

- Apply the rule-of-thumb relating angle of bank and airspeed in a rate-one turn.
- Choose the recommended action to resolve a learning problem.
- Compare the angle of attack between the inner and outer wing of an aeroplane in a descending turn.
- Demonstrate how to conduct a timed turn.
- Explain the flight test performance standards for the en route portion of the navigation exercise.
- Explain the procedure to change airspeed while maintaining a constant rate of descent.
- Explain the recommended procedure for conducting an obstacle approach.
- Explain why a heading indicator must be reset at frequent intervals.
- Explain why the vertical fin is offset on a single-engine propeller driven aeroplane.
- Interpret an attitude indicator and a turn and bank indicator.
- Name the disorienting effect caused by an abrupt head movement during a turn without outside visual references.
- Predict the possible effect of making an approach in blackhole conditions.
- Recall the A.I.P. guidelines concerning the consumption of alcohol.
- Recall the time period prior to the expiry of an instructor rating that a renewal flight test may be conducted.
- Recognize the factors that impair night vision and ways to cope.

- Calculate the effect of pressure change on indicated altitude.
- Calculate true altitude.
- Choose the recommended action to resolve a learning problem.
- Compare airspeeds used for different types of take-offs.
- Compare the angle of attack between the inner and outer wing of an aeroplane in a descending turn.
- Determine pressure altitude using an altimeter.
- Employ effective eye contact during ground instruction.
- Employ visual aids effectively when presenting ground instruction.
- Explain the design factors that affect the longitudinal stability of an aeroplane.
- Explain the procedure to change airspeed while maintaining a constant rate of descent.
- Identify recommended fault analysis practices when conducting in-flight instruction.
- Identify the factors that would cause increased loading in a vertical gust.
- Identify the instruments used to recover from an unusual attitude.
- Identify the learning factor of relationship when presenting instruction.
- Identify the reason why ear and sinus pain may occur while climbing to altitude.
- Name the disorienting effect caused by an abrupt head movement during a turn without outside visual references.
- Recall the A.I.P. guidelines concerning the consumption of alcohol.
- Recognise the effect an alternate static source located inside an unpressurized aircraft will have on pressure instruments.
- Recognize when a student is using an escape mechanism.

- Calculate density altitude and true airspeed.
- Calculate pressure altitude.
- Calculate the manoeuvring speed of an aeroplane given the load factor and normal stall speed.
- Demonstrate how to conduct a timed turn.
- Explain how the location of the C of G affects aircraft stability.
- Explain how to lean an engine for best power.
- Explain the causes of wheelbarrowing.
- Explain the flight test performance standards for the ground preparation of a cross-country flight.
- Explain the relationship between weight and lift during a climb.
- Identify the instruments that only use static pressure.
- Identify the instruments used when recovering from unusual attitudes.

Interpret a turn and bank indicator relate angle of bank to rate of turn

April 20/99 Instructor 6

## INSTRUCTOR RATING

ten Exam.

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- Explain the relationship between weight and lift during a climb.
- Identify the instruments that only use static pressure.
- Identify the instruments used when recovering from unusual attitudes.
- Interpret a turn and bank indicator; relate angle of bank to rate of turn.
- Interpret the significance of the colour markings on an airspeed indicator.
- Predict the indication of the turn and bank instrument during a spin.
- Recognize the factors that impair night vision and ways to cope.
- State the guidelines for taking hayfever medication.

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- Identify the factors that would cause increased loading in a vertical gust.
- Identify the instruments used to recover from an unusual attitude.
- Identify the learning factor of relationship when presenting instruction.
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- Recognise the effect an alternate static source located inside an unpressurized aircraft will have on pressure instruments.
- Recognize when a student is using an escape mechanism.

Nr. 2

Corey Dyer  
July 25, 1995

### Class 4 Instructor Written Exam (AIRAF)

The Transport Canada exam was remarkably similar to the practice AIRAF exams in the Culhane Instructor Rating: Written Test Book. I had T/C AIRAF # 2 which was, in terms of difficulty somewhere between the first and second Culhane exam. A student who is very comfortable with the material in the second exam should not find the T/C exam much different. I would recommend that student complete all four exams in the practice book. Below, I have listed some of the differences between the Transport and the Culhane exams.

