

## CAMPBELL HELICOPTERS – BELL 212 EXAM

Name: \_\_\_\_\_ Date: \_\_\_\_\_

<p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Aircraft Flight Manual</li> <li>2. Aircraft Transition Manual</li> <li>3.</li> <li>4.</li> <li>5.</li> </ol>	<p style="text-align: center;"><b>Reviewed &amp; Corrected to 100%</b></p> <p>By: _____</p> <p>Signature: _____</p> <p>Date: _____</p>
<p><b>This exam meets the requirements for initial and annual emergency procedures training in accordance with the COM. Section 6 Aircraft Type Training Exam</b></p> <ol style="list-style-type: none"> <li>1. Fire in the air and on the ground</li> <li>2. Use of fire extinguishers</li> <li>3. Operation and use of emergency exits</li> <li>4. Passenger preparation for an emergency landing or ditching</li> <li>5. Emergency evacuation procedures</li> <li>6. Donning and inflation of life preservers (when equipped)</li> <li>7. Removal from stowage, deployment, inflation and boarding of life rafts (when equipped)</li> <li>8. Hijacking, bomb threats and other security procedures</li> <li>9. Passenger on board medical emergency</li> <li>10. Special emergency procedures where the helicopter is used on MEDEVAC operations, including patient evacuation in emergency situations</li> </ol>	

1. The main rotor and anti-torque rotor are \_\_\_\_\_, two bladed type with an \_\_\_\_\_ feathering axis
  - a) Rigid / over slung
  - b) Semi-rigid / underslung
  - c) Articulated / rigid
  - d) Rigid / articulated
  
2. Overall length of the Bell 212 rotor turning is?
  - a) 45 feet
  - b) 57 feet
  - c) 62 feet
  - d) 70 feet
  
3. Main rotor diameter of the Bell 212 is?
  - a) 57 feet
  - b) 45 feet
  - c) 60 feet
  - d) 48 feet

4. The 3 items Bell Helicopters lists as required equipment are;
  - a) Heated pitot static system
  - b) Windshield wipers
  - c) Dual hydraulic systems
  - d) Force trim system
  - e) Cargo hook
  
5. Rear baggage compartment loading limits are;
  - a) 400 lbs max / not to exceed 100 lbs/sq ft
  - b) 400 lbs max / not to exceed 75 lbs/sq ft
  - c) 350 lbs max / not to exceed 100 lbs/sq ft
  - d) 400 lbs max / not to exceed 50 lbs/sq ft
  
6. The force trim acts on?
  - a) The cyclic.
  - b) The pedals.
  - c) The AFC system
  - d) The collective
  - e) Both A & B
  
7. Ice is prevented from forming in the compressor inlet area by?
  - a) Engine oil warming the compressor inlet case.
  - b) Bleed air in the compressor inlet guide vanes.
  - c) Bleed air in the compressor inlet support struts.
  - d) Bleed air in both of the compressor inlet guides
  
8. How many chip detectors are connected to the ENG 2 CHIP caution light?
  - a) 1.
  - b) 2
  - c) 3.
  - d) 4.
  
9. Maximum airspeed when operating above max continuous torque (87.5%) is:
  - a) 100 kts
  - b) 90 kts
  - c) 85 kts
  - d) 80 kts
  
10. How does the hydraulic indicator behind the pilot's chin bubble function?
  - a) It only turns red if either hydraulic bypass indicator, visible behind the Plexiglas on the centre aft wall pops.
  - b) If any of the 4 indicators on the hydraulic filter housing 'pop,' it turns red
  - c) It turns red if either hydraulic system is turned off.
  - d) It pops if the indicator on either hydraulic system pops.
  
