

UNITAS FLYING CLUB TRAINING OPERATIONS



# Unitas Flying Club

Flying Training Operations

**Comprehensive Aircraft Technical Exam**

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UNITAS FLYING CLUB TRAINING OPERATIONS

**Unitas Flying Club Long Aircraft Technical**

Name: \_\_\_\_\_ Aircraft Type: \_\_\_\_\_

Date: \_\_\_\_\_ Aircraft Registration: \_\_\_\_\_

Signature of applicant: \_\_\_\_\_

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**THIS BLOCK IS FOR CLUB USE ONLY**

Marks obtained: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Signature of Instructor (Grade I or II): \_\_\_\_\_

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**ENGINE**

**ALL AIRCRAFT**

1. Number of engines: \_\_\_\_\_ Engine Manufacturer: \_\_\_\_\_

2. Engine model number: \_\_\_\_\_

3. Engine Type: \_\_\_\_\_

4. Power rating (state HP, RPM & MP): \_\_\_\_\_

5. Number of cylinders: \_\_\_\_\_

6. Maximum RPM: \_\_\_\_\_

7. Maximum continuous RPM: \_\_\_\_\_

8. Maximum oil temperature: \_\_\_\_\_

9. Oil pressure, Minimum: \_\_\_\_\_ Maximum: \_\_\_\_\_

10. Oil quantity, Minimum: \_\_\_\_\_ Maximum: \_\_\_\_\_

11. Oil Type: \_\_\_\_\_

12. Minimum static RPM at full throttle: \_\_\_\_\_

13. At what RPM are the magnetos checked? \_\_\_\_\_

and what is maximum RPM drop per magneto? \_\_\_\_\_

and the maximum difference between magnetos? \_\_\_\_\_

14. Cylinder head temperatures, Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_

**VARIABLE PITCH, TURBO CHARGED**

1. Maximum Continuous MP: \_\_\_\_\_

2. At which RPM is the CSU checked? \_\_\_\_\_

3. At which RPM is the feathering checked? \_\_\_\_\_

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**TURBO CHARGED AND FUEL INJECTION**

1. Briefly describe the hot start: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Maximum fuel flow on take-off: \_\_\_\_\_

**TURBO CHARGED**

1. Which grades of fuel are approved for this aircraft (state colours of fuel)? \_\_\_\_\_  
\_\_\_\_\_
2. Does this aircraft have a “Waste Gate”? \_\_\_\_\_  
and if so, at which MP does it open? \_\_\_\_\_
3. Briefly describe the Shut-down procedure: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**FUEL SYSTEMS**

**ALL AIRCRAFT**

1. Which grades of fuel are approved for this aircraft (state colours of fuel)? \_\_\_\_\_  
\_\_\_\_\_
2. Total fuel capacity: \_\_\_\_\_
3. Capacity of each tank: \_\_\_\_\_
4. Total usable fuel: \_\_\_\_\_
5. Give the typical consumption rate and endurance for the aircraft @ 65% power: \_\_\_\_\_  
\_\_\_\_\_
6. Give the positions for all the fuel drains: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**PROPELLER**

**ALL AIRCRAFT**

1. Propeller manufacturer: \_\_\_\_\_
2. Propeller models: \_\_\_\_\_
3. Propeller diameter, Maximum: \_\_\_\_\_ Minimum: \_\_\_\_\_
4. Maximum rotational speed (RPM): \_\_\_\_\_
5. Range of RPMs to be avoided: \_\_\_\_\_

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**AIRFRAME**

**ALL AIRCRAFT**

1. Give the following speeds at MAUW:

Vne: \_\_\_\_\_ Vno: \_\_\_\_\_  
Va: \_\_\_\_\_ Vfe: \_\_\_\_\_  
Vs: \_\_\_\_\_ Vso: \_\_\_\_\_  
Vx: \_\_\_\_\_ Vy: \_\_\_\_\_  
Cruise Climb: \_\_\_\_\_

- 2. Are spins approved in this aircraft? \_\_\_\_\_
- 3. Maximum demonstrated crosswind velocity: \_\_\_\_\_
- 4. Give the load factor limitations, Flaps up: \_\_\_\_\_ Flaps down: \_\_\_\_\_
- 5. Is flight into known icing conditions approved? \_\_\_\_\_
- 6. State tyre pressures, Nose / tail: \_\_\_\_\_ Main: \_\_\_\_\_

**RETRACTABLE LANDING GEAR**

- 1. Vlo: \_\_\_\_\_ Vle: \_\_\_\_\_
- 2. Explain how to operate the emergency landing gear system: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 3. By what method is the landing gear operated (hydraulic, electrical etc.)? \_\_\_\_\_

**ELECTRICAL SYSTEM**

**ALL AIRCRAFT**

- 1. Electrical system voltage: \_\_\_\_\_
- 2. AC or DC? \_\_\_\_\_
- 3. Battery Voltage: \_\_\_\_\_
- 4. Describe the location of the battery: \_\_\_\_\_  
\_\_\_\_\_
- 5. Does the aircraft use alternator(s) or generator(s)? \_\_\_\_\_
- 6. What will happen in the event of an over voltage condition? \_\_\_\_\_  
\_\_\_\_\_
- 7. How would you reset the alternator control unit? \_\_\_\_\_  
\_\_\_\_\_
- 8. How can we check the low voltage warning light? \_\_\_\_\_  
\_\_\_\_\_
- 9. Which type of circuit breakers does this aircraft use? \_\_\_\_\_
- 10. Does this aircraft have a ground servicing receptacle, and if so, where is it located? \_\_\_\_\_  
\_\_\_\_\_