1. Learning Factors: Questions were just like the Culhan.
2. Weight & Balance: There were a lot of weight and balance questions. One was a simple "is this airplane loaded within W&B limitations?" Then there was a question about what minimum weight would be required to move from one station to another to move the C of G into limits.
3. Wake Turbulence: Two minutes after the passage of a large transport does the wake turbulence a.) Dissipate Slowly b.) Rapidly c.) Stay at the level of the A/C.
4. Wake Turbulence: From what wind direction and speed will wake turbulence on a runway be most hazardous? Answers: a.) Head wind b.) Cross wind c.) Quartering Tail wind.
5. Take off Performance: 2 questions, one easy and one that I totally guessed on. (Cessna type chart, although the format of the chart was slightly different from the chart in the Culhane.)
6. Calculate True Altitude and True Airspeed.
7. Range & Endurance: One simple: When flying at the best Lift/Drag Ratio you are flying for which situation? Answer: Range. Then there was a question about the determining where range and endurance fall on the power curve only. (Remember the tangent from the origin to the power curve!)
8. There was only one question about the Exercise numbers, for example spins are exercise 13.
9. In what condition does an A/C become airborne at the highest possible speed?
10. What effects the rate and angle of climb?
11. Wheel-barrowing: The Culhane book discusses wheel-barrowing as a result of high approach speeds, but the T/C exam asked about the causes on take-off.

Examination questions which are related to the following were answered incorrectly.

- Apply the demonstration-performance method when presenting instruction.
- Calculate the time required to complete a specified procedure turn.
- Compare the effect of altitude on indicated and true stall speeds.
- Compare the sensitivity of different flight instruments during abrupt changes in pitch.
- Describe how lift/drag ratio is affected by a change in aspect ratio.
- Employ the learning factor of readiness when presenting instruction.
- Explain how an aeroplane turns.
- Explain the design factors that affect the longitudinal stability of an aeroplane.
- Explain the factors that determine the best rate of climb.
- Explain the procedure to change airspeed while maintaining a constant rate of descent.
- Identify maximum range and endurance airspeeds given a power available and power required graph.
- Identify the factors that affect the angle of attack at which an airfoil stalls.
- Identify the instruments used to recover from an unusual attitude.
- Interpret the significance of the colour markings on an airspeed indicator.
- Name the disorienting effect caused by an abrupt head movement during a turn without outside visual references.
- Predict the possible effect of making an approach in blackhole conditions.
- Predict the visual illusions that may result during a low level turn in strong winds.
- Recall the A.I.P. guidelines concerning the consumption of alcohol.
- Recognize the factors that impair night vision and ways to cope.

John Mulligan

Dave B.  
Nov 23/98

## Instructor Flight Test.

Scenario given:

Last lesson - Review Range + Endurance  
- PGI Slow Flight.  
- Demo Stalls.

Next lesson \_\_\_\_\_

Gave PGI on stalls.

After PGI asked to do preflight briefing.  
on unusual attitude recovery on instrument.  
Then said vacuum pump failed.

Pre Flight - looked at map - to what practice area Altitude etc. How.

Asked student if fuel, weather check wt + balance was done etc

Student declined - you know who did this.

Flight Pass. brief - not necessary he was familiar  
No teaching until run-up. (He observed)

Started with short field T/O demo.

Different rates of climb to practice area <sup>demo</sup>

Str + Level flight. (AI)

Steep Turns. (AI)

Spiral Entries + recovery. - emphasize climbing + descending stall in turn



Date Nov 28/18

John Miller

Introduction to instrument flying. (IA)  
Demo one perfect circuit + landing. (Demo)  
Student flew next circuit. — looking for you to guide him —  
→ talked him through.

8:30 - 8:55	He gave pre brief of what expected
8:55 - 9:15	Time to set up.
9:15 - 9:45?	<del>Pre</del> P&I.
9:45 - 10:00	His questions on Inst.
10:00 - 10:40	Pre flight + walk-around.
10:40 - 11:45	Air Time (Flight Time 1.3).
12:00 - 12:20	Debrief (And pay).

