

CHAPTER 1 • REFERENCE DEPTH

The RTR(A) Exam & How to Use This Book

Before a single watt of radio theory, you must understand the licence itself — what it permits, who issues it, exactly how the examination is built and scored, the law that governs it, and the study system that will carry you through every chapter that follows. This is the map for the whole journey.

SYLLABUS MAP

Part I (vi) Licensing of radio apparatus • examination framework • key definitions (ICAO Annex 10)

🎯 Learning objectives — by the end of this chapter you will be able to...

- Define the RTR(A) licence, the privileges it grants, and the aeronautical mobile service it authorises you to operate in.
- Define aeronautical station, aircraft station and radiotelephony precisely, as the examiner expects.

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- Describe the structure of the examination — the written/oral theory paper and the practical transmission test — and how each is scored.
- State the validity, attempts, exemptions and renewal rules (3 years validity, 3 attempts, written-only exemptions, and lifetime validity with age 80 renewal).
- Explain the layered legal framework — Act, Rules, CAR, ICAO Annex 10, ITU Radio Regulations — and how they interlock.
- Use the study system in this book and follow a structured study plan.

1.1 What the RTR(A) is — privileges & the service

1.2 The key definitions you must own

1.3 How the examination is built & scored

1.4 Validity, attempts, exemptions & renewal

1.5 The legal framework

1.6 Eligibility & the application process

1.7 What the examiner is really testing

1.8 How to use this book — the study system

1.9 A structured study plan

1.10 Exam-day strategy & common failure causes

1.1 What the RTR(A) is — privileges & the service

IN PLAIN TERMS

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RTR(A) stands for **Radio Telephone Operator (Restricted) — Aeronautical**. It is the certificate that legally permits a person to **operate an aircraft radio station** and communicate by radiotelephony with air traffic services. The aircraft owns the radio; the RTR is what authorises *you*, the human, to press the transmit button on a live frequency and speak. Without it, a pilot may not exercise the radio privileges of a flight crew licence.

❓ WHY A SEPARATE RADIO LICENCE EXISTS

Radio spectrum is a shared, finite, safety-critical resource governed by international treaty. One untrained operator who blocks a distress call, transmits on the wrong frequency, or causes a runway incursion through a misunderstood clearance endangers everyone on that frequency. The State therefore requires every operator to demonstrate a defined minimum standard of **regulatory knowledge, radio theory and disciplined phraseology** before being licensed. The word "**Restricted**" signals that the privilege is confined to the **aeronautical mobile service** — you are licensed as an aircraft radio *operator*, not as a radio engineer or a general (e.g. maritime) operator.

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A student pilot operating within the aeronautical mobile service, communicating with Air Traffic Control via radio link.

✓ PRIVILEGES & LIMITATIONS OF THE RTR(A)

Privileges: to operate radiotelephone equipment in the aeronautical mobile service — transmitting and receiving voice communications with aeronautical (ground) stations and other aircraft, including handling distress, urgency and safety traffic.

Limitations: restricted to the aeronautical mobile service (not maritime/general); the holder operates equipment but is not certified to install or maintain it; operation is subject to the aircraft radio station being separately licensed (Chapter 3).

1.2 The key definitions you must own

WHY DEFINITIONS FIRST

The examiner frequently opens with a definition — "What is the aeronautical mobile service?" — because precise language is the foundation of safe radio work. Learn these word-for-word; they recur throughout the book.

THE CORE ICAO DEFINITIONS

Aeronautical Mobile Service (AMS): a mobile radiocommunication service between **aircraft stations and aeronautical stations**, or between aircraft stations, in which **survival-craft and emergency position-indicating beacon** stations may also participate.

Aeronautical Station: a **land station** in the aeronautical mobile service (e.g. an ATC or ground station). In certain cases it may be on board a ship or platform.

Aircraft Station: a **mobile station** in the aeronautical mobile service, located on board an aircraft (other than a survival-craft station).

Radiotelephony: a form of radiocommunication intended primarily for the **exchange of information in the form of speech**.

AMS(R) VS AMS(OR)

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The AMS is sub-divided: **AMS(R)** — "**Route**" is reserved for communications relating to **safety and regularity of flight** along national or international civil air routes; **AMS(OR)** — "**Off-Route**" covers communications outside those routes. As an RTR(A) operator you work primarily in **AMS(R)**.