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- 11. List all the external lights attached to this aircraft: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- 12. Does the aircraft have a pitot heat system? \_\_\_\_\_

**NORMAL OPERATIONS**

**ALL AIRCRAFT**

- 1. Idle RPM: \_\_\_\_\_
- 2. Flap setting for normal take-off: \_\_\_\_\_
- 3. Flap setting for short field take-off: \_\_\_\_\_
- 4. Normal take-off rotation speed: \_\_\_\_\_
- 5. Short-field take-off rotation speed: \_\_\_\_\_
- 6. Maximum angle of climb speed: \_\_\_\_\_
- 7. Maximum rate of climb speed: \_\_\_\_\_
- 8. What is the cruise RPM setting? \_\_\_\_\_
- 9. Give the approach speed for:  
Normal landing, no flaps: \_\_\_\_\_ Full flaps: \_\_\_\_\_  
Short field, flap setting: \_\_\_\_\_ Speed: \_\_\_\_\_
- 10. On go-around, immediately raise the flaps to: \_\_\_\_\_
- 11. What speed is used for the go-around? \_\_\_\_\_

**VARIABLE PITCH AND TURBO-CHARGED**

- 1. Manifold Pressure for normal climb: \_\_\_\_\_
- 2. Normal climb RPM: \_\_\_\_\_
- 3. State the MP & RPM for 55% cruise power @ 7500 ft density altitude, MP: \_\_\_\_\_ RPM: \_\_\_\_\_

**EMERGENCIES**

**ALL AIRCRAFT**

- 1. Airspeeds:  
Engine failure after take-off: \_\_\_\_\_  
Precautionary landing: \_\_\_\_\_  
Maximum glide: \_\_\_\_\_  
Forced landing without flaps: \_\_\_\_\_
- 2. Precautionary landing flap setting: \_\_\_\_\_

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- 3. Briefly describe the procedures to follow for an electrical fire in flight: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**VARIABLE PITCH**

- 1. Describe the procedure to follow if the Constant Speed Unit (CSU) fails, or the pitch cable breaks, i.e. engine over-revs: \_\_\_\_\_  
 \_\_\_\_\_

**TURBO-CHARGED**

- 1. State the procedure to follow if the turbocharger fails: \_\_\_\_\_  
 \_\_\_\_\_
- 2. Describe the actions to follow if the waste gate fails to open: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

**RETRACTABLE UNDERCARRIAGE**

- 1. Once the emergency gear operation was followed, are you allowed to operate this aircraft's gear again without a maintenance engineer checking it first? \_\_\_\_\_

**MULTI-ENGINED AIRCRAFT**

**GENERAL**

- 1. Give the engine model numbers of each engine:

Engine Position	Model Number

- 2. What is the accelerate-go distance for 60% load @ 2000 ft. density altitude? \_\_\_\_\_
- 3. What is the accelerate-stop distance for MAUW @ 6000 ft. density altitude? \_\_\_\_\_

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4. Which systems have redundancy? (e.g. alternators, vacuum pumps etc.)? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**SPEEDS**

1. Give the following speeds:

V1: \_\_\_\_\_ V2: \_\_\_\_\_

**MULTI-ENGINE EMERGENCIES**

**GENERAL**

1. What is indicated by Vmc? \_\_\_\_\_  
\_\_\_\_\_

2. Describe the emergency cross-feed: \_\_\_\_\_  
\_\_\_\_\_

3. Describe the actions followed during an engine failure after take-off: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. Identify the *Critical Engine*: \_\_\_\_\_

5. Single engine service ceiling: \_\_\_\_\_

6. Give the following speeds:

Vyse		Vxse	
Vmca		Vmcg	
Vsse			

7. What would you use as an asymmetric committal height in this aircraft? \_\_\_\_\_

8. Give the Zero-Thrust setting, MP: \_\_\_\_\_ RPM: \_\_\_\_\_

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**WEIGHT AND BALANCE**

**ALL AIRCRAFT**

1. Basic empty weight: \_\_\_\_\_
2. Maximum Take-off weight: \_\_\_\_\_
3. Maximum Ramp weight: \_\_\_\_\_
4. Maximum landing weight: \_\_\_\_\_
5. Maximum zero-fuel weight: \_\_\_\_\_
6. Useful load: \_\_\_\_\_
7. Number of baggage areas for the aircraft: \_\_\_\_\_
8. Maximum allowable weight in each area: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. Complete a load sheet using the following information:

Flight level: 075

Temperature: Standard

**Two seater aircraft**

**Three or four seater aircraft**

<u>Item</u>	<u>Weight</u>
Pilot:	82 Kg.
Passenger:	89Kg.
Baggage:	25Kg.
Fuel:	2 Hrs + 45 mins. Reserve

<u>Item</u>	<u>Weight</u>
Pilot	82 Kg.
Passengers:	78Kg. each
Baggage:	35 Kg.
Fuel:	3 Hrs + 45 mins. Reserve

**Five or more seater aircraft**

<u>Item</u>	<u>Weight</u>
Pilot:	82Kg.
Passengers:	80Kg.each
Baggage:	65 Kg.
Fule:	3 Hrs + 45 mins. Reserve.