National Intercollegiate Flying Association
2001 Computer Accuracy Test

Cruising in your F-28-4000 at FL 280, you approach the Spokane, WA VOR (GEG). You notice the time is 1824Z and your OAT gauge is indicating -30° C. Due to your airplane lacking an EMS or other sophisticated navigation system, Captain Crumble begins to pester you with questions.

1) "How fast are we going?" he asks. Knowing your OAT gauge always reads 20° C high at this altitude and speed, you spin your whiz wheel and note that your present Mach 0.725 equates to….

   A. 410 kts TAS
   B. 450 kts TAS
   C. 420 kts TAS
   D. 505 kts TAS

2) "How long 'til we arrive in Seattle?", says Crumble. Knowing it's 204 NM to Seattle (SEA), you check the DME ground speed readout, and find that your GS is the same as your TAS. (Winds must be very light.) You assume you'll keep your present speed and reply...

   A. 29 minutes 45 seconds
   B. 24 minutes 12 seconds
   C. 27 minutes 12 seconds
   D. 29 minutes 6 seconds

3) Deep down inside, you feel badly, knowing you have slightly deceived your Captain.   Obviously, you'll have to slow from your present speed to land, and that will affect your arrival time. To figure your "at gate" time, you have discovered you can add 10 minutes to your previously computed ETE if landing runway 16, and add 15 minutes if landing on runway 34. Knowing that SEA is landing on 34 and taking into account the 7 hours time difference from Zulu, you say, "We'll be at the gate at..."

   A. 12:08:45 local time
   B. 12:08:06 local time
   C. 12:02:12 local time
   D. 12:03:06 local time

4) You note a wind correction angle of 4 degrees. Approximately how much crosswind component are you experiencing (knots)?

   A. 7
   B. 4
   C. 32
   D. 28

5) After a smooth landing, Capt. Crumble asks you to prepare the fueling slip.   Unfortunately, one of your gas gauges is broken, so you must figure out how many gallons of Jet A to request of the right wing. Crumble has asked for 8000 lbs. in the right tank. Knowing you have 2500 pounds of Jet-A in the right tank, you figure that with Jet-A weighing 6.6 pounds per gallon (remember this), you need..

   A. 833 gallons
   B. 916 gallons
   C. 82 gallons
   D. 970 gallons

6) Your aircraft weights 23528 lbs. with a current CG of 748.2 cm. You find yourself 5.8 cm forward of CG. How many passengers (172 lbs. each) from zone 1(591.4 cm) are you going to have to move to zone 3 (831.7 cm) in order bring the airplane within limits?

    A. 1
    B. 2
    C. 3
    D. 4

7) While getting VFR advisories, Salt Lake Center states, "Traffic 12 o'clock, 7 miles, same direction a Cessna 172." Five minutes later center tells you that your traffic is now at 5 miles and still 12 o'clock. If your ground speed is 130 kts, how fast is the Cessna moving?

    A. 108 kts
    B. 107 kts
    C. 106 kts
    D. 105 kts

8) You tune in CTAF when you are 20 miles NNW of Vista airport. Before you key the mike you hear a female voice say, "Mayday, mayday, mayday. Beechjet 32 X-ray is going down 17 miles out on the 043° bearing to Vista." Which direction and distance should the Beechjet be from your present position?

    A. 359° @ 29 miles
    B. 201° @ 23 miles
    C. 121° @ 15 miles
    D. 188° @ 32 miles

9) While getting vectored to the airport, approach tells you that traffic is at 10 o'clock 15 miles 500 ft below you on a course of 305°, both of your ground speeds are the same. Since visibility is only 3 miles you get out your flight computer to determine if the traffic will pass in front of, underneath, or behind you. The wind is from 1600 at 21 kts. You are on a course of 275° degrees. The answer is:

    A. In front
    B. Directly underneath you
    C. Behind

10) Your standard climb profile calls for a climb speed of 320 KIAS until reaching M 0.725 and then to continue climbing at M 0.725. if the temperature is – 35°C at your transition altitude, what altitude will you be at when you make the transition?