💡 MNEMONIC

Land station = Aeronautical; Aircraft station = Airborne. "Aeronautical is on the earth." Both live inside the Aeronautical **Mobile** Service because the aircraft end moves.

1.3 How the examination is built & scored

📄 IN PLAIN TERMS

The RTR(A) is tested in two complementary halves. A **theory examination** (written and/or oral) checks your knowledge of regulations, radio principles and procedure. A **practical test** checks that you can actually *operate* — read a passage aloud, transmit and receive messages in correct phraseology, and answer the examiner's spoken questions on the spot.



Figure 1.1 — The two halves of the RTR(A) examination: Theory (Written/Oral) and Practical & Oral.

1.4 Validity, attempts, exemptions & renewal

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i IN PLAIN TERMS

The theory paper — what it covers

The theory follows the CAR Section 7 syllabus and breaks into three knowledge blocks:

(I) Aeronautical Telecommunication & Regulations; (II) Radio Principles & Practice; and (III) Radiotelephony procedures & phraseology. Questions are typically objective/short-answer; some centres also conduct an oral on the same material.

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The practical & oral test — what it covers

Reading a printed passage clearly at a controlled pace; transmitting and receiving a set of messages using correct **phonetic alphabet, numbers, phraseology and read-back**; demonstrating **distress/urgency** handling; and answering spoken questions. This tests *fluency under pressure*, not just recall.

MARKS, WEIGHTING & PASS STANDARD

Reported section weighting on the theory paper is approximately:

Regulations & Procedure ≈ 30%, Radio Principles & Practice ≈ 40%, Radiotelephony ≈ 20%+. **The pass marks are Written = 70% and Practical = 50% under CAR 2025.**

EXAM TRAP — THE PRACTICAL IS WHERE PEOPLE FAIL

Candidates over-invest in theory and under-prepare the oral/practical. Examiners fail more people on the spoken test, where nerves wreck phraseology and readability. Budget at least half your preparation for live transmission practice (Module C of this book).

Passing is governed by exact rules on how long a part-pass lasts, how many attempts you get, who is exempt, and how the licence is kept current. These are direct viva favourites and they govern your own paperwork — know the numbers cold.

RTR(A) Exam Rules & Validity

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Item	Rule (enter exact figure from current CAR / Rules 2025)
Validity of a part-pass	3 years (36 months). Practical attempts are valid for 3 years.
Number of attempts / re-sit interval	3 practical attempts allowed. There is no minimum re-sit interval.
Pass mark (each part)	Written = 70%; Practical = 50%.
Minimum age	18 years.
Exemptions	Written exam (Part 1) only. Exempt categories: military pilots (1000 hrs flying experience), old 1954 rules licence holders, and Commonwealth/Philippines FRTOL holders. No practical exam exemptions.
Validity & renewal of the licence	Lifetime validity. Yearly renewal required only after age 80 based on 3 months of experience in the preceding 1 year.

