

**DGCA APPROVED STUDY MATERIAL****Masterclass Chapter 7:  
Separation in the Vicinity  
of Aerodromes****Concept**

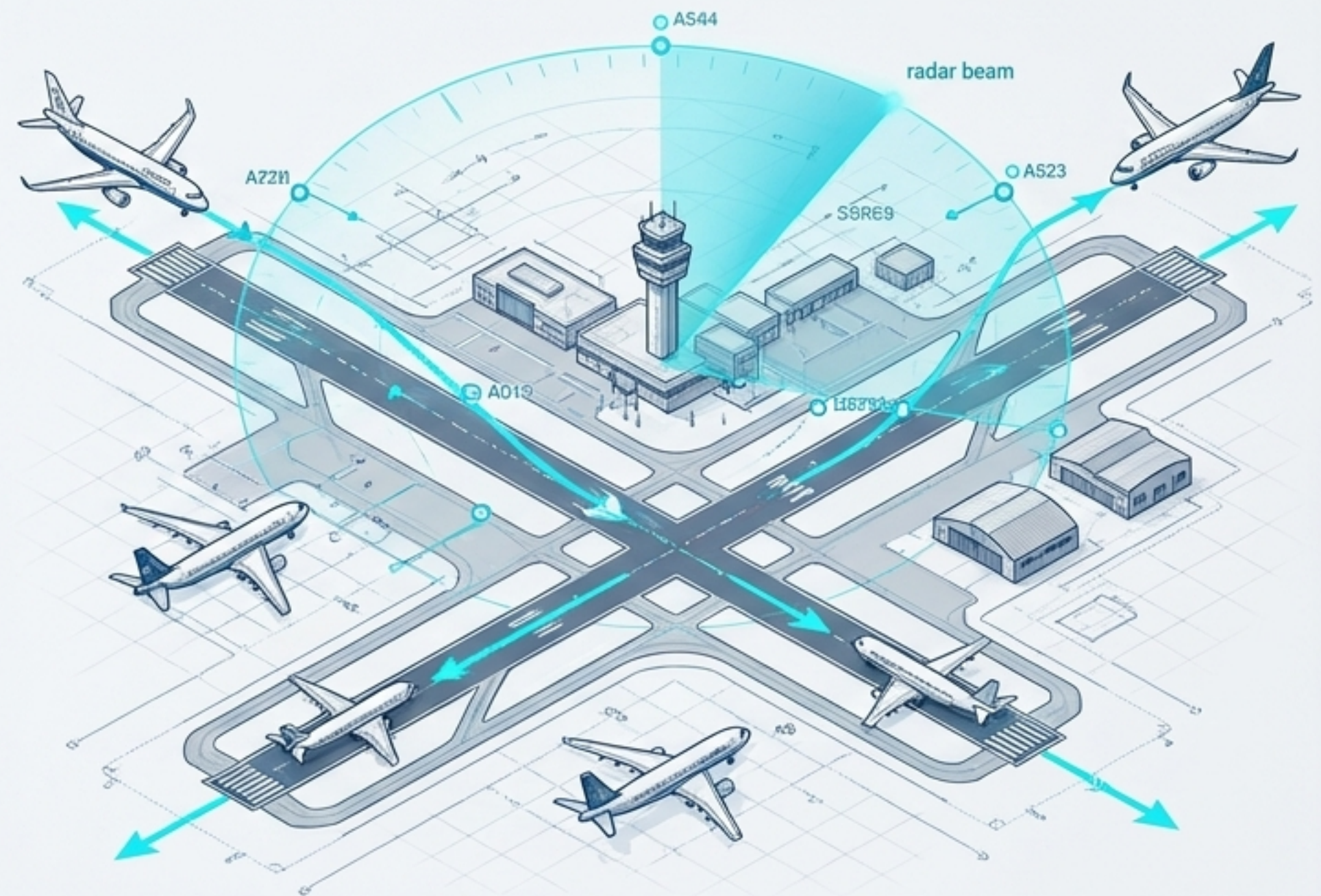
Safe, expeditious flow of air traffic requires rigid, time-based and distance-based separation minima applied by Air Traffic Control (ATC) in the terminal area.

**Regulatory Application**

Adherence to ICAO Doc 4444 and AIP India procedures for departures, arrivals, and visual approaches in controlled airspace.

**Exam Tip**

The DGCA CPL/ATPL exams heavily target numerical thresholds (minutes, distances, speeds, altitudes) in this chapter. Memorize the exceptions and specific conditional triggers.

