



# Flight Examiner Manual

## Module 6 - Mountain Rating



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### MOU Skill Test

V2021.1

#### General Applicable Framework

<b>Flight rules:</b>	VFR
<b>Operational rules:</b>	Part-NCO
<b>Crew concept:</b>	SPO
<b>Equipment:</b>	Aeroplane (wheels or skis)
<b>Applicable type or class:</b>	TMG, SEP, SET, MEP, MET
<b>Required examiner certificate:</b>	FE qualified for MOU (ME)
<b>Possible combination with another test, check or AoC:</b>	No



# 1. Introduction

The basic privileges of the holder of a mountain rating are to conduct flights as PIC with aeroplanes or TMGs to and from surfaces, which are designated to require such a rating.

When conducting the skill test, the examiner must have due regard for the experience that a MOU candidate should have. The examiner shall also appreciate that upon licensing the pilot will be responsible to operate in the mountains, with all their peculiarities and risks, he is safe to approach and land on glaciers, snowfields with skis and/or specially designated landing sites of varying characteristics with wheels in a considered and foresighted manner.



## 2. Test Administration

Since flying in the mountains as well as flying to the designated landing areas must be strongly adapted to the current weather conditions, the corresponding programme must be defined and determined best possible before take-off for the skill test.

During the flight test, two sites different from the departure airport should be used for recognition, approach, landing and take-off. For the mountain rating ski or the extension from wheel to ski, one of the two different sites should be a glacier.

Usually, the examiner occupies the instructor seat and is the PIC. No other person, if not required for the conduct of the examination, is allowed on the aircraft.

Before proceeding with the test, the examiner shall verify that the prerequisites are met, including MOU skill test recommendation; the ATO/DTO shall make available the training records for verification if requested. Accordingly, the following documents and conditions shall be verified:

- Passport or ID;
- Valid rating for the aircraft used for the test;
- Medical EASA Class 2;
- Training completion certificate from the ATO/DTO;
- Relevant MOU skill test form filled, and endorsed by the ATO/DTO;
- Insurance of aircraft covering check flights; and
- Specific equipment for mountain landings (Skis, special wheels for mountain landings etc.).

When the examiner is satisfied that the prerequisite requirements are met; they should seek confirmation that the candidate is fit and ready for the test. If so, the examiner formally starts the test; it is a good practice to take this opportunity to show the examiner credentials at first.



## 3. Examiner Briefing

The Examiner must brief the following elements:

- Freedom for the candidate to ask questions;
- Purpose and aim of the skill test;
- Applicable weather minimum (e.g. Part-NCO, NAA, ATO/DTO, or test requirements);
- Examiner has PIC responsibility; the candidate acts autonomously as if they were the PIC;
- Handling of correct radio communications and calls during approach, landing and take-off;
- Examiner role-play in normal operations and simulated emergencies;
- Engine failure-simulation;
- Handling of possible contingencies (technical, weather, ATC);
- Handling of actual emergencies (e.g. engine failure procedures, change of aircraft control); and
- Pass, fail, and partial pass criteria, repeat items option, and examination termination rules.

When covering pass/fail criteria the examiner should cover general standards of completion, including decision-making and airmanship. Some test items may require specific emphasis for the candidate to understand what is required. The standards of completion should be agreed with the candidate, and the examiner should consider actual flight conditions when briefing them. Items which could require special emphasis could be:

- Take-off performance; selection of take-off rejection point
- Selection of aiming and touchdown point and acceptable tolerances for the different types of landings
- Navigation accuracy
- Simulated emergencies; expectation on handling, checklist use and what and how to simulate.

In covering the standards of completion, the examiner should also review how the candidate has been trained by the DTO/ATO as procedures and flight techniques might differ between organisations.



## 4. Candidate Flight Briefing

The examiner should allow the candidate to brief uninterrupted; the candidate shall conclude their briefing by making a go/no-go decision. The briefing should cover the following aspects:

- Timetable (e.g. boarding time);
- Operational navigation flight plan;
- Weather situation and forecast;
- Expected conditions regarding the landing areas
- Personal equipment for the flight;
- NOTAMs, including relevant local military restrictions, as applicable;
- Fuel planning;
- Mass and balance calculation;
- ATC flight plan, if applicable;
- Aircraft status and documents, including maintenance release;
- Threat and Error Management aspects.



