Welcome to the

NIFA 2003 Regional SAFECON

Manual Flight Computer Test

NAME _____

CONTESTANT NUMBER _____

SCHOOL _____

INSTRUCTIONS: **You will be given forty-five (45) minutes to complete the following test. The test is made up of twenty-five (25) multiple-choice and five (5) fill-in questions. Electronic calculators, electronic computers, instructional manuals, <u>are not allowed.</u> <u>No aids of any type may be marked, taped, or glued to your manual flight computer.</u>**

Mark you answers on the answer sheet provided by <u>filling in the circle</u> provided. <u>Only the answer sheet will be graded.</u> In case of ties, faster completion time takes precedence.

Write the serial number of this test packet (located at the top of this envelope) on your answer sheet in the space provided.

DO NOT TURN THE PAGE UNTIL TOLD TO DO SO!

1. You are cruising at 17,000 ft MSL with a groundspeed of 180 mph. The winds are 240° @ 19 knots and the altimeter is 29.42" Hg. If your true course is 160°, what is your true airspeed?

   A. 158 knots
   B. 161 knots
   C. 164 knots
   D. 167 knots

2. You are at 16,000 ft MSL, a groundspeed of 156 knots, and are 120 statute miles from PROTO (a point over the ground). If you must cross PROTO at 7,000 ft and would like to descend at 500 fpm, how far do you travel before you must start down?

   A. 46.7 Nautical Miles
   B. 57.5 Nautical Miles
   C. 73.3 Statute Miles
   D. 46.7 Statute Miles

3. A person weighing 72 kilograms wants to fly with you. What is their weight (in lbs)?

   A. 15.8 lbs
   B. 99.4 lbs
   C. 32.7 lbs
   D. 158.4 lbs

4. You are flying along at 12,000 ft MSL with an altimeter setting of 30.12" Hg. If your groundspeed is 140 mph, the true course is 140°, and the winds aloft are 100° @ 45 km/hr, what is your true airspeed?

   A. 102 knots
   B. 117 knots
   C. 129 knots
   D. 141 knots

5. Your fuel tank capacity is 140 liters of AVGAS. Your tanks are currently holding 120 pounds of AVGAS. How many more US Gallons are needed to fill the tank?

   A. 11
   B. 13
   C. 15
   D. 17

6. If you were to add 90 lbs at station 120 to an aircraft that weighs 1864 kilograms (with a current CG of 83.6 inches), what is the new CG?

   A. 84.4 inches
   B. 82.8 inches
   C. 84.9 inches
   D. 83.5 inches

7. Cruising at FL180, with a true airspeed of 207 mph and true heading of 181°, you notice you are drifting (4°R). Then you turn to a true heading of 267°. After turning you notice you are drifting (1°L). What are the winds aloft?

   A. 070° @ 13 knots
   B. 250° @ 13 knots
   C. 221° @ 18 knots
   D. 149° @ 29 knots

8. Your indicated airspeed is 207 knots. You are cruising at FL230 with a temperature of -21°C. What is your Mach number?

   A. .335
   B. .490
   C. .385
   D. .430

9. Scott crosses radial 172° at 16:23:32 and then crosses radial 182° at 16:30:01. If the winds are 320° @ 25 knots, he maintains a true airspeed of 145 knots, and a true course of 267°, what is the distance to station?

   A. 197.5 Nautical Miles
   B. 110.2 Nautical Miles
   C. 75.9 Nautical Miles
   D. 154.5 Kilometers

10. The winds are 245° @ 36 knots, the true course outbound is 120°, and the fuel tank has 36 US gallons of AVGAS. If your fuel burn is 33.2 liters/hour and want to return with 45 minutes of reserve fuel, what is your time to turn? Assuming a true airspeed of 136 knots.

    A. 84.5 minutes
    B. 66.0 minutes
    C. 98.2 minutes
    D. 129.1 minutes

11. Traveling between Yakima, WA and Walla Walla, WA (distance 84 nautical miles) with a true heading of 100°, you realize you are 4.2 nautical miles to the south of course 1/3 of the way through the trip. What will be the new true heading to fly directly to Walla Walla?

    A. 93.6°
    B. 105.4°
    C. 98.2°
    D. 96.1°
    E. 103.6°

12. Your aircraft weighs 1946 lbs. You move your flight bag (30 lbs) from up in the front (station 62) to the rear cargo (station 101). If the old CG was 88.1 inches, what is the new CG?

A. 88.7 inches
B. 87.5 inches
C. 89.1 inches
D. 87.1 inches

13. You are cruising at 5000 ft MSL with an altimeter setting of 29.42“ Hg. The outside air temperature is –10°C. Your airspeed indicator reads 162 mph. If you turn to a true heading of 333° and drift 8°L. You turn to a true heading of 040° and drift 4°L. What are the winds aloft?

A. 067° @ 18 knots
B. 247° @ 18 knots
C. 147° @ 9 knots
D. 287° @ 24 knots

14. Your Mach meter reads .82. If you are at FL290 with an outside air temperature of -25°C, what are the true airspeed (TAS) and indicated airspeed (IAS) if the altimeter setting is 29.92” Hg?

A. 502 KTAS and 302 KIAS
B. 492 KTAS and 280 KIAS
C. 550 KTAS and 411 KIAS
D. 536 KTAS and 376 KIAS

15. You are flying from Ocala, FL to Tallahassee, FL (distance 97 nautical miles). At 36.2 nautical miles into the flight you realize you are 1.2 nautical miles North of your true course of 281°. Your true airspeed is 154 knots and you look down at the GPS to see a groundspeed of 167 knots. If you maintained an initial true heading of 281° (which is also your true course), what are the winds aloft?