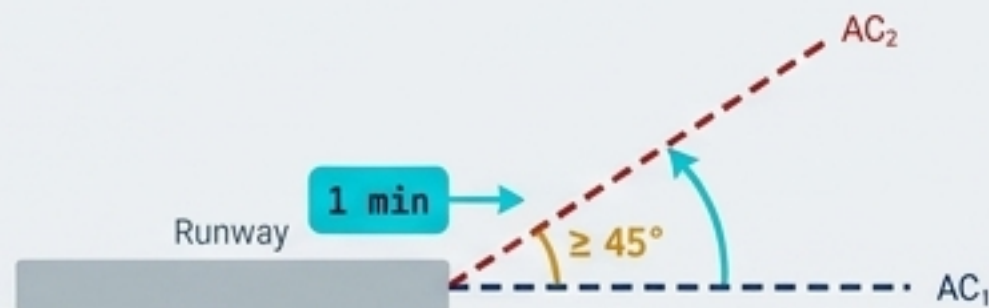
**DGCA Exam Alert: High Probability**

Expect at least 3-4 direct numerical recall questions from this specific chapter in your Air Regulations exam.

# Minimum Separation Between Departing Aircraft (The 1-2-5 Rule)

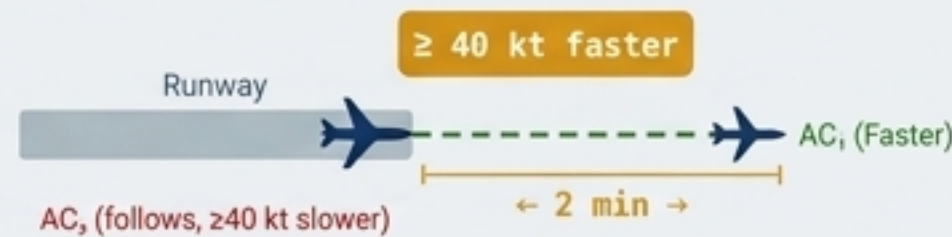
**Concept:** Successive departing aircraft must be separated laterally, longitudinally, or vertically using specific time intervals to avoid wake turbulence and mid-air collisions.

## 1-Minute Rule (Lateral)



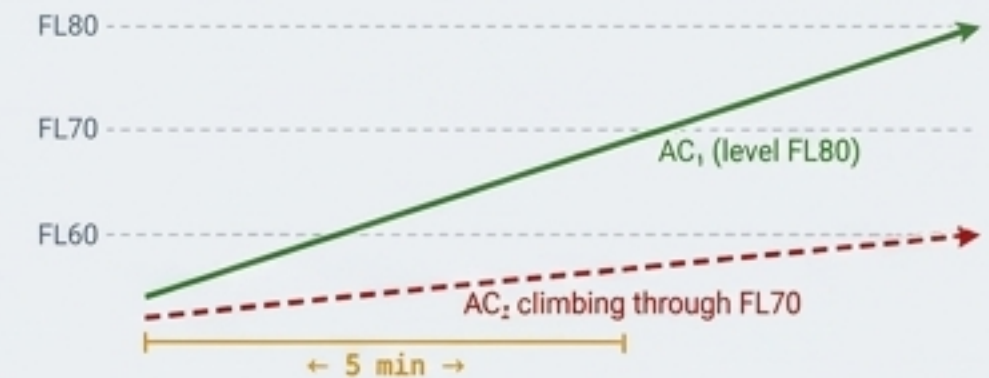
Applied if tracks diverge by  $\geq 45^\circ$  immediately after take-off.

## 2-Minute Rule (Longitudinal)



Applied on the same track if the preceding aircraft is  $\geq 40$  kt faster.

## 5-Minute Rule (Vertical)



Applied on the same track if the following aircraft climbs through the preceding aircraft's level.

**Exam Tip:** Look for the word 'immediately' in the 1-minute rule, and ensure you associate 40 knots strictly with the 2-minute rule.

### DGCA Exam Alert

**High Probability Question:** "One-minute separation may be used between departing aircraft if they are to fly on tracks diverging by at least?" → **Answer:**  $45^\circ$  immediately after take-off.