    A. FL 210
    B. FL 203
    C. FL 197
    D. FL 191

11) Your OBS receiver shows you 090 TO Billings VOR at 24 DME. You wish to get a vector to the 360 radial at 70 nm off B1L. if the straight-line distance to your desired waypoint is 74 nm, what heading should you ask the controller for?

    A. 017°
    B. 019°
    C. 341°
    D. 343°

12) Your departure course of 1510 requires you to be able to clear a 5100' mountain that is 15.8 sm away. Your climb speed is 113 ktas. if the wind is 123° @ 17 kts, what is the minimum climb rate necessary?

  A. 608 fpm
  B. 527fpm
  C. 701 fpm
  D. 372 fpm

13) You depart DFW at a weight of 71,340 lbs. and a CG located at 41.4% MAC (mean aerodynamic cord). MAC starts at 396" and runs aft to 488". Another way to say this is that station 396" is 0% MAC and station 488" is 100% of MAC. Your CO is located at 4 1.4% of this range. You have 54 passengers who each weigh 172 pounds. Two hours and fourteen minutes later you land in Kansas City after burning Jet A from station 473" at the rate of 48 liters per minute. What will your CG be after the passengers have deplaned if 21 of them were seated with an average arm of 314" and the rest with an average arm of 558"?

  A. 22.3 %MAC
  B. 24.2%MAC
  C. 26.4 % MAC
  D. 422.6"

14) You wish to see how far you can fly from your home airport and still make it back. You have 17.6 gallons of gas which get burned at 4.1 gallons per hour at your cruising altitude of 4,500 feet with your altimeter set at 30.49" and your OAT probe showing + 93° F at an indicated airspeed of 153 kilometers per hour. The wind is from 319° at 24 mph. How far out can you fly and still get home? Your inbound TC is 264°.

  A. 189nm
  B. 221 sm
  C. 192nm
  D. 354km

15) You fly from Buffalo, NY to Montreal, Canada. Your true course is 014 for the first 63% of the trip. The remaining 37% of the 478 nautical mile trip is flown on a true course of 078 degrees. You will fly at an indicated airspeed of 137 knots at 9,500 feet where the OAT is showing -14° C and the altimeter is set to 30.74. If the winds are from 322 degrees at 14 knots and you burn fuel at the rate of 13.8 gallons per hour, how long will it take the fuel truck to fill your 76 gallon tanks if you left with 58 gallons on board? The truck pumps at the rate of 37.4 liters per minute.

  A. 4.48 ruin
  B. 5.23 ruin
  C. 5.91 ruin
  D. 6.33 ruin

16) "If we are cruising at 180 KIAS at 23,000 feet, using an altimeter setting of 30.20 inches, air temperature of -23° C and a heading of 283° True, what rate of descent do we need if we want to keep a 3.00 glide slope down to our field elevation of 1800 feet MSL? Average winds aloft through descent ends up to be 220° True at 46 kts."

  A. 1200 ft/nm
  B. 745 ft/mm
  C. 300 ft/mm
  D. 1190 ft/mm

17) How far out will you have to start down to achieve the glide angle?

    A. 81.4smout
    B. 61.3nmout
    C. 68.8 nmout
    D. 70.7 sm out

18) The airport below is 9860 feet MSL and we are cruising at 24,760 feet indicated altitude using an altimeter setting of 29.68 inches.... and a density altitude of 22,200 feet. What is our true altitude and our outside air temperature?"

    A. 23,410' & -57° C
    B. 31,700' &-47° C
    C. 19,900' & -49° F
    D. 27,900' & -65° F

19) A basic multiplication equation……

$$(8 \times 4.2 \times 21) \div (3 \times 5.4 \times 2.2) =$$

    A. 189.5
    B. 18.9
    C. 13.42
    D. 19.8

20) 12 lbs. of avgas = _____ fluid oz

    A. 228
    B. 256
    C. 360
    D. 288

21) The Apollo 13 was traveling 34,802 ft/sec as it entered the earth's atmosphere. How long would it take to circle 9/16th of the earth if one full circle was 42,900 statute miles at that altitude?