Flight - looked at map - to what direction  
 area Altitude etc. low  
 Asked student if fuel, weather check  
 not balance was done etc.  
 Student declined - you know who  
 did this

Flight  
 Pre brief - not necessary he was nervous  
 No teaching until run-up. (He observed)

Started with short field 1/10 demo.  
 Different rates of climb to practice  
 step turns. (IA)  
 step turns. (IA)  
 spiral entries + recovery. — emphasis  
 a limp and descending stall in turn

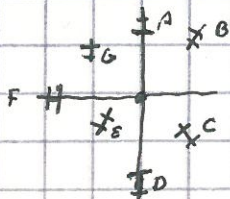


QUESTIONS ON CLASS IV  
INSTRUCTOR RATING  
2002 OR 04

★ USE THIS IN CONJUNCTION WITH THE INCORRECT ANSWER SHEET

- WHAT TIME AFTER CONSIDERABLE CONSUMPTION OF ALCOHOL.
- SHIFTING C/G
- W/B X 2
- TAKE OFF DISTANCE OVER 50' OBSTACLE
- HYPOXIA EFFECTS
- DANGER OF LANDING PLANE @ NIGHT IN BLACK HOLE ILLUSIONS
- VOR INTERPRETATIONS
- VOT CHECK - 180° TO
- NOT INTERCEPT (CALM WIND)
- SOME - LEARNING FACTORS
  - NOT AS MANY AS EXPECTED
- HUMAN FACTORS: UNDERSTAND - FATIGUE & EATING
- X-WIND LIMITATION SPEED FROM OTHER THAN 90°
- ★ BE CAREFUL THERE WERE AT LEAST 3 QUESTIONS THAT WERE ASSOCIATED TO MULTIPLE ANSWERS, PARTICULAR WITH THE VOR QUESTIONS I.E.:

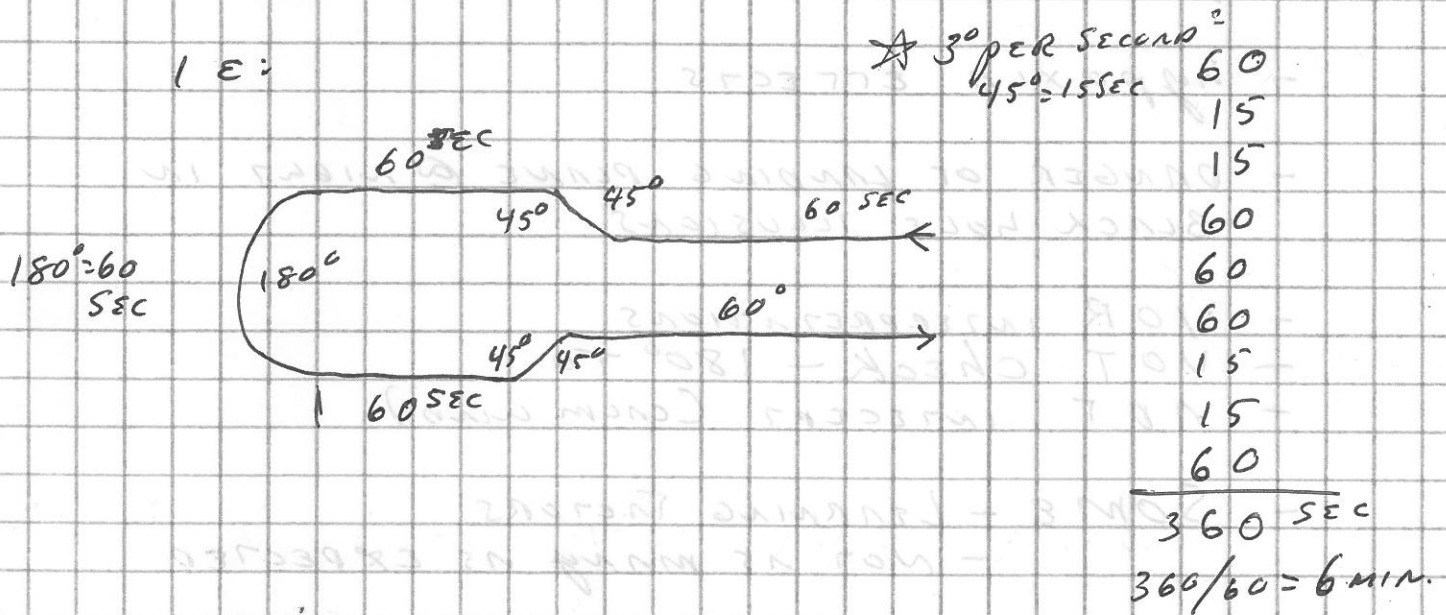
OBS CENTER 090° TO WHICH AIRCRAFT WOULD RECEIVE 090 TO INDICATIONS. DON'T GET THE ANSWER COMBINATION MIXED UP WITH THE ANSWER NUMBER.