# Departing vs. Arriving Aircraft: Conflict Zones

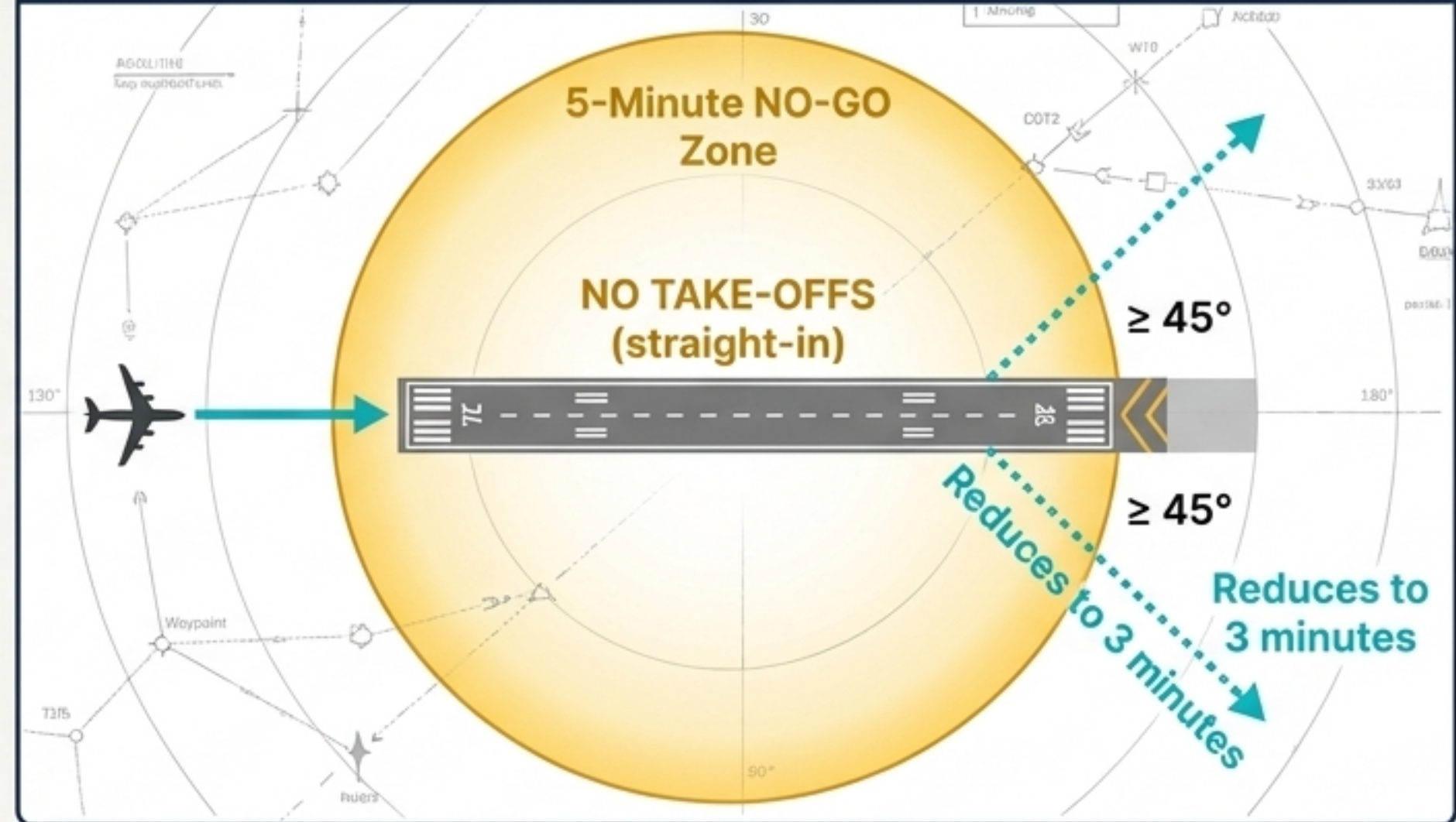
**Concept:** Departures must be held on the ground to protect the approach path of an arriving IFR aircraft, depending on the type of approach being flown.

## Regulatory Application

- **Complete Instrument Approach:** Take-offs permitted in **ANY** direction until arrival starts procedure/base turn. If departing track differs by  $\geq 45^\circ$  from **reciprocal**, permitted until **3 mins** before arrival is over runway.
- **Straight-in Approach:** Take-offs permitted in **ANY** direction until **5 mins** before arrival is over runway. If track differs by  $\geq 45^\circ$ , permitted until **3 mins** before.

**Exam Tip:** "Straight-in = 5 mins."  
 "Procedure turn = Until turn starts."  
 Both allow an exception down to 3 mins if your departure track diverges by  $\geq 45^\circ$ .

## Radar Threat Zone



## DGCA Exam Alert

**High Probability Question:** "If an arriving aircraft is making a straight-in approach, a departing aircraft may take off in any direction?" -> **Answer:** Until 5 minutes before the arriving aircraft is estimated to be over the instrument runway.

# Reduction in Separation Minima

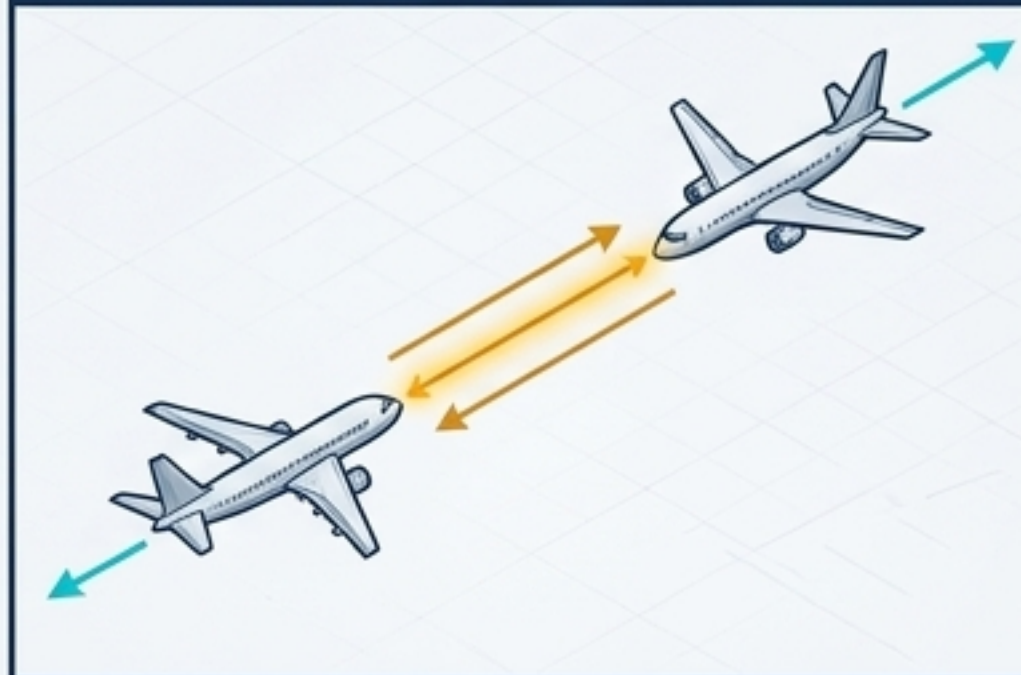
**Concept:** Under strict **visual conditions**, the standard radar/time-based separation minima can be reduced to increase aerodrome throughput.