## 5. Oral Examination on Ground

The Examiner should verify the relevant theoretical knowledge of the Candidate during the briefing on the ground by asking questions related, as far as possible, to the planned flight covering, for example, the following areas:

- Follow-up questions to the candidate's briefing;
- Regulations (EU and relevant specific national requirements);
- Licensing (e.g. MOU rating, privileges, validity);
- Operational aspects;
- Weather information and interpretation;
- Different conditions of the landing sites, snow, ice etc.;
- Use of oxygen;
- Characteristics of steep and flat landing areas;
- Types of snow;
- Airspace structure and limitations;
- Aircraft systems, limitations, performance, mass and balance;
- Navigation charts;
- Emergency procedures.

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# 6. Skill Test Items

The use of checklist, airmanship, control of aeroplane etc., apply in all sections.

**Section 6 may be combined with sections 1 to 5.**

The skill test items are stated in the left column. Expanded guidance and additional explanations are provided in the right column.

Section 1 - Departure		
1.1	Theoretical knowledge mountain rating: Equipment, Survival, Rules, Human Performance and Limitations	<ul style="list-style-type: none"><li>• Characteristics of steep and flat landing areas</li><li>• Types of snow</li><li>• Mountain survival tactics and procedures in case of incident/accident</li><li>• Human performance in relation to hypoxia and optical phenomena in mountains (whiteout, distance perception problems)</li></ul>
1.2	Pre-flight including: Documentation, mass and balance, weather briefing, NOTAM	<ul style="list-style-type: none"><li>• obtain and assess all elements of the prevailing and forecast weather conditions including latest snow information</li><li>• obtain and assess all aeronautical information and NOTAMS</li><li>• complete an appropriate flight navigation log</li><li>• determine that the aeroplane is correctly fuelled for the flight</li><li>• complete mass and balance schedule</li><li>• check aeroplane serviceability record and technical log</li><li>• perform all elements of the aeroplane pre-flight inspections as detailed</li><li>• confirm that the aeroplane is in a serviceable and safe condition for flight</li><li>• check and complete all necessary documentation</li></ul>
1.3	Pre-start checks, external/internal	<ul style="list-style-type: none"><li>• complete all recommended taxiing checks and procedures</li><li>• follow ATC instructions if applicable</li><li>• complete all departure checks and drills including engine operation</li><li>• use the correct take off technique using the recommended speeds for rotation/lift-off and initial climb</li><li>• execute a safe departure in accordance with published routes, clearance if applicable and with due regard for other air traffic</li><li>• ensure a safe climb and departure adjusting power and aeroplane configuration (with skis) appropriate</li><li>• complete all necessary after take-off checks</li><li>• use charts or other published information as required</li><li>• use correct lookout techniques</li><li>• observe the Rules of the Air and ATC Regulations</li><li>• follow any noise routing or departure procedures and ATC instructions if applicable</li><li>• complete all necessary climb checks</li></ul>
1.4	ATC compliance and R/T procedures	<ul style="list-style-type: none"><li>• demonstrate standard R/T procedures and phraseology</li><li>• demonstrate compliance with ATC instructions</li></ul>





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Section 2 - Airwork		
2.1	Flight techniques in the valleys	<ul style="list-style-type: none"><li>• <i>use of the correct technique to fly in mountains</i></li><li>• <i>consideration of the wind</i></li></ul>
2.2	Flight over mountain passes and ridges	<ul style="list-style-type: none"><li>• <i>demonstrate control of heading, altitude and airspeed while pass over mountain passes and ridges</i></li><li>• <i>consideration of the wind</i></li><li>• <i>maintain lookout throughout</i></li></ul>
2.3	U-turn in narrow valleys	<ul style="list-style-type: none"><li>• <i>demonstrate the correct lookout technique before, during and after turns</i></li><li>• <i>use correct techniques for such manoeuvres</i></li><li>• <i>establish and maintain throughout the turn the nominated altitude/level and speed</i></li><li>• <i>consideration of the wind</i></li></ul>