11. How many hydraulic filter impending bypass indicators are there on the 212?
  - a) 1.
  - b) 3.
  - c) 4
  - d) 5.

12. Starter limitations are:
- a) 30 sec On - 60 sec OFF / 30 sec ON - 60 sec OFF / 30 sec ON - 15 min OFF
  - b) 30 sec On - 60 sec OFF / 30 sec ON - 2 min OFF / 30 sec ON - 10 min OFF
  - c) 30 sec On - 60 sec OFF / 30 sec ON - 5 min OFF / 30 sec ON - 5 min OFF
  - d) 30 sec On - 60 sec OFF / 30 sec ON - 5 min OFF / 30 sec ON - 15 min OFF
13. Useable fuel capacity is?
- a) 220.6 U.S. Gals.
  - b) 219.6 U.S. Gals.
  - c) 218.6 U.S. Gals.
  - d) 216.8 U.S. Gals
14. When the fuel quantity select switch is selected either left or right, the fuel gauge should indicate...
- a) Approximately 50% of the total fuel quantity.
  - b) Fuel remaining in the respective forward fuel cell.
  - c) 270 lbs
  - d) Zero if the switch is held in that position for several seconds.
15. The fuel cross feed valve will open automatically when...
- a) FUEL XFEED switch is in the OVRD CLOSE position.
  - b) Both boost pumps are operating at normal pressure and flow.
  - c) Either boost pump switch is ON and the fuel low is sensed on both sides.
  - d) FUEL XFEED switch is in the NORM position and the fuel boost pressure is lost
16. An electrical failure to the Caution Panel is indicated by?
- a) Illumination of the CAUTION PANEL light on the Caution Panel
  - b) Illumination of both MASTER CAUTION lights
  - c) Caution Panel Inoperative, continue flight as normal
  - d) Both A&B
17. Illumination of a Caution Panel annunciator light indicates?
- a) A system status advisory
  - b) A system operating properly
  - c) A system malfunction has occurred
  - d) All of the above
18. An illuminated FUEL FILTER light indicates that one of the engine fuel filters;
- a) And/or fuel heaters have clogged.
  - b) Has partially clogged.
  - c) And / or fuel heater have partially clogged
  - d) Has partially clogged or fuel heater has clogged
19. An illuminated ENG 1 FUEL BOOST or ENG 2 FUEL BOOST caution light indicates?
- a) The respective fuel boost pump pressure is low or the pump has failed
  - b) Insufficient flow to the respective ejector pump.

- c) The interconnect valves have opened automatically + answer A.
  - d) B or both A and B.
20. If ENG 1 FUEL BOOST or ENG 2 FUEL BOOST illuminates in flight you would?
- a) Descend below 5000ft. HP if practical, select cross feed switch to open and confirm pressure on both gauges.
  - b) Descend below 5000ft. HP if practical, select interconnect switch to open if fuel contamination is not suspected.
  - c) Confirm pressure on both gauges, land when practical.
  - d) Both B & C
21. During an exterior pre-flight check, what must be checked to ensure that both fire bottles are serviceable?
- a) An indication of pressure on each bottle and the fire “T” handles are in.
  - b) An indication of pressure on each bottle and the red thermal relief cover is in place.
  - c) An indication of correct pressure for temperature range on each bottle
  - d) An indication of pressure on each bottle.
22. Which of the following oil systems have an impending filter bypass indicator, which can be checked during a pre-flight check?
- a) 90 deg. Gearbox.
  - b) 42 deg. Gearbox.
  - c) C-box
  - d) Transmission
  - e) Engine 1
  - f) Engine 2
23. During an engine start, select starter switch to off at?
- a) 45%
  - b) 50%
  - c) 55%
  - d) 60%
24. How many oil / fluid pressure gauges come to life when the first / second engine is being started?
- a) 7 / 2
  - b) 5 / 1
  - c) 6 / 1
  - d) 5 / 2
25. After starting the second engine and advancing the throttle to engage it, what would indicate that it was not engaged?
- a) Its N2 is 10-15% higher and its torque reading is higher than the other engine.
  - b) Its N2 is 10-15% higher than the other engine and its torque is near zero.
  - c) Its N2 is the same as the other engine and its torque is near zero.
  - d) Its N1 is 10-15% higher than the other engine and its torque is near zero.
26. The normal AC voltmeter range is?
- a) 104-122
  - b) 105-115
  - c) 110-115