## Condition A



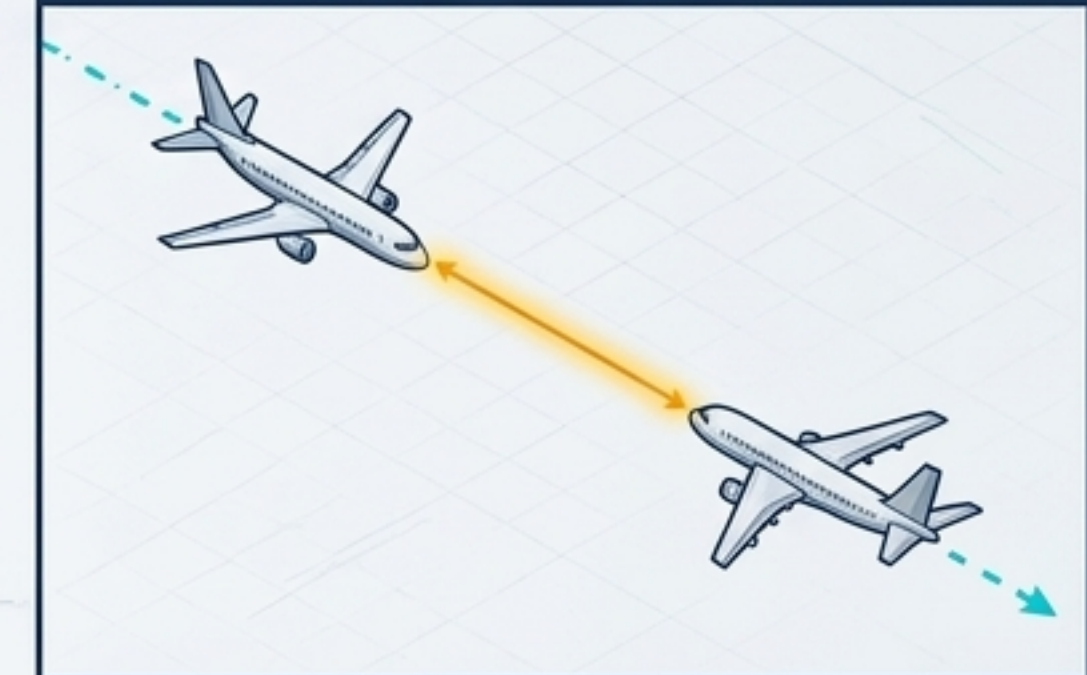
Controller has both aircraft continuously in sight.

## Condition B



Both flight crews see each other AND pilot reports they can maintain own separation.

## Condition C



A following aircraft has the preceding aircraft in sight and reports able to maintain separation.

**Exam Tip:** The controller cannot force a reduction based on pilot vision; the pilot **MUST** explicitly report "traffic in sight and can maintain own separation."

## DGCA Exam Alert

**High Probability Question:** "For controlled traffic, separation minima may be reduced..."

-> **Answer:** When the commander in the following aircraft has the preceding aircraft in sight and is able to maintain own separation.

# Visual Approach Fundamentals

**Concept:** A Visual Approach allows an IFR flight to bypass part or all of the instrument approach procedure while maintaining visual reference to the terrain.

## Regulatory Application

Exclusively for IFR flights (the IFR flight plan remains active).  
Can be requested by the Pilot OR initiated by the Controller.

## Exam Tip

VFR flights do not execute "Visual Approaches." If the exam option mentions VFR, cross it out immediately.  
Furthermore, controllers cannot initiate it if they suspect the crew is unfamiliar with the aerodrome terrain.



## DGCA Exam Alert

**High Probability Question:** "A so-called Visual Approach can be performed:"

→ **Answer:** During IFR flights, if there is permanent sight on the movement area and the underlying ground.