A. 075° @ 16 knots
B. 124° @ 14 knots
C. 140° @ 15 knots
D. 191° @ 11 knots

16. Preparing to depart on a trip, you load up the aircraft. The aircraft weighs 2770 lbs with a CG of 81.2 inches. You decide to move 75 lbs from the rear baggage area (station 112) to the nose baggage area (station 27). What is the new CG?

A. 78.9 inches
B. 79.6 inches
C. 76.9 inches
D. 83.5 inches

17. If it takes 12 minutes to cross from radial 142° to radial 166°, what is the time to station?

A. 26 minutes
B. 28 minutes
C. 30 minutes
D. 32 minutes

18. Your groundspeed out is 145 knots. Your true airspeed is 122 knots. Your WCA is 5° L and true course out is 122°. What are the winds aloft?

A. 328° @ 26 knots
B. 283° @ 26 knots
C. 319° @ 26 knots
D. 271° @ 26 knots

19. Using the above information (question #18) and knowing you have 5 hours and 12 minutes of fuel onboard, what is the time to turn if you will return to your original station?

A. 2 hours and 23 minutes
B. 126 minutes
C. 187 minutes
D. 153 minutes

20. – 22.

At 7:30 am, Tim is departing Dallas-Fort Worth (1000 ft MSL) for Portland, OR (0 ft MSL). His routing essentially takes him direct to Denver Intl. (DIA), 900 nautical miles, then direct PDX, an additional 1150 statute miles. ATC allows him the option to fly direct to PDX, 1400 nautical miles. The pressure everywhere is 29.92" hg. Climb and descent winds are calm. Cruise winds aloft = 280° @ 80 knots.

<u>His performance is as follows</u>:

Climb True Airspeed = 360 knots, Cruise Airspeed .79 Mach, and Descent True Airspeed = 470 knots. Temperature at FL390 is -35°C. True Course DFW to DIA is 340°, True Course DIA to PDX is 295°, and True Course DFW to PDX is 315°. Rate of Climb is 1000 fpm and Rate of Descent is 1500 fpm.

20. How long does it take to travel the original routing?

A. 229.5 minutes
B. 249.5 minutes
C. 259.5 minutes
D. 279.5 minutes

21. How long does it take to travel the new routing?

A. 169 minutes
B. 181 minutes
C. 196 minutes
D. 208 minutes

22. If you burn 13,500 lbs/hr, how much fuel will you save by going direct?

A. 14,000 lbs
B. 16,100 lbs
C. 18,230 lbs
D. 17,090 lbs

23. An aircraft weighs 1150 kilograms and 14 US gallons of AVGAS are added at station 41. If the original CG is 77.9 inches, what is the new CG?

A. 79.13 inches
B. 77.78 inches
C. 76.72 inches
D. 78.91 inches

24. The winds aloft are 111° @ 42 knots. On a true course of 236°, you notice a groundspeed of 145 mph. At 4500 ft MSL (altimeter is 29.42" and temperature is 24°C), what is your indicated airspeed? True course of 236

A. 91 knots
B. 97 knots
C. 109 knots
D. 118 knots

25. You are at 7500 ft MSL. The dew point is 13°C. The outside air temperature is 32°C. The altimeter setting is 29.92" hg. The winds aloft are 232° @ 44 knots. If your Mach number is .52, what's the true airspeed?

A. 354 knots
B. 344 knots
C. 334 knots
D. 324 knots

26. 140 kg of AVGAS = _____ Imp. Gallons

27. 42 liters = _____ US Gallons

28. 98 lbs of oil = _____ quarts of oil

29. 1.2 statute miles = _____ feet

30. 242 lbs = _____ kilogram

Answers

1. B
2. B
3. D
4. D
5. D
6. A
7. A
8. B
9. D
10. A
11. D
12. A
13. A
14. A
15. B
16. A
17. C
18. A
19. B
20. D
21. D
22. B
23. C
24. B
25. A
26. 42.7 (+ or – .2)
27. 11.1 (+ or – .2)
28. 52.4 (+ or – 1)
29. 6336 (+ or – 0)
30. 110 (+ or – 0)

NIFA 2003 Regional
MANUAL FLIGHT COMPUTER EXAM
Answer Sheet

Contestant # _____ **Number Correct:** _____

Name: _____ **Elapsed Time:** _____;_____
min **sec**

School: _____

MARK YOUR CHOICE COMPLETELY: SAMPLE (A) ● (C) (D)

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1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)
4. (A) (B) (C) (D)
5. (A) (B) (C) (D)
6. (A) (B) (C) (D)
7. (A) (B) (C) (D)
8. (A) (B) (C) (D)
9. (A) (B) (C) (D)
10. (A) (B) (C) (D)
11. (A) (B) (C) (D) (E)
12. (A) (B) (C) (D)
13. (A) (B) (C) (D)
14. (A) (B) (C) (D)
15. (A) (B) (C) (D)
16. (A) (B) (C) (D)
17. (A) (B) (C) (D)
18. (A) (B) (C) (D)
19. (A) (B) (C) (D)
20. (A) (B) (C) (D)
21. (A) (B) (C) (D)
22. (A) (B) (C) (D)
23. (A) (B) (C) (D)
24. (A) (B) (C) (D)
25. (A) (B) (C) (D)
26. _____ IMP. GAL.
27. _____ U.S. GAL.
28. _____ qts. oil
29. _____ ft.
30. _____ kilogram