- A A B C
- B B D A
- C C B A
- D D G E



- DME - SCANNY RANGE & READING OVER TACAN.
- PROPER PROCEDURE FOR DOOR OPEN IN FLIGHT.
- Why is the FIN (VERTICAL) OFF-SET?
- UNDERSTAND "GUST FACTORS"
- TOTAL TIME FOR MANEUVERS



- WHAT KEEPS AN AIRCRAFT IN A TURN?
- EFFECTS OF GLIDING IN A HEADWIND
- SWEEPBACK WING PROPERTIES
- ★ POWER CURVE - KNOW WHERE RANGE & ENDURANCE ARE LOCATED

- ON A TURNING DESCENT WHICH WING HAS HIGHER ANGLE OF ATTACK?
- EFFECT OF DIHEDRAL ON LATERAL STABILITY
- WHY DOES THE HEADING INDICATOR NEED TO BE RE-SET (2) REASONS, & HOW OFTEN
- EFFECT OF BLOCKED STATIC PORY ON AIR SPEED INDICATOR DURING DESCENT.
- ILLUSION IN CIRCUIT WHEN TURNING FROM ~~WIND~~ INTO WIND TO DOWNWIND.
- COMPASS LEAD & LAG ERRORS
- HUMAN FACTORS: CORIOLIS EFFECT.
- IN UNUSUAL ATTITUDE RECOVERY, WHICH ARE THE FIRST INSTRUMENTS TO BE REFERRED TO?

## ★ THERE VERY FEW FLIGHT TEST STANDARD QUESTIONS

- FIGURE DENSITY ALTITUDE AND ITS EFFECT ON TAS.
- ALTIMETER CHANGE FROM 29.62 TO 30.22 WHAT IS THE EFFECT ON THE ALTIMETER READING?
- CLIMBING IN "BLACK HOLE" CONDITIONS WHAT IS THE ILLUSION?
- LANDING ON UPSLOPE RUNWAY, WHAT IS THE HAZARD?



## - CHANGING WING SHAPE

IF YOU DOUBLE THE WING LENGTH & REDUCE THE CHORD BY 50% WHAT HAPPENS TO THE EFFECT OF THE WING?



- VOICE VARIANCE IS AN EXAMPLE OF WHAT TYPE OF LEARNING FACTOR
- CARBURATOR ICE AT ITS WORSE FORM WITH 50% HUMIDITY & WHAT TEMP?  
-100°
- WHAT SHOULD THE TEMPERATURE BE @ 10,000' ASSUMING STANDARD ATMOSPHERE

★ DON'T SPEND TOO MUCH TIME ON LEARNING FACTORS OR HUMAN FACTORS. GOOD SOLID KNOWLEDGE ON THEORY OF FLIGHT BOTH INSTRUCTOR & COMMERCIAL IS WHAT IS REALLY TESTED. IF I HAD TO DO IT OVER AGAIN I WOULD SPEND LESS TIME ON LEARNING FACTORS & AIR EXERCISES.



# INSTRUCTOR (AIRAF) PRACT

Q - RATE I TURN : 180 KTS : RULE OF THUMB  
GREAT BANK ANGLE ?

A ~~110~~ ~~130~~ = 110-130 -  
SPIND =

Q - INWARD + OUTWARD WORK  $\angle$  OF ATTACK IN  
DESCENDING TURN

Q - START TURN IN TURN TURN ?

A - PUSH CTRL -

- TEN-ROTH NAV-EX : WHICH CHECK ?

Q - CONSTANT 500' FROM DISCREET : HOW CHANGE  
SPIND FROM 90 TO 100 ?

A - NOSE UP VS PUSH  $\angle$  IN  
DOWN ONE

Q - WHICH REDUCE POWER OBSTACLE APPROX ?

A - AFTM/FLARE - ~~AFT~~ ~~ASST~~

Q - RLSHT HI 2500 IS OK : WHY ?

A - BRAKE FRICTN + APPAR' PRESS -

- VERTICAL FWD OFFSET : WHY ?

- SLIPSTREAM - OFFSET THRUST -

Q - EFFORT : ABRUPT HEAD HOUR' IN TURN ?

A = AUTO ~~HEADS~~ = VERTIC? : SPATIAL DISORIENT'D

- BLANKET? APPROACH ?

Q - HRAST ALCOHOL, = WHAT PROUD ?

A - 12 - 24 - 48 -



Q - RENEWAL INSTRUCTOR FLIGHT TEST PRIOR TO EXPIRY?

A - ~~30~~ - 60 - 90 -

- NIGHT VISION FACTORS?