# Visual Approach Visibility Minima

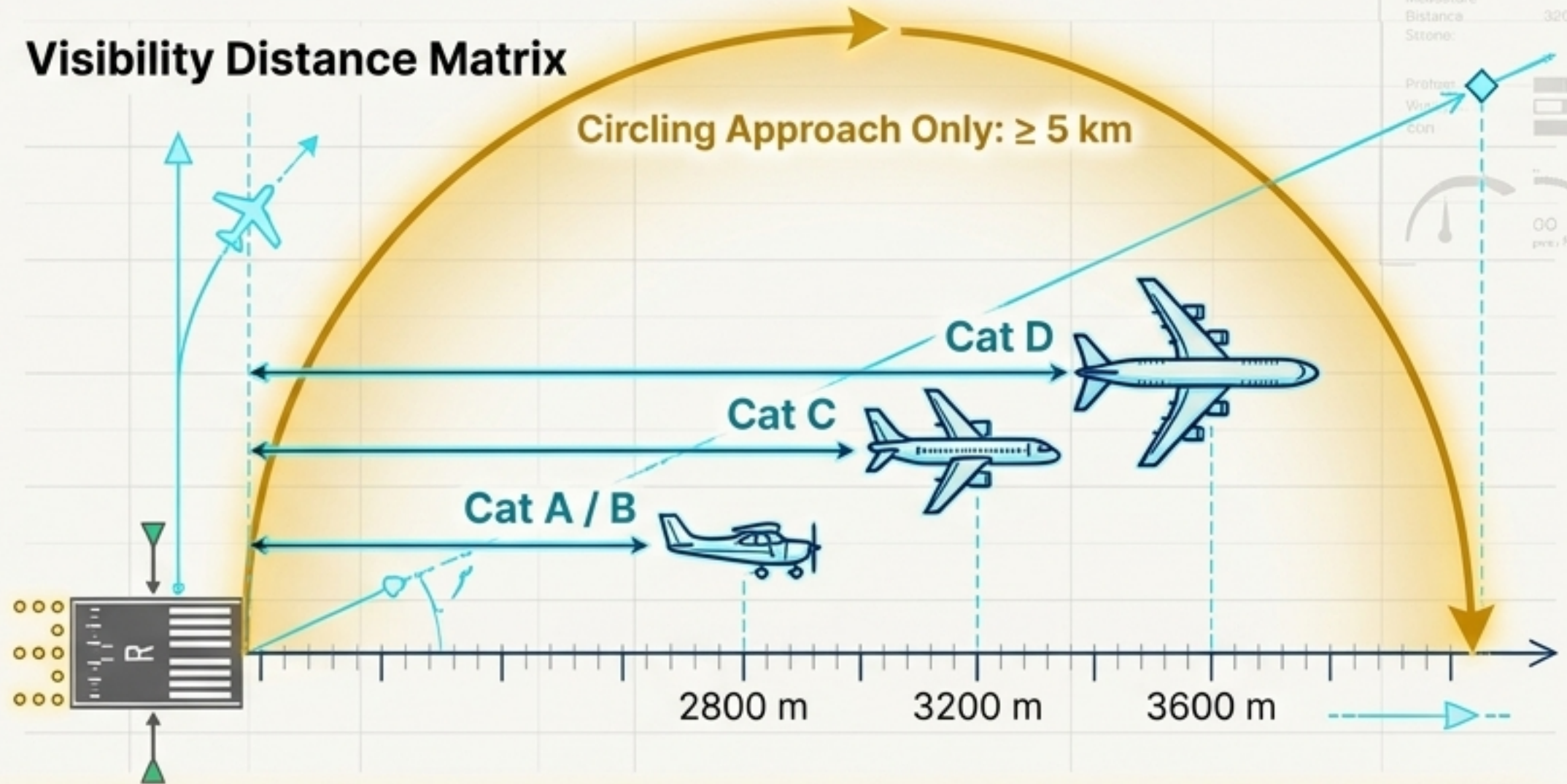
**Concept:** A visual approach is only legal if the meteorological conditions guarantee a safe landing using external visual cues.

**Regulatory Application**

Ground visibility must NOT be below the higher of the aerodrome operating minima, OR the absolute minima based on Aircraft Category.

**Exam Tip:**

Memorize the 400m step-up per category (2800 → 3200 → 3600). Circling approaches demand a massive jump to 5 km.