- d) 115-120
27. N2 governor beep range with one throttle full open should be?
- a) 95-100%
  - b) 97-100%
  - c) 97-101%
  - d) 95-99.5%
28. WAT CHART; GIVEN +20C 5000ft
- a) 10500
  - b) 11000
  - c) 11200
  - d) None of the above
29. The rotor RPM limits in powered flight are; min\_\_\_\_\_max\_\_\_\_\_% and in autorotation are; min\_\_\_\_\_max\_\_\_\_\_%
- a) 91-104.5% & 97-100%
  - b) 97-100% & 91-104.5%
  - c) 97-100% & 97-100%
  - d) 97-101.5% & 91-104.5%
30. When a fire “T” handle is pulled;
- a) The same side fuel valve and particle separator door are closed, main fire bottle is released, and both engine heater valves are shut off.
  - b) Both heater bleed air valves are closed, the same side fuel valve and particle separator door are closed, the same side fire bottle is armed.
  - c) Both fire bottles are armed, both fuel valves are shut off, both engine heater valves are shut off, both particle separator doors are closed
  - d) The same side fuel valve and particle separator door are closed, both engine heater valves are shut off, both fire bottles are armed.
31. What is the procedure to deal with an Engine Fire light?
- a) FIRE 1 or FIRE 2 T-handle illuminated, possible smoke or flames, Initiate EMERGENCY DESCENT TO LAND, lower collective to single engine power range, confirm illuminated handle, confirm and roll effected engine, T-handle – PULL, FIRE EXT switch – MAIN, Throttle – CLOSE, RPM switch INCREASE, If T-handle remains illuminated after 10 seconds select – RESERVE.
  - b) FIRE 1 or FIRE 2 T-handle illuminated, possible smoke or flames, Initiate EMERGENCY DESCENT TO LAND, lower collective to single engine power range, confirm illuminated handle, confirm and roll non - effected engine, T-handle – PULL, FIRE EXT switch – RESERVE , Throttle – CLOSE, RPM switch INCREASE, If T-handle remains illuminated after 10 seconds select – RESERVE.
  - c) FIRE 1 or FIRE 2 T-handle illuminated, possible smoke or flames, Initiate EMERGENCY DESCENT TO LAND, raise collective out of single engine power range, confirm illuminated handle, confirm and roll effected engine, T-handle – PULL, FIRE EXT switch – MAIN, Throttle – CLOSE, RPM switch INCREASE, If T-handle remains illuminated after 10 seconds select – MAIN again. FIRE 1 or FIRE 2 T-handle illuminated, possible smoke or flames, Initiate EMERGENCY

32. Maximum torque split is \_\_\_\_% for normal operations.
- a) 3%
  - b) 4%
  - c) 5%
  - d) 6%
33. If a take off is to be performed in accordance with the previous question, given that the helicopter is at a 4' skid height, how much torque shall be used over and above hover torque?
- a) 5%
  - b) 10%
  - c) 15%
  - d) Maximum
34. On departure, to avoid the nose of the single engine height/velocity curve when at the WAT limit, airspeed should be no less than \_\_\_\_kts, when climbing through \_\_\_\_ AGL
- a. 20 kts. / 20ft.
  - b. 30 kts. / 25ft.
  - c. 35 Kts / 25ft.
  - d. 40 kts / 35ft.
35. With reference to the last question, gross weight is at maximum permissible, HP is 1000ft., and OAT is +30 deg. C. What is the VTOCS?
- a) 30 kts
  - b) 35 kts
  - c) 40 kts
  - d) 42 kts
36. At maximum gross weight what is the VNE at sea level and 6000ft?
- a) 91kts & 95 kts
  - b) 100 kts & 91 kts
  - c) 95 kts & 98 kts
  - d) 95 kts & 115 kts
37. Campbell Helicopters policy regarding VNE for the Bell 212 is?
- a) 90 kts
  - b) 115 kts
  - c) 120 kts
  - d) 100 kts
  - e) Placard Maximum
38. What limits apply to flight with doors open or removed?
- a) VNE 100kts decreasing 3kts per 1000ft. above 3000ft. HP
  - b) Both sliding doors open or removed with both hinged panels installed or removed
  - c) Any allowable combination of doors, open or removed, shall be symmetrical.
  - d) All of the above