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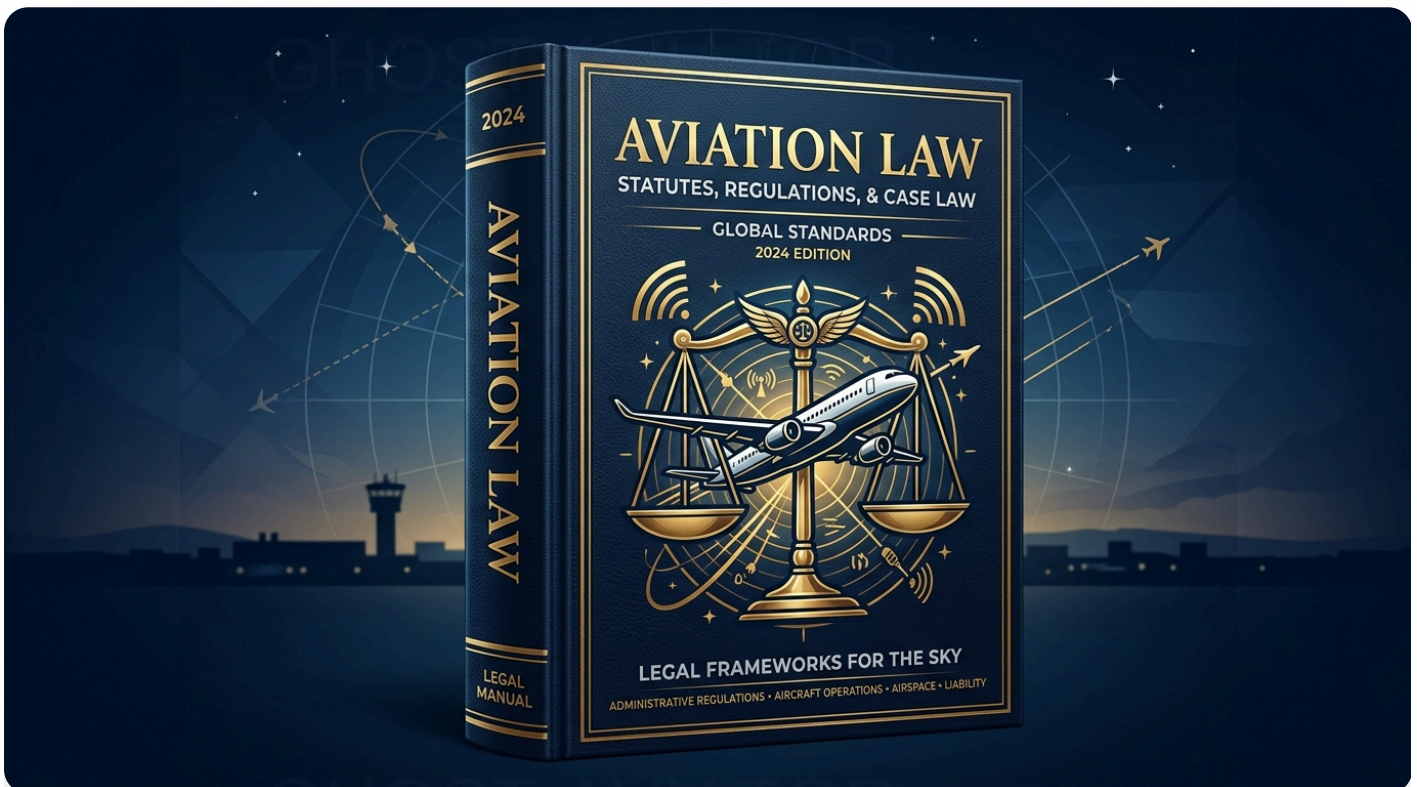
| 1.5 The legal framework



FIRST PRINCIPLES — THREE LAYERS OF LAW, PLUS TWO INTERNATIONAL FOUNDATIONS

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Authority over your radio licence flows downward through nested layers. The **Act** is the top-level national statute; the **Rules** are the detailed mechanics made under it; the **CAR** is the regulator's operating requirement that turns the rules into a syllabus and procedure. Above the national layer sit two international foundations: **ICAO Annex 10** (the technical standards for aeronautical telecommunications) and the **ITU Radio Regulations** (the global allocation of spectrum). India's national law gives domestic legal force to these international standards.



The three-tiered structure of Indian aviation law governing radiotelephony licensing and airwaves coordination.

The Nested Legal Framework

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Layer	Instrument	What it does
International (spectrum)	ITU Radio Regulations	Allocates the radio-frequency bands aviation may use
International (aviation)	ICAO Annex 10	Standards & Recommended Practices for aeronautical telecommunications
National Act	Bharatiya Vayuyan Adhiniyam, 2024	India's principal civil aviation statute
National Rules	RTR (Restricted) Rules, 2025	Create & govern the RTR licence and examination
Requirement	CAR Section 7, Series G, Part VI	The examinable syllabus & procedure

💡 MNEMONIC — "ACT → RULES → CAR"

Remember "**A Real Carrier**": Act (Vayuyan Adhiniyam) → Rules (RTR Restricted 2025) → CAR (Section 7). Broad to specific, top to bottom — just like a transmitter narrowing a big idea down to one exact frequency.

▼ 🔍 Deep dive — why a new Act and Rules appeared in 2024–25

India modernised its aviation statute, replacing the long-standing Aircraft Act, 1934 framework with the **Bharatiya Vayuyan Adhiniyam, 2024**, and refreshed the subordinate rules — including RTR licensing — in 2025. For the exam the practical takeaway is simple: **cite the current Act**

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and Rules by name. Quoting a repealed Act marks a candidate as out of date, and is exactly why second-hand notes are risky — the legal citations age fast even when the radio physics does not.