**Module 6 - Mountain Rating****Section 3 - En-route Procedures**

<b>3.1</b>	<b>Flight plan, dead reckoning and map reading</b>	<ul style="list-style-type: none"><li>• <i>control aeroplane using visual attitude flying techniques</i></li><li>• <i>complete all necessary checks and drills</i></li><li>• <i>configure airframe and engine for cruise/endurance performance in accordance with the AFM</i></li><li>• <i>display sound airmanship and cockpit management</i></li><li>• <i>complete all elements of VFR planning under consideration of weather, wind and visibility</i></li></ul>
<b>3.2</b>	<b>Orientation</b>	<ul style="list-style-type: none"><li>• <i>identify position visually by reference to ground features and map</i></li><li>• <i>use of topographic maps of the relevant regions</i></li></ul>
<b>3.3</b>	<b>Flight management (flight log, routine checks, including fuel, systems and icing)</b>	<ul style="list-style-type: none"><li>• <i>control aeroplane using visual attitude flying techniques</i></li><li>• <i>maintain the heading height and speed as planned or advised to the examiner within the prescribed limits</i></li><li>• <i>use an appropriate technique of instrument scanning and cross check to maintain flight within prescribed limits</i></li><li>• <i>make regular checks for carburettor icing</i></li></ul>
<b>3.4</b>	<b>Altimeter setting, ATC-liasion-compliance, R/T-procedures</b>	<ul style="list-style-type: none"><li>• <i>set and cross check altimeters to QNH</i></li><li>• <i>calculate heading and fuel required during any unscheduled diversion</i></li><li>• <i>calculate safety altitude for track to new destination/site</i></li><li>• <i>maintain the heading, altitude and speed taking into account the terrain</i></li><li>• <i>maintain R/T communication using correct phraseology throughout as used for mountain sites and/or glaciers</i></li><li>• <i>comply with ATC clearances and instructions when applicable</i></li></ul>

**Module 6 - Mountain Rating****Section 4a - Arrival at mountain landing site/glacier**

<b>4.1</b>	<b>Observation of obstacles on the ground</b>	<ul style="list-style-type: none"><li>• carry out appropriate checks and drills</li><li>• maintain adequate lookout and collision and define obstacles, like stones, waves, impacts and clefts etc.</li></ul>
<b>4.2</b>	<b>Evaluation of the landing site</b>	<ul style="list-style-type: none"><li>• consider light (sun), weather, wind conditions, landing surface and obstructions</li><li>• carry out high and normal recognition of the desired landing area</li></ul>
<b>4.3</b>	<b>Estimation of the snow nature (for check on skis only)</b>	<ul style="list-style-type: none"><li>• carry out low recognition of the desired landing area</li><li>• final assessment of snow conditions, waves, impacts and clefts</li><li>• set altimeter</li><li>• define altitude for the circuit</li></ul>
<b>4.4</b>	<b>Definition of the references for the landing</b>	<ul style="list-style-type: none"><li>• plan the circuit pattern and orientation with the landing area</li><li>• define terrain references</li><li>• wind taken into account</li><li>• maintain R/T communication using correct phraseology throughout as used for mountain sites and/or glaciers</li></ul>