**DGCA Exam Alert**

**High Probability Question:** "Which statement is correct? During a visual approach in Class C airspace..."

**Answer:** ATC will apply separation with other traffic (ATC still separates you; you only maintain terrain clearance).

# Own Separation in VMC

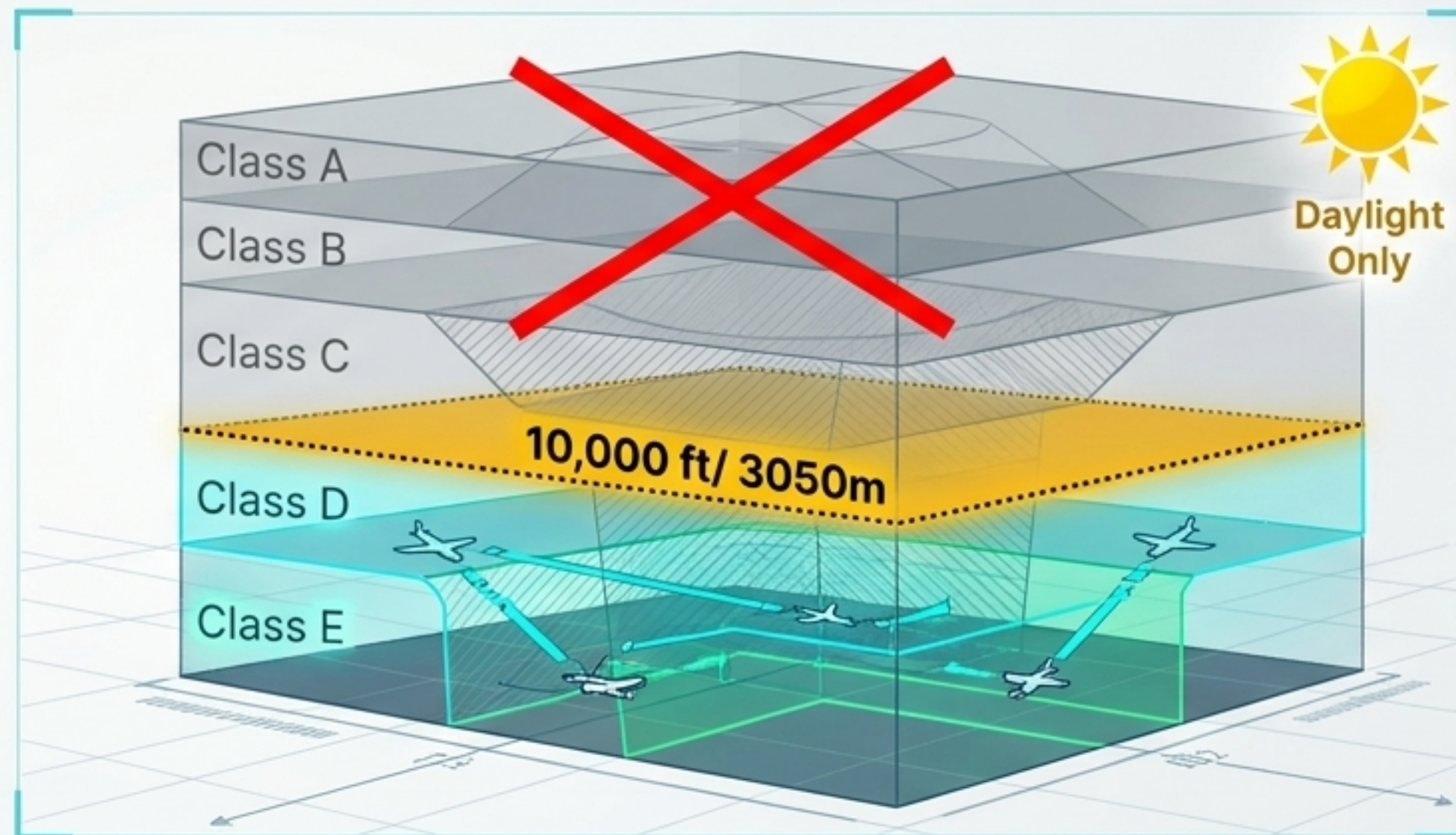
**Concept:** Under highly specific conditions, IFR/controlled flights can be cleared to maintain their own separation **from one other aircraft while remaining in Visual Meteorological Conditions (VMC).**

## Regulatory Application

**ALL of the following MUST apply:**

- Only in Airspace Classes D and E.
- During daylight hours only.
- At or below 3050 m (10,000 ft) during climb or descent.

**Exam Tip:** If conditions deteriorate, the pilot must inform ATC before entering IMC. The responsibility for traffic avoidance shifts entirely to the Pilot-in-Command in this scenario.