1.6 Eligibility & the application process

✓ TYPICAL PATH TO THE LICENCE

1. Meet the **eligibility** (minimum age; any prescribed nationality/identity requirements).
2. **Apply** to the examining authority with the required form, fee, photographs and identity/age proof.
3. Sit the **theory** examination (and oral where conducted).
4. Sit the **practical & oral** transmission test.
5. On passing both within the validity window, the **licence is issued**.
6. Maintain currency/renewal as required.

1.7 What the examiner is really testing

i THE FIVE COMPETENCIES

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Behind every question sits one of five competencies. Frame your study around them, not just around topics:

The Five Competencies

Competency	What it looks like in the exam	Where in this book
Regulatory knowledge	Bodies, licences, NOTAM/AIP, definitions	Module A (Ch 1–6)
Radio theory	Electrical, bands, propagation, modulation, equipment, nav aids	Module B (Ch 7–12)
Phraseology fluency	Phonetics, numbers, call signs, ATC scripts	Module C (Ch 13–22)
Readability & delivery	Clear, paced, correct pronunciation on the practical	Module C + practice
Emergency handling	Distress/urgency, comms failure, the right word at the right time	Ch 20



The examiner evaluates phraseology fluency and emergency handling during the live practical testing.

1.8 How to use this book — the study system

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i IN PLAIN TERMS

Every chapter is built the same way, so once you learn the pattern here you move fast everywhere. Watch for these coloured boxes — each has a job:

📖 DEFINITION

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The exact wording to recite. Blue = "say it like this."

NUMBERS / LIMITS

Hard figures — frequencies, distances, percentages. Teal = "memorise this."

PROCEDURE

A step-by-step sequence done in order. Green = "do it in this order."

WORKED EXAMPLE

A problem solved end-to-end. Indigo = "follow the working."

EXAM TRAP

A common mistake or examiner favourite. Orange = "don't fall for this."

MNEMONIC

A memory hook for sticky facts. Purple = "remember it this way."

COCKPIT REALITY

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How the rule plays out in flight. Pink = "why it matters in the air."

Inside the text you'll also meet the **three-pass method** on each concept — **In plain terms**, then **Why it works**, then the **exact figure or rule**. Collapsible 🔍 **Deep dives** are optional enrichment. Every chapter ends with a **question bank** (MCQs + viva, and numerical problems where relevant) and a **revision card**.



A structured approach combining theory readings with regular phraseology drills yields the best results.

1.9 A structured study plan

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i AN 8-WEEK FRAMEWORK (COMPRESS OR EXPAND TO SUIT)

Treat theory and practical in parallel — never leave the practical to the last week.

Suggested 8-Week Study Plan

Week	Theory focus	Practical drill (in parallel)
1	Ch 1–2 — exam, bodies, framework	Phonetic alphabet & numbers daily
2	Ch 3–4 — licensing, Q-codes	Time, standard words, radio checks
3	Ch 5–6 — FIR/AIS/NOTAM, met codes	Decode METAR/TAF aloud; ATIS read-back
4	Ch 7–8 — electrical, frequency bands	Call signs & initial contact
5	Ch 9–10 — propagation, modulation	Taxi/clearance phraseology
6	Ch 11–12 — equipment, nav aids	Departure/circuit/approach scripts

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Week	Theory focus	Practical drill (in parallel)
7	Ch 13–18 — phraseology & control	Full message exchanges; distress drills
8	Ch 19–24 — revision & mock papers	Mock practical & oral under timed pressure

✈️ COCKPIT REALITY

On your first solo radio call your mouth goes dry and your mind blanks. The pilots who stay calm are the ones who *drilled the pattern* until it was automatic. The quizzes and revision cards exist for that — not merely to pass the exam, but so the right words come out when the frequency is busy and the pressure is real.

1.10 Exam-day strategy & common failure causes

✓ THE HONEST PASS ROUTINE

Aim for **8/10 on every chapter's self-test before moving on**; re-drill the "Numbers to Memorise" tables until automatic; and **speak the phraseology out loud daily** — silent reading does not build the spoken fluency the practical demands.

✔ ON THE DAY

Theory: read every question fully before answering; do the ones you know first; never leave objective questions blank; watch the units. Practical: **listen, then press, pause, speak, release**; control your pace; use full standard phraseology and read back correctly; if you fumble, say "**correction**" and continue calmly.