**Section 4b - Landing on mountain landing site/glacier**

<b>4.5</b>	<b>Approach and landing (Minimum of 6 approaches and landings required)</b>	<ul style="list-style-type: none"><li>• aiming point and touch down area defined</li><li>• before entry in the circuit pattern complete all other necessary checks and drills</li><li>• required approach configuration changes are carried out</li><li>• check down position of the skis if applicable</li><li>• maintain awareness of other traffic through R/T and lookout</li><li>• adjust circuit pattern/speed to maintain spacing with other traffic in the pattern</li><li>• adjusting speed and rate of descent to maintain a stabilised approach</li><li>• aiming point and touch down area verified</li><li>• plan descent to achieve a safe approach to chosen landing area such that a safe landing would be assured</li><li>• execute a timely decision to discontinue the approach either when instructed or as considered necessary</li><li>• achieve the selected touchdown area at the recommended speed</li><li>• adjust the flare to achieve a safe landing</li><li>• maintain directional control after touchdown</li></ul>
<b>4.6</b>	<b>Parking/securing of the aircraft</b>	<ul style="list-style-type: none"><li>• choose a suitable position of the aircraft with due regard for landing surface, surroundings, inclination of the site and wind</li><li>• securing the aircraft with suitable tools</li></ul>
<b>4.7</b>	<b>ATC liaison - Compliance - R/T procedures</b>	<ul style="list-style-type: none"><li>• maintain R/T communication using correct phraseology throughout as used for mountain sites and/or glaciers</li></ul>

**Module 6 - Mountain Rating****Section 5 - Take-off from mountain landing site/glacier**

<b>5.1</b>	<b>Safety checks before take-off</b>	<ul style="list-style-type: none"><li>• <i>complete all necessary checks and drills</i></li></ul>
<b>5.2</b>	<b>Control of runway axis during take-off</b>	<ul style="list-style-type: none"><li>• <i>apply appropriate power and control aeroplane attitude to initiate a safe climb maintaining heading</i></li></ul>
<b>5.3</b>	<b>Choice and use of visual references for the take-off axis</b>	<ul style="list-style-type: none"><li>• <i>defined terrain points considered</i></li><li>• <i>complete all necessary checks and drills</i></li></ul>
<b>5.4</b>	<b>ATC liaison - Compliance - R/T procedures</b>	<ul style="list-style-type: none"><li>• <i>maintain R/T communication using correct phraseology throughout as used for mountain sites and/or glaciers</i></li></ul>

**Section 6 – Abnormal & emergency procedures**

<b>6.1</b>	<b>Simulated power loss during mountain take-off and departure</b>	<ul style="list-style-type: none"><li>• <i>maintain control of aeroplane direction and speed following simulated engine failure</i></li><li>• <i>complete checks and drills</i></li></ul>
<b>6.2</b>	<b>Simulated power loss during mountain approach and landing</b>	<ul style="list-style-type: none"><li>• <i>maintain control of aeroplane direction and speed following simulated engine failure</i></li><li>• <i>adjust traffic pattern with due regard to surface conditions, obstructions and other air traffic</i></li><li>• <i>complete checks and drills</i></li></ul>
<b>6.3</b>	<b>Simulated emergencies: Systems malfunctions Ski malfunction (for check on skis only)</b>	<ul style="list-style-type: none"><li>• <i>inform ATC of abnormal flight condition and any assistance required</i></li><li>• <i>comply with ATC procedures and instructions</i></li><li>• <i>demonstrate ability to operate aircraft systems as applicable</i></li><li>• <i>demonstrate knowledge of maintaining, operating, emergency handling and limitations of the aeroplane used for the flight test</i></li></ul>



## 7. Standard of Completion

To pass the MOU Skill Test, the candidate shall demonstrate the ability to:

- (a) operate the aeroplane within its limitations;
- (b) complete all manoeuvres with smoothness and accuracy;
- (c) exercise good judgment and airmanship; that is, to consistently use good judgement and well-developed knowledge, skills and attitudes to accomplish flight objectives;
- (d) apply aeronautical knowledge;
- (e) maintain control of the aeroplane at all times in such a manner that the successful outcome of a procedure or manoeuvre is never seriously in doubt;
- (f) stay within the following limits. Those tolerances are for general guidance; the Examiner should make allowance for turbulent conditions and the handling qualities and performance of the aeroplane used:

altitude:	normal flight	$\pm 100$ ft
heading:	normal flight	$\pm 10^\circ$
speed:	take-off and approach	-0/+5 knots
	all other flight regimes	$\pm 10$ knots

Compared to requirement (a) and (f), completion standards (b) to (e) don't rely on quantitative tolerance, but on qualitative one. Usage of guidance provided in subpart 8 should provide for a fact-based and consistent assessment and decision of those qualitative requirements.