39. At 5000 ft. HP. The minimum and maximum temperatures approved for operations are
- 54C & +42C
  - 52C & +54C backwards +/-
  - 45C & +55C
  - 50C & +52C
40. Minimum pilot weight is?
- 150 lbs
  - 160 lbs
  - 170 lbs
  - 200 lbs
41. What does a HEATER AIRLINE caution light indicate?
- Engine bleed air valve(s) is/are malfunctioning, so turn off heater immediately.
  - Heater mixing valve is malfunctioning so turn off heater immediately.
  - That the bleed air heater is functioning normally.
  - It informs the pilot that at a specific collective setting the bleed air heater has cut off line
42. In flight you notice all three needles on the triple tach indicating 101%. The RPM BEEP switch has no effect. Torque needles have normal split. What is the probable cause and cure?
- High side Gov failure on one engine. Adjust collective as necessary to control rotor RPM. Identify engine with higher torque then roll throttle to idle. Switch Gov to Manual, then slowly advance throttle so that torque is just below good engine.
  - The helicopter is in a low power descent at high gross weight. Apply sufficient up collective to control the RPM
  - The beep motor has failed at full increase. As soon as practical roll back the throttles slightly to control RPM. Land as soon as practical

**Weight & Balance Section – Calculate the following W&Bs**

**Helicopter C-FXXX Empty Weight 6580 lbs Long arm 143.0 Lat arm 0.1**

Pilot weight	220 lbs
Co-pilot	240 lbs
Fuel on board	1,500 lbs
4 MANSEAT outer right	200 lbs
4 MANSEAT inner right	200 lbs
4 MANSEAT outer left	200 lbs
4 MANSEAT inner left	200 lbs
5 SEAT outer right	200 lbs
5 SEAT inner right	200 lbs
5 SEAT outer left	200 lbs
5 SEAT inner left	200 lbs
5 SEAT Middle (bambi bucket)	250 lbs
RIGHT AFT TRANS (gear)	150 lbs
LEFT AFT TRANS (gear)	100 lbs
Co-pilot Aft rear cargo -Survival kits	40 lbs
Pilot Aft rear cargo -Refuel gear	40 lbs
Tail Boom cargo	380 lbs

BELL 212	Weight	Longitudinal		Lateral	
		Arm	Moment	Arm	Moment
EMPTY	6580	143.0	940940	0.1	
PILOT		47.0		22.0	
CO-PILOT		47.0		-22.0	
4 SEAT LEFT		87.0		-23.0	
4 SEAT INNER LEFT		87.0		-8.0	
4 SEAT INNER RIGHT		87.0		8.0	
4 SEAT RIGHT		87.0		23.0	
5 SEAT LEFT		117.0		-34.0	
5 SEAT INNER LEFT		117.0		-19.0	
5 SEAT CENTRE		117.0		0.0	
5 SEAT INNER RIGHT		117.0		19.0	
5 SEAT RIGHT		117.0		34.0	
LEFT FWD TRANS		139.0		-26.0	
RIGHT FWD TRANS		139.0		26.0	
LEFT AFT TRANS		156.0		-26.0	
RIGHT AFT TRANS		156.0		26.0	
REFUEL GEAR CARGO		195.0		18.0	
SURVIVAL GEAR CARGO		195.0		-18.0	
BAGGAGE		263.0		0.0	
SLING LOAD		138.0		0.0	
FUEL MAIN (1409)				0.0	
<b>TOTALS</b>					