⚠ THE FIVE MOST COMMON REASONS CANDIDATES FAIL

1. Neglecting the **practical/oral**.
2. Guessing **exact regulatory figures** (validity, pass mark, frequencies).
3. Confusing look-alike facts (ICAO vs IATA, QNH vs QFE, 121.5 vs 243.0).
4. Poor **readability** — too fast, mumbled, wrong pronunciation.
5. Freezing on **distress phraseology**.

Every one is fixed by drilling, not cramming.

★ Numbers to memorise

Essential Facts for Chapter 1

Fact	Value
Licence	RTR(A) — Radio Telephone Operator (Restricted), Aeronautical

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Fact	Value
Service authorised	Aeronautical Mobile Service — primarily AMS(R)
Aeronautical station	A land station in the AMS
Aircraft station	A mobile station in the AMS aboard an aircraft
Governing Act / Rules	Bharatiya Vayuyan Adhiniyam 2024 / RTR (Restricted) Rules 2025
Syllabus source	CAR Section 7, Series G, Part VI
International foundations	ICAO Annex 10 (telecom standards) · ITU Radio Regulations (spectrum)
Pass mark / validity / attempts	Written = 70%, Practical = 50% Valid for 3 years 3 practical attempts



Question bank

Part A — MCQs (click an option to check)

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1. "RTR(A)" stands for:

Radio Transmission Rating (Advanced)

Radio Telephone Operator (Restricted) — Aeronautical

Registered Telecom Radio (Aircraft)

Radar Tracking Receiver (Airborne)

Answer: Radio Telephone Operator (Restricted), Aeronautical

— the operator's licence for the aircraft radio.

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2. The "Restricted" in RTR(A) means the licence is limited to:

Operation within the aeronautical mobile service

Daylight operations only

Ground operations only

Any radio service worldwide

Answer: Operation within the aeronautical mobile service

. It confines the privilege to the aeronautical mobile service — an aircraft radio operator, not a general operator.

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3. The Aeronautical Mobile Service is a service between:

Two land stations only

Aircraft stations and aeronautical stations (and between aircraft stations)

Ships and aircraft only

Satellites and ground

Answer: Aircraft stations and aeronautical stations (and between aircraft stations)

. AMS is between aircraft stations and aeronautical (land) stations, or between aircraft stations; survival-craft/ELT may participate.

4. An "aeronautical station" is:

A station aboard an aircraft

A land station in the aeronautical mobile service

A satellite

An emergency beacon

Answer: A land station in the aeronautical mobile service

. An aeronautical station is a land station; the airborne one is the aircraft station.

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5. "Radiotelephony" is radiocommunication primarily for the exchange of:

Data packets

Morse code

Information in the form of speech

Radar returns

Answer: Information in the form of speech

. Radiotelephony = communication primarily by speech.

6. AMS(R) is reserved for communications relating to:

Company business

Safety and regularity of flight along civil air routes

Passenger entertainment

Military operations only

Answer: Safety and regularity of flight along civil air routes

. The "R" = Route; AMS(R) carries safety/regularity-of-flight traffic on civil routes.

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7. The document that lists the examinable RTR(A) syllabus is:

ICAO Annex 8

The Aircraft Rules, 1937

CAR Section 7, Series G, Part VI

The ITU Radio Regulations

Answer: CAR Section 7, Series G, Part VI

. The DGCA's CAR Section 7, Series G, Part VI carries the syllabus.

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8. The correct top-to-bottom legal order is:

CAR → Rules → Act

Act → Rules → CAR

Rules → CAR → Act

Act → CAR → Rules

Answer: Act → Rules → CAR

. "A Real Carrier" — Act (top statute) → Rules (made under it) → CAR
(operationalises into a syllabus).

9. The principal civil aviation statute currently in force in India is the:

Aircraft Act, 1934

Bharatiya Vayuyan Adhiniyam, 2024

Telegraph Act, 1885

Carriage by Air Act

Answer: Bharatiya Vayuyan Adhiniyam, 2024

. The 2024 Act replaced the older Aircraft Act framework.