## DGCA Exam Alert

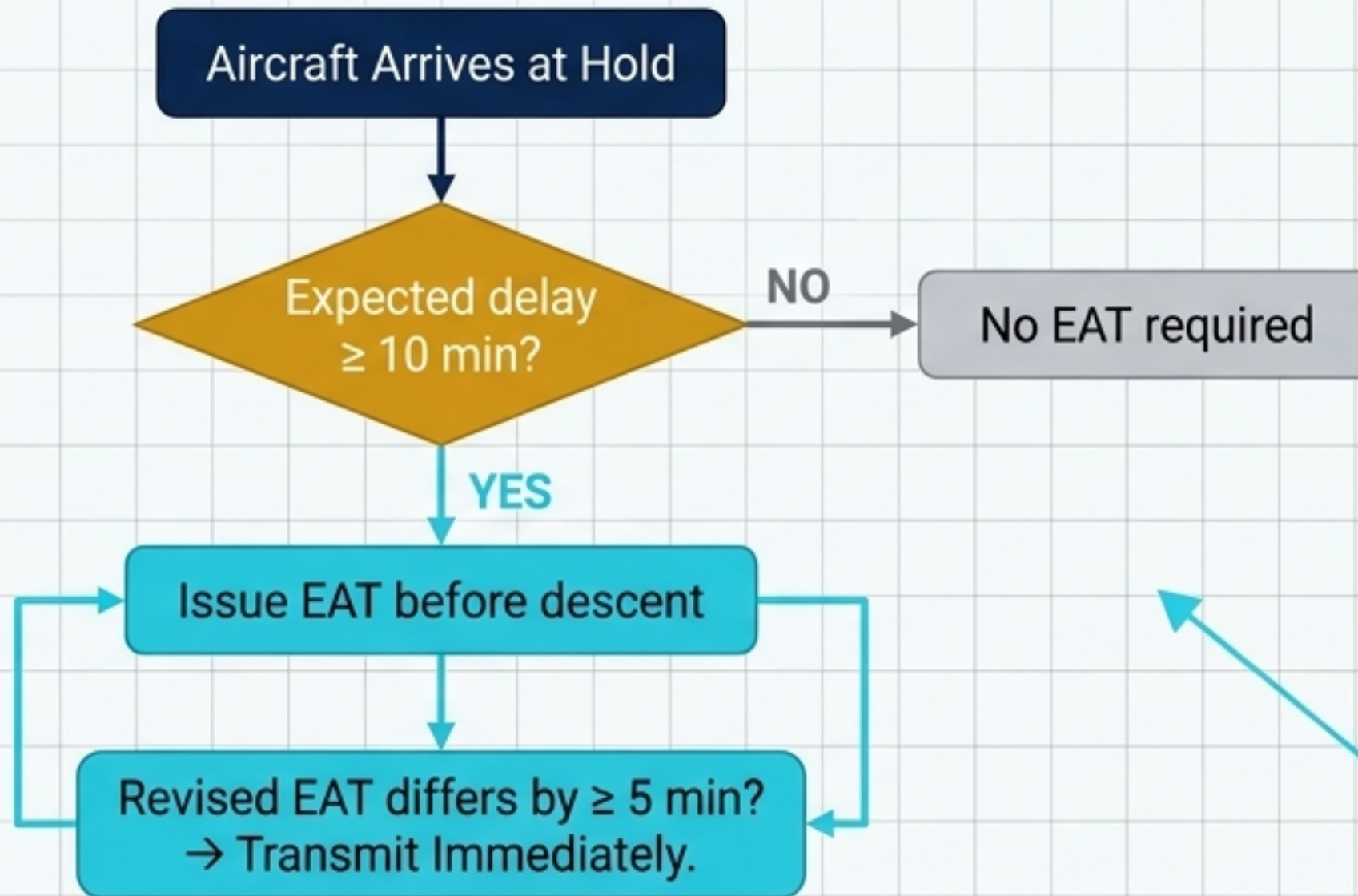
**High Probability Question:** 'During an arrival procedure under an IFR flight plan in VMC conditions, traffic avoidance is the responsibility of:' -> **Answer:** The pilot in command.

# Expected Approach Time (EAT) Triggers

**Concept:** EAT is the time ATC expects an arriving aircraft to leave the holding fix and commence its approach. It prevents fuel starvation and manages terminal flow.

**30-Min Rule**  
 Transmitted by "most expeditious means" if holding is  $\geq 30$  mins.

**Exam Tip:** Do not confuse EAT with "Onward Clearance Time" (which is used for en-route holds). EAT is strictly for the initial approach fix.



**DGCA Exam Alert**  
**High Probability Question:** "The EAT has to be transmitted to the pilot as soon as possible, in case the expected delay is:" → Answer: 10 minutes or more. (Note: DGCA legacy key accepts 5 min, though 10 min is modern Doc 4444 standard. **Know both, default to the legacy answer if 10 is missing**).