## 8. Knowledge, Skills and Attitude Assessment Guidance

The following tables are designed to give the Examiner guidance when assessing the Knowledge, Skills and Attitudes required by the Candidate to successfully complete each section of the test. It should aid the Examiner to assess the standard of completion elements laid down in subpart 7 under (b) to (e) and determine the result.

For each section a brief narrative of the section's objectives is provided, together with the most relevant KSAs.

### Section 1 - Pre-flight Operation and Departure

- a) planning and preparation of a safe and compliant flight, including the usage of TEM
- b) safe and compliant usage of the aircraft on the ground and during the transition to flight

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• applicable regulations (rules of the air, operational, licensing)</li><li>• weather information interpretation and understanding</li><li>• Notams interpretation and understanding</li><li>• aircraft flight manual structure, relevant information usage</li><li>• aeronautical charts interpretation and usage</li><li>• radio communication procedures and standard phraseology</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• flight preparation information retrieval</li><li>• searching in official reference documents (e.g. AFM, AIP)</li><li>• standard SOP and checklist usage</li><li>• smooth aircraft handling</li><li>• communicate clearly and assertively</li></ul>
<b>Attitude</b>	<ul style="list-style-type: none"><li>• looking for information and assess them critically</li><li>• safety-minded rather than mission-minded</li><li>• takes effective decisions</li><li>• assertive when in doubt</li><li>• aware of his limited experience and abilities</li></ul>



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### Section 2 - General Airwork

safe and smooth aircraft operation throughout the certified flight envelope, awareness of the envelope limits and how to return to a safe flight, should an excursion occur

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• aircraft pitch-power-configuration values</li><li>• recovery procedures from an unusual aircraft state (stall, approach to stall, spiral dive)</li><li>• spin prevention and spin recovery procedure</li><li>• causes of load-factor increase and effect on stall speed</li><li>• critical airspeeds (e.g. <math>V_s</math>, <math>V_{ne}</math>, <math>V_{no}</math>, <math>V_a</math>) and respective ASI markings</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• establish stabilised flight path in trim, with the required power, airspeed, or vertical speed, as required</li><li>• smooth, precise, and coordinated aircraft handling</li><li>• smooth flight path changes, following the established SOPs</li><li>• correct and systematic application of recovery drills</li></ul>
<b>Attitude</b>	<ul style="list-style-type: none"><li>• acquire and update his knowledge about his position and potential threats (e.g. traffic, terrain, flight path) and consider their future evolution</li><li>• set priorities (Fly, Navigate, Communicate, Manage)</li><li>• assertive, seek clarification of doubts and misunderstandings before acting</li></ul>

### Section 3 - En-route Procedures

navigating safely and effectively in compliance with the regulation; monitoring the flight and maintaining an awareness of the changing environment; implementing adequate solutions as necessary

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• navigation charts legend and charts interpretation</li><li>• operational flight plan usage</li><li>• onboard navigation and communication equipment use and limitation</li><li>• applicable regulation (airspace class, weather minima)</li><li>• radiotelephony requirements, procedures, and applicable standard phraseology</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• chart and ground reading (reconciliation of ground features and chart information)</li><li>• proficient usage of onboard navigation and communication equipment</li><li>• smooth tracking of the required ground track while maintaining altitude</li><li>• communicate clearly, assertively, and in due time</li><li>• flight replanning and diversion implementation</li><li>• ability to fly basic manoeuvres</li></ul>
<b>Attitude</b>	<ul style="list-style-type: none"><li>• aware of the current situation and its possible evolution, and proactively generating options</li><li>• set priorities (Fly, Navigate, Communicate, Manage) and manage workload</li><li>• takes effective decisions, displaying leadership</li><li>• considerate about other traffics and the potential threat</li></ul>



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### Section 4a and 4b - Approach and Landing Procedures

safe arrival and entry into a mountain area in compliance with the regulation; structured pattern and stable approach leading to a safe landing; discontinuation of the approach or landing

