-12 and cruise at 300 mph. How many nautical miles will it take before you pass your old CFI?
- A. 171.8
B. 197.7
C. 318.2
D. 211.8
35. Your old Cub is reaching TBO and burns oil at 6 oz./hour. If the total capacity of the oil reservoir is 5.5 quarts, how much oil do you need to add after adding 4.5 hours of flight time to the logbook?
- A. 3.48 pounds
B. .27 pounds
C. 2.75 pounds
D. 1.58 pounds
36. Frank fuels his aircraft at a rate of 0.33 imperial gallons/second and Steve fuels his at 3,845 liters/hour. How long will it take each to pump 120 gallons of fuel?
- A. Frank 7:05; Steve 5:03
B. Frank 1:36; Steve 8:30
C. Frank 5:03; Steve 7:05
D. Frank 8:30; Steve 1:36

37. You have determined that the winds are not as forecast. You need to calculate your actual groundspeed. You are nearing the Williamsport VOR and decide to tune it in. You are 34nm from the facility and cross the 135° radial at 11:43:57 local. At 11:57:43 you cross the 085° radial. You still have 168 sm to your destination. What time will you arrive?
- A. 1:11:13
 - B. 13:08:56**
 - C. 1:21:57
 - D. 13:19:40
38. After calculating the weight and balance for a cross-country flight, your passengers decide to swap seats. Bill weighs 189 pounds and was sitting in the back seat (station 85.2). Alex was originally sitting in the front seat (station 49.1). Completely fueled, your aircraft weighs 810.45 kg. The original CG was 91.6. What is the new CG? Alex weighs 137 pounds.
- A. 89.28
 - B. 90.55**
 - C. 92.65
 - D. 91.55
39. Departing Asheville, NC requires careful planning due to high terrain surrounding the airport. Your aircraft requires that the takeoff distance be increased by 3% for every 275 feet above sea level the density altitude is. Field elevation is 2,165' and the temperature is 32°C. The altimeter setting is 29.78. You calculated the uncorrected takeoff distance to be 864 feet. What will your actual takeoff distance be?
- A. 1,082'
 - B. 1,062'
 - C. 1,068'
 - D. 1,310'**
40. If you are descending at 860 fpm at a groundspeed of 144 knots, what is your descent in feet/NM?
- A. 275
 - B. 310
 - C. 360**
 - D. 400