    A. 1:23:24
    B. 61 minutes
    C. 1.17 hours
    D. 94.2 minutes

22) 5678 lbs. of Jet A fuel = _____ liters

    A. 3582
    B. 8412
    C. 3255
    D. 9463

23) 2 sm = _____ inches

    A. 145834"
    B. 145824"
    C. 12672"
    D. 126720"

24) 835 imperial gallons = _____ kg of avgas

   A. 2273
   B. 2729
   C. 1292
   D. 2927

25) At FL350, ISA +12° F, an increase of .01 Mach (.73M to .74M) over a 553 sm trip will result in a savings of how much time?

   A. 9 minutes 21 seconds
   B. 42 seconds
   C. 1 minute 5 seconds
   D. 1 minute 17 seconds

Given:

   Wind True: 054° @31 kts
   TC: 196°

   TAS = 141 mph
   Variation: 9° E
   Distance across water: 51 sm
   Best Glide: 87 ktas with descent rate of 780 fpm

26) What is the minimum altitude must you cross at in order to ensure that you're able to safely make land at any point along your route under any emergency?

   A. 10,980'
   B. 19,900'
   C. 8,890'
   D. 13,420'

27) 359ktas=253 kias at

   A. 8,000'/-800F
   B. 25,000'/-500F
   C. 20,000'I-50F
   D. 22,000'/-20~ F

28) TAS = 244 kts, GS = 209 kts, FL19O, SAT = -26° C, TC = 301° , TH= 295° .   What is your tailwind / headwind and crosswind component?

   A. CW left = 30mph, HW = 39mph
   B. HW = 25mph, CW left = 25mph
   C. CW left = l8kts, HW = 28kts
   D. HW = 28kts, CW left = 30kts

29) Your twin burns 27.5 lbs. of Jet fuel per minute per engine. You travel 1052 sm on 970 gals. What was your speed?

   A. 519 kts
   B. 235 kts
   C. 471 kts
   D. 530 kts

30) You are tracking a 0120 across the ground, showing a true airspeed of 200 km/hr.   Your heading is 355° and your GPS indicates a ground speed of 211 km/hr. What will your GPS tell the wind direction to be?

     A. 278°
     B. 251°
     C. 120°
     D. 263°

You are planning a cross-country flight in your new Beech Baron.   You will depart airport A at 0912 local for airport B, located 724 sm due southwest of airport A.   You opt to cruise at a pressure altitude of 11,000 feet.   The AWOS at airport A (elev. 2,324') is reporting surface winds 240 at 21 mph, temperature 86 F, and altimeter 29.42".   The winds aloft for the flight are forecast to be 38 knots from 312°.   The AWOS at airport B (elev. 1,736') is reporting the same conditions, except the wind is a little lighter, 203° at 28 kilometers per hour.   After consulting the performance manual of your Baron, you decide that you can plan a TAS of 143 kts at 36.4 gph and 1,150 fpm in climb; IAS of 197 mph at 24.7 imperial gph in cruise; and in the descent a TAS of 259 mph at 69.2 liters per hour and 1,325 fpm.   Use airport A winds for climb, winds aloft for cruise, and airport B winds for descent. Assume standard lapse rate.

   ***Answer in the format specified for each question, or no credit will be given!

31) How much time will you spend in climb? mm:ss

    ANS. _____ : _____

32) How much gas will you bum in cruise? US gallons to the nearest tenth.

    ANS. _____ . ____ gal.

33) How far will you go in cruise? Statute miles to the nearest tenth.

    ANS. _____ s.m.

34) How long will the flight take? hh:mm:ss

    ANS. _____ : _____ : _____

35) How much total fuel will you bum? Liters to the nearest tenth.

    ANS. _____ . ____ liters