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• procedures and standard pattern for mountain, briefing structure and purpose</li><li>• applicable landing techniques with different winds</li><li>• applicable take-off techniques with different winds</li><li>• radiotelephony requirements, procedures, and applicable standard phraseology</li><li>• post-flight actions (e.g. post-flight inspection, logbook entry, flight plan closing, occurrence reporting)</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• systematic configuration changes, operated within the applicable limitations</li><li>• precise and stable approach path</li><li>• positive touch down within the designated touch down zone, at the correct speed</li><li>• timely decision to abort the approach or landing</li><li>• safe engine-out approach and landing</li></ul>
<b>Attitude</b>	<ul style="list-style-type: none"><li>• awareness of the other traffics, their intentions, and the resulting impact</li><li>• mindful about the environment and its impact (e.g. wind, sun, light, condition of the landing area)</li><li>• considerate for other traffics</li><li>• assertive radiotelephony communication</li></ul>

### Section 5 - Take-off from mountain landing site/glacier

spotting, assessing, and addressing emergencies or abnormals using the appropriate procedures, maintaining a safe flight throughout; decisions to discontinue the flight to ensure safety, if necessary

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• emergency drills memory items</li><li>• cautionary landing methodology</li><li>• standard phraseology for emergency and abnormal situation</li><li>• transponder codes for emergency or com-loss situations</li><li>• priority setting tools (e.g. PPAA or FNCM)</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• instrument scanning for advanced information of an impending issue</li><li>• timely execution of emergency drills memory items</li><li>• proper use of the applicable checklist</li><li>• ability to deal with a system failure according to the AFM</li><li>• situation assessment, decision and solution implementation</li></ul>
<b>Attitude</b>	<ul style="list-style-type: none"><li>• information gathering and problem solving</li><li>• informed decision making</li><li>• awareness of time or height availability and exhaustion</li><li>• informed decision making and effective implementation</li><li>• set priorities (Fly, Navigate, Communicate, Manage)</li></ul>





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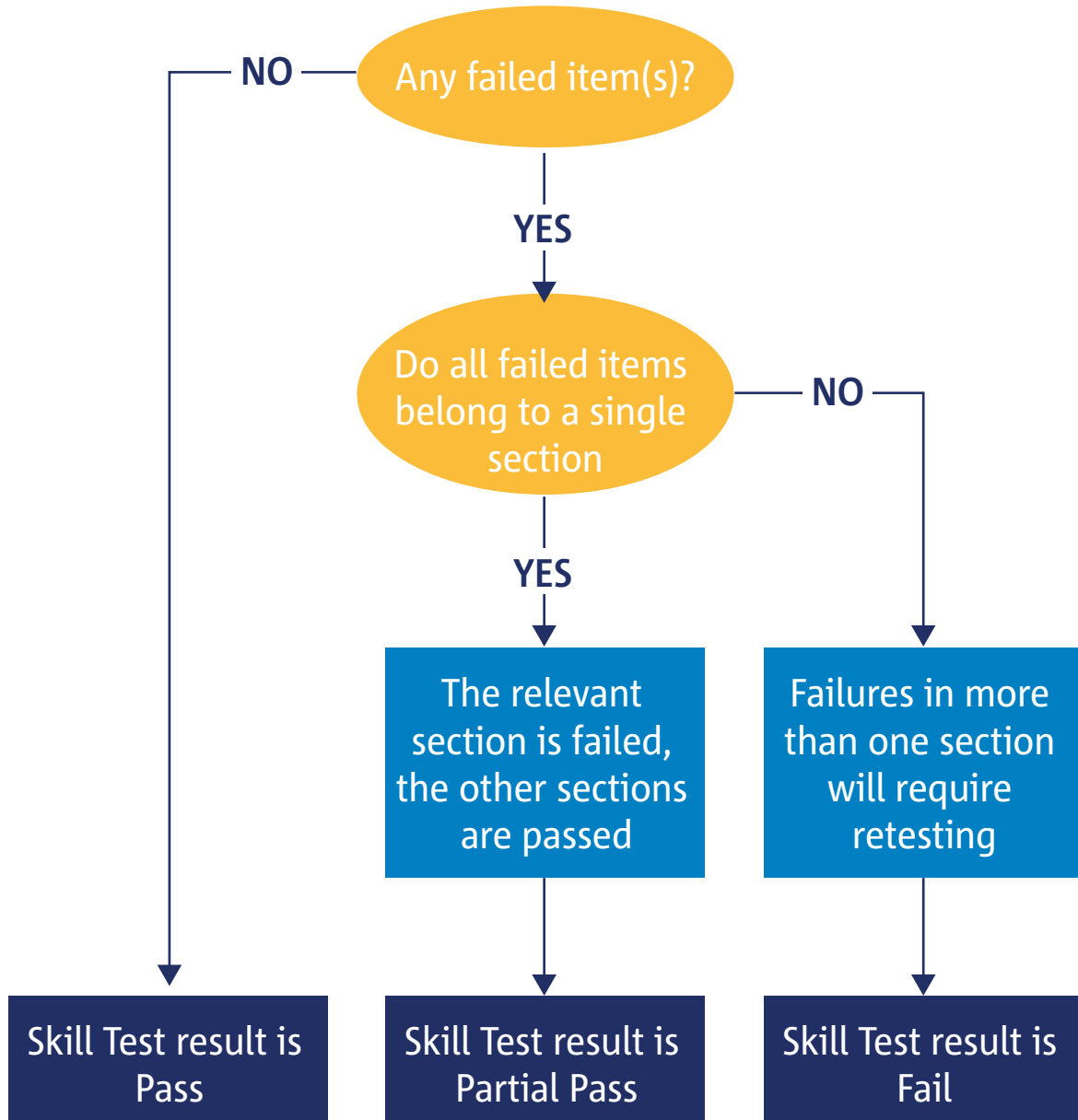
### Section 6 - Abnormal and Emergency Procedures