Is this W&B correct and within limits? YES /NO

**Helicopter C-FXXX Empty Weight 6580 lbs Long arm 143.0 Lat arm 0.1**

Pilot weight	220 lbs
Co-pilot	0 lbs
Fuel on board	1,400 lbs
4 MANSEAT outer right	0 lbs
4 MANSEAT inner right	0 lbs
4 MANSEAT outer left	0 lbs
4 MANSEAT inner left	0 lbs
5 SEAT outer right	0 lbs
5 SEAT inner right	0 lbs
5 SEAT outer left	0 lbs
5 SEAT inner left	0 lbs
5 SEAT Middle (bambi bucket)	0 lbs
RIGHT AFT TRANS (gear)	0 lbs
LEFT AFT TRANS (gear)	0 lbs
Cargo Hook	2800 lbs
Co-pilot Aft rear cargo -Survival kits	40 lbs
Pilot Aft rear cargo -Refuel gear	40 lbs
Tail Boom cargo	100 lbs

BELL 212	Longitudinal			Lateral	
	Weight	Arm	Moment	Arm	Moment
EMPTY	6580	143.0	940940	0.1	
PILOT		47.0		22.0	
CO-PILOT		47.0		-22.0	
4 SEAT LEFT		87.0		-23.0	
4 SEAT INNER LEFT		87.0		-8.0	
4 SEAT INNER RIGHT		87.0		8.0	
4 SEAT RIGHT		87.0		23.0	
5 SEAT LEFT		117.0		-34.0	
5 SEAT INNER LEFT		117.0		-19.0	
5 SEAT CENTRE		117.0		0.0	
5 SEAT INNER RIGHT		117.0		19.0	
5 SEAT RIGHT		117.0		34.0	
LEFT FWD TRANS		139.0		-26.0	
RIGHT FWD TRANS		139.0		26.0	
LEFT AFT TRANS		156.0		-26.0	
RIGHT AFT TRANS		156.0		26.0	
REFUEL GEAR CARGO		195.0		18.0	
SURVIVAL GEAR CARGO		195.0		-18.0	
BAGGAGE		263.0		0.0	
SLING LOAD		138.0		0.0	
FUEL MAIN (1409)				0.0	
<b>TOTALS</b>					

Is this W&B correct and within limits? YES /NO

### QUESTIONS BASED ON HP CONFIGURATION – 113 GAUGES AND FMS 29 & 35

- For normal twin engine operations, the maximum engine torque differential of 4%, IS or IS  
NOT applicable to the 212HP with eng #2 governor trim switch installed
- What is the 30 min single engine power range on the 3B and HP?? **Bad question – 3 vs 3b engines**  
3- 63.9 – 71.8%  
3b- 63.9 – 79.4%
- What is the twin engine take off power range on the HP? And for how long??  
87.5% 104.3 5 min
- 2/+2 positions, (trim) increase /decrease engine #1 only. **TRUE or FALSE?**  
Both engines simultaneously

5. What is the lateral trim range??
  - a) 1.0 - 3.0%
  - b) 2.0 - 2.5%
  - c) 1.0- 3.5%
  - d) 2.0 - 2.5%
  
6. What is max continuous N1 on the 3B with 113 gauges?  
101.8 - 103.4% 30 seconds
  
7. What is max transient N1 on the 3B with 113 gauges? And for how long??  
102.6% 30 seconds
  
8. What is the 5 min take off ITT limit?
  - a) 765 -810 C
  - b) 755 -805 C
  - c) 760 -815 C
  - d) 755 -815 C
  
9. What is the 2 1/2 min N1 range?
  - a) 101.6-103.6?
  - b) 101.3-102.4?
  - c) 101.8-103.4?
  - d) 101.8-104.3?
  
10. What is the N1 continuous range?
  - a) 61 – 100.8%
  - b) 61 – 101.8%
  - c) 61 – 102.7%
  - d) 61 – 101.5%
  
11. What is the 30 min ITT, OEI limit?
  - a) 755 – 825C
  - b) 745 – 835C
  - c) 715 – 844C
  - d) 765 – 822C
  
12. What is the 2.5 min ITT, OEI limit?
  - a) 812 – 855C
  - b) 822 – 850C
  - c) 785 - 890C
  - d) 805 – 865C
  
13. What is the purpose of the strakes and fast fin kits?
  - a) Reduces Tail rotor loading
  - b) Increases W&B
  - c) Increases Internal payload
  - d) Reduces pilot workload

**END OF EXAM**