# Information for Arriving Aircraft (Final Approach)

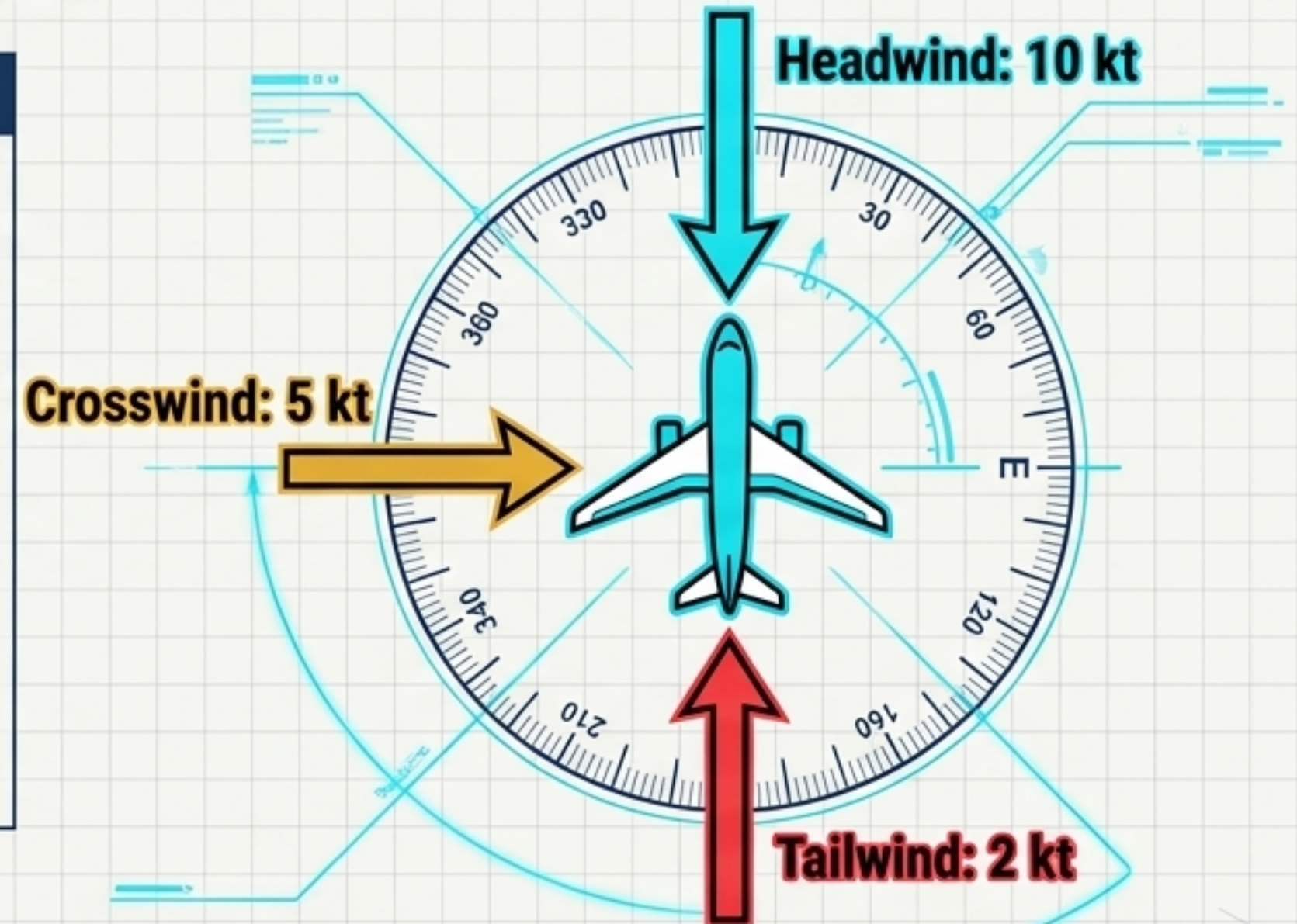
**Concept:** During final approach, crew workload is maximized. ATC must only transmit critical safety information without delay, filtering out minor fluctuations.

## Regulatory Application

ATC must transmit significant changes in wind, wind shear, runway surface conditions, or RVR. If ATC uses wind components, the threshold for a "significant change" is:

- Mean **Head-wind**: 10 kt
- Mean **Tail-wind**: 2 kt
- Mean **Cross-wind**: 5 kt

 **Exam Tip:** The tail-wind component is the tightest tolerance (2 kt) because tailwinds drastically increase landing distance and the risk of runway overruns.



## DGCA Exam Alert

High Probability Question: 'At the commencement of final approach, the mean tail-wind component significant change is:' -> Answer: 2 kt.

# Masterclass Synthesis: Aerodrome Separation Cheat Sheet

**Concept:** Final rapid-fire recall of all numerical thresholds required for the exam. Take a screenshot of this slide. Write these numbers on your scratchpad the moment your DGCA exam begins.

Scenario	Trigger Value	Key Condition
Dep-Dep	<b>1 min</b>	45° immediately after T/O
Dep-Dep	<b>2 min</b>	Preceding AC 40 kt faster
Dep-Dep	<b>5 min</b>	Following AC passes through preceding AC's level
Dep-Arr	<b>5 min</b>	Straight-in approach, before runway
Dep-Arr	<b>3 min</b>	45° divergence, before runway
Vis App Minima	<b>2800m / 3200m / 3600m</b>	Cat A/B / Cat C / Cat D
Vis App Minima	<b>5 km</b>	Circling approach only
VMC Own Sep	<b>≤ 10,000 ft</b>	Classes D/E, Daylight only
EAT	<b>≥ 10 min / ≥ 5 min</b>	Initial delay threshold / Revision threshold

## DGCA Exam Alert

**High Probability Concept:** Passing the exam requires absolute confidence in distinguishing between the 3-minute and 5-minute departure/arrival rules. Trust the numbers.