spotting, assessing, and addressing emergencies or abnormals using the appropriate procedures, maintaining a safe flight throughout; decisions to discontinue the flight to ensure safety, if necessary

<b>Knowledge</b>	<ul style="list-style-type: none"><li>• emergency drills memory items</li><li>• understanding of all emergency and abnormal procedures</li><li>• precautionary landing methodology</li><li>• standard phraseology for emergency and abnormal situation</li><li>• transponder codes for emergency or com-loss situations</li><li>• priority setting tools (e.g. PPAA or FNCM)</li></ul>
<b>Skill</b>	<ul style="list-style-type: none"><li>• instrument scanning for advanced information of an impending issue</li><li>• timely execution of emergency drills memory items</li><li>• proper use of the applicable checklist</li><li>• ability to deal with a system failure according to the AFM</li><li>• situation assessment, decision and solution implementation</li></ul>
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## 9. Decision Making Flow Chart





## 10. Test Debriefing

The debriefing should begin with the examiner informing the candidate the result of the test. After that, the examiner should make use of a facilitated discussion and emphasise the relevant strengths and weaknesses demonstrated by the candidate. If the test is failed, the Examiner shall inform the candidate and the training organisation regarding any training requirements. The candidate shall be explained their right of appeal, according to the procedures set by the candidate's competent authority. With the agreement of the candidate, the examiner may allow, the responsible instructor, a senior examiner or an inspector of the NAA, to take part in the debriefing.



# 11. Completion of all applicable records

All relevant records must be completed. Which includes, but is not limited to:

- Relevant operational documentation, ATS flight plan, aircraft logbook
- Skill test protocol and examiner report
  - 1 signed copy to the applicant
  - 1 copy to the candidate's competent authority
  - 1 copy to the examiner's competent authority
  - 1 copy for the examiner's records
- Candidate logbook

For any failed or partially failed test, the justification for failure must be printed on the examiner report. The ground for failure must be clear and motivated; a mere indication of which item was failed is not adequate nor sufficient. Any re-training recommendation should equally be written in the examiner report.