10. Which international instrument allocates the radio-frequency spectrum aviation may use?

ICAO Annex 10

The ITU Radio Regulations

CAR Section 7

The Chicago Convention

Answer: The ITU Radio Regulations

. The ITU allocates spectrum; ICAO Annex 10 then standardises aviation's use of it.

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11. The examination is passed only when the candidate clears:

The theory paper alone

The practical alone

Both the theory and the practical/oral

Either one

Answer: Both the theory and the practical/oral

. Both halves must be passed (within the validity window) to be licensed.

12. Examiners most often fail candidates on:

The application form

The practical/oral phraseology test

The medical

The theory paper

Answer: The practical/oral phraseology test

. Live phraseology under pressure trips up the under-prepared — drill it as hard as theory.

13. The RTR(A) authorises the holder to:

Install and maintain aircraft transmitters

Operate the aircraft radio and communicate with ATS

Act as an air traffic controller

Issue NOTAMs

Answer: Operate the aircraft radio and communicate with ATS

. It is the operator's licence — communication, not engineering or control.

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14. ICAO Annex 10 deals with:

Rules of the Air

Operation of Aircraft

Aeronautical Telecommunications

Aerodromes

Answer: Aeronautical Telecommunications

. Annex 10 — Aeronautical Telecommunications — is the international standard behind the RTR syllabus.

15. The best preparation balance for the RTR(A) is:

100% theory, nothing spoken

Theory and spoken phraseology drilled in parallel from the start

Practical only in the final two days

Memorise the question bank, ignore concepts

Answer: Theory and spoken phraseology drilled in parallel from the start

. Run theory and live transmission practice together throughout; never defer the practical.

Part B — Oral / viva (tap to reveal model answers)

▼ ? What does the RTR(A) licence permit, and what does "Restricted" mean?

Model Answer:

It permits the holder to operate an aircraft radio station and communicate by radiotelephony within the aeronautical mobile service. "Restricted" means the privilege is confined to that service — an aircraft radio operator, not a general or maritime operator, and not certified to install/maintain equipment.

▼ ? Define the Aeronautical Mobile Service.

Model Answer:

A mobile radiocommunication service between aircraft stations and aeronautical stations, or between aircraft stations, in which survival-craft and emergency position-indicating beacon stations may also participate.

▼ ? What is the difference between an aeronautical station and an aircraft station?**Model Answer:**

An aeronautical station is a land station in the aeronautical mobile service (e.g. ATC/ground); an aircraft station is a mobile station in that service located aboard an aircraft.

▼ ? Define radiotelephony.**Model Answer:**

A form of radiocommunication intended primarily for the exchange of information in the form of speech.

▼ ? Name the Act, the Rules, and the syllabus document governing the RTR licence.**Model Answer:**

The Bharatiya Vayuyan Adhiniyam, 2024 (Act); the Radio Telephone Operator (Restricted) Rules, 2025 (Rules); and CAR Section 7, Series G, Part VI (syllabus).

▼ ? What is the difference between AMS(R) and AMS(OR)?**Model Answer:**

AMS(R) — "Route" — is reserved for communications relating to safety and regularity of flight

along civil air routes; AMS(OR) — "Off-Route" — covers communications outside those routes.

▼ ? How is the RTR(A) examination structured?

Model Answer:

In two halves: a theory examination (written and/or oral) on regulations, radio principles and radiotelephony; and a practical/oral test of passage reading, message transmission and reception in correct phraseology, distress handling, and spoken questions. Both must be passed to be licensed.

▼ ? Which two international bodies underpin the system, and what does each do?

Model Answer:

The ITU allocates the radio-frequency spectrum (Radio Regulations); ICAO sets the aviation technical standards, with Annex 10 covering aeronautical telecommunications. National law gives these domestic force.

⚡ 60-SECOND REVISION CARD

RTR(A) = operator's licence for the aircraft radio, restricted to the **Aeronautical Mobile Service** (mainly AMS(R)).

Aeronautical station = land; **Aircraft station** = airborne; **Radiotelephony** = communication by speech.

Exam = **theory** (regs / radio principles / RTF) + **practical & oral**; pass **both**. The oral fails most people.

Law stack: **Act 2024** → **Rules 2025** → **CAR Sec 7**; foundations **ICAO Annex 10 + ITU Radio Regs**.

Remember: pass mark (Written 70% / Practical 50%), validity of part-pass (3 years), attempts (3 practical attempts), and minimum age (18 years).

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