- PROVISION CHANGE ON W/D ALTITUDE

- WHAT HIGHEST A/S OR T/O

Q -  $29.42 \text{ kg} + 6500' = 7000 \text{ PA} =$  (DA + TAS = ?)

A - 183 KT + 7856'

- DO THEIR ACTION

Q - IWD STALL SP + TAS @ S.L + 8000'

A - ANSW = SAME IWD + TAS W/D'S

Q - ILMW 2500 TMDL = 5° WHAT DIFF TO ICAO STD

- INSTANT IN CONVERSION ART

ASL + T/C + VSI + ART + HI

Q - BLACK HOLE APPROX

A - HIGH - LOW - FAST - SLOW

- NBSE DOWN GOOD ANSWER HEADLINE

- USUAL ART

COURSE OF



- FRONT IN FLIGHT

- RAFLAN WITH CONSTANT

- LOADS UNIT LEFT

- HEAVY vs LIGHT + FAST vs SLOW

Q - ART STATIC INSIDE CABIN

A LOW PR = HIGH ACCELERATION

Q - DISCHARGE BYR CONSTANT

A IMPARTIAL - JUDGE KNOW - REBAR

- NIGHT VISUAL FACTORS

- BLIND ~~IN~~ HAZARD - RIND LIGHT -

Q - WTB : FURL ALLOWANCE

A - 222' -

Q - 2550 LBS @ 94" =  $\frac{W}{D} = \frac{D}{W}$  = BACK TO 93 INCH

A - 79 LBS - 43 LBS - 21 LBS

Q - WTB @ 2550 : WHICH DOT A, B, C, D

A DIAGONAL = C

Q - END VS RASER ANSW = B+C

A DIAGONAL A B C D

Q - TG DIST OVER 50' : TEMP 50° vs 75°

+ 7% + 10%

Q - SLOW FLIGHT : WHICH TRUR?

A - FASTEN = LINGS POK

Q - DESIGN FACTOR FOR LONG'S STABILITY

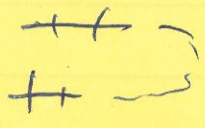
A - G+G FSD COP - SURVIVAL -

Q - TRUR ART

USA 15112 WTERAN

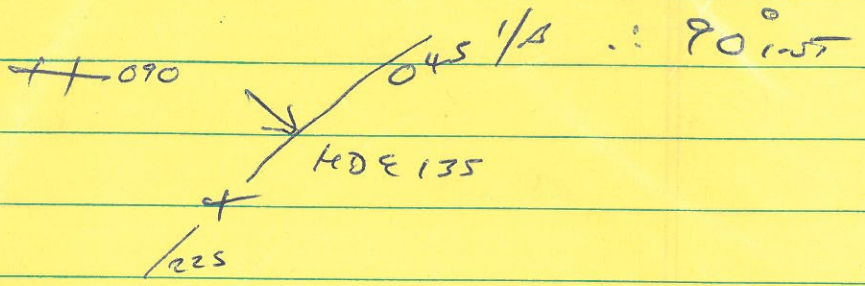


- Vom

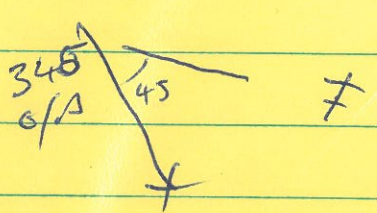


Richtung SANA +

- NDB



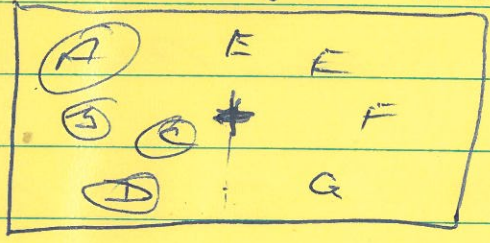
- NDB



-45° 15T 0/B

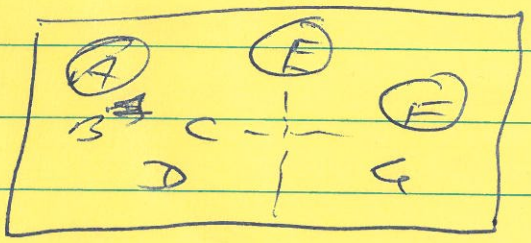
ANS = HDE 300

- Vom = 085 = 180° NRUNDA LIEFF?



ANS = A B C D

- Vom



085 = 70 + 180°

ANS = A E F