

CHAPTER 11 – VISUAL AIDS FOR NAVIGATION

Visual Aids for Navigation

ICAO ANNEX 14

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CAR SECTION-4 SERIES B PART I ISSUE II

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Part A — Indicators & Signalling Devices

PART A

Wind Direction Indicator (WDI)

APPLICATION – MANDATORY

An aerodrome **shall** be equipped with at least **one wind direction indicator**.

LOCATION

A WDI shall be located so as to be:

- Visible from aircraft **in flight** or on the **movement area**
- Free from the effects of **air disturbances** caused by nearby objects

CHARACTERISTICS

RECOMMENDATION

Provision should be made for **illuminating at least one wind indicator** at an aerodrome intended for use at night.

Landing Direction Indicator (LDI)

LOCATION

Where provided, a landing direction indicator shall be located in a **conspicuous place** on the aerodrome.

CHARACTERISTICS

💡 RECOMMENDATION

The landing direction indicator should be in the form of a "T" (Tee shape).

Signaling Lamp

🚫 MANDATORY RULE

A signaling lamp **shall** be provided at a **controlled aerodrome** in the **aerodrome control tower**.

CHARACTERISTICS

💡 RECOMMENDATION

A signaling lamp should be capable of producing **red, green, and white** signals.

Signal Panels & Signal Area

LOCATION OF SIGNAL AREA

💡 RECOMMENDATION

The signal area should be located so as to be visible from **all angles of azimuth above an angle of 10° above the horizontal** when viewed from a height of **300 m**.

CHARACTERISTICS OF SIGNAL AREA

🚫 DGCA RULE

- The signal area shall be an **even horizontal surface** at least **9 m square**.

💡 RECOMMENDATIONS

- The colour of the signal area should contrast with the signal panels used
- It should be surrounded by a **white border** not less than **0.3 m wide**



General — Marking Colours & Conspicuity

COLOUR RULES — MANDATORY

- **Runway markings** — shall be **WHITE**
- **Taxiway markings, runway turn pad markings, and aircraft stand markings** — shall be **YELLOW**
- **Apron safety lines** — shall be of a conspicuous colour contrasting with aircraft stand markings.

In India: RED



Runway — White



Taxiway / Stand — Yellow



Apron Safety (India) — Red

NOTES ON RUNWAY MARKINGS

1. On **light-coloured** runway surfaces, white markings may be improved by **outlining them in black**.
2. It is preferable to use paints with **reduced friction variation** to minimise uneven friction characteristics.
3. Markings may consist of solid areas or **longitudinal stripes** providing an equivalent effect.

RECOMMENDATION — NIGHT OPERATIONS

At aerodromes where operations take place at night, pavement markings should be made with **reflective materials** to enhance visibility.

Interruption of Runway Markings at Intersections

RULE — INTERSECTION PRIORITY

At an intersection of two or more runways, the markings of the **more important runway** shall be displayed and those of the other runway(s) **interrupted**. Runway side stripe markings may be continued or interrupted.

ORDER OF IMPORTANCE AT INTERSECTIONS

1. **1st:** Precision approach runway
2. **2nd:** Non-precision approach runway
3. **3rd:** Non-instrument runway

RUNWAY × TAXIWAY INTERSECTIONS

At a runway–taxiway intersection: **runway markings shall be displayed; taxiway markings interrupted** (runway side stripe markings may be interrupted).

Runway Designation Marking

APPLICATION – MANDATORY

A runway designation marking **shall** be provided at the **thresholds of a paved runway**.

RECOMMENDATION

A runway designation marking *should* be provided, so far as practicable, at the thresholds of an **unpaved runway**.

LOCATION

The runway designation marking shall be located at a **threshold**, as per the appropriate figure.

NOTE

If the runway threshold is displaced from the extremity of the runway, a sign showing the designation may be provided for aeroplanes taking off.

CHARACTERISTICS — DESIGNATION NUMBERS & LETTERS

HOW RUNWAY NUMBERS ARE ASSIGNED

- Consists of a **two-digit number** (nearest one-tenth of the magnetic North — approach direction)
- If a single-digit result would occur, it shall be **preceded by a zero** (e.g., 09 not 9)
- On **parallel runways**, each number is supplemented by a letter:

Number of Parallel Runways	Letters Used (L to R when viewed on approach)
2 parallel	L, R
3 parallel	L, C, R
4 parallel	L, R, L, R
5 parallel	L, C, R, L, R or L, R, L, C, R
6 parallel	L, C, R, L, C, R

Runway Centre Line Marking

🚫 APPLICATION — MANDATORY

A runway centre line marking **shall** be provided on a **paved runway**.

LOCATION

Located along the **centre line of the runway** between the runway designation markings, except when interrupted at the intersection of two or more runways.

CHARACTERISTICS — STRIPE & GAP DIMENSIONS

Parameter	Specification
Length of stripe + gap	Not less than 50 m, not more than 75 m
Length of each stripe	At least equal to the gap or 30 m, whichever is greater
Width — CAT II & III precision approach runways	≥ 0.90 m
Width — Non-precision approach (code 3 or 4) & CAT I	≥ 0.45 m
Width — Non-precision approach (code 1 or 2) & Non-instrument	≥ 0.30 m

Threshold Marking

🚫 APPLICATION — MANDATORY CONDITIONS

A threshold marking **shall** be provided at the threshold of:

- A **paved instrument runway**
- A **paved non-instrument runway** where code number is **3 or 4** AND intended for use by **international commercial air transport**

💡 RECOMMENDATIONS

1. Should be provided at non-instrument runway (code 3 or 4) for *other than* international commercial air transport.
2. Should be provided, so far as practicable, at the thresholds of an **unpaved runway**.

LOCATION

🚫 CRITICAL VALUE

Stripes of the threshold marking shall commence **6 m** from the threshold.

CHARACTERISTICS — NUMBER OF STRIPES VS. RUNWAY WIDTH

Runway Width	Number of Stripes (each side of centre line)
18 m	4
23 m	6
30 m	8
45 m	12
60 m	16

Exception: On non-precision approach and non-instrument runways ≥ 45 m wide, the optional pattern (Fig. 1C) may be used.

Transverse Stripe

💡 RECOMMENDATION

Where a threshold is **displaced** from the extremity of the runway, or where the extremity is **not square** with the runway centre line, a **transverse stripe** should be added to the threshold marking.

🚫 RULE

A transverse stripe shall be **not less than 1.80 m wide**.

Displaced Threshold — Arrows

🚫 MANDATORY RULES FOR DISPLACED THRESHOLDS

- **Permanently displaced:** Arrows conforming to Fig. 2(B) shall be provided on the runway portion *before* the displaced threshold.
- **Temporarily displaced:** Marked as per Fig. 2(A) or 2(B). All markings prior to the displaced threshold shall be **obscured** except the runway centre line marking, which shall be converted to **arrows**.

Aiming Point Marking

🚫 APPLICATION – MANDATORY

An aiming point marking **shall** be provided at each approach end of a paved **instrument runway** where the code number is 2, 3 or 4.

💡 RECOMMENDATIONS – PROVIDE ALSO AT:

- Paved **non-instrument** runway where code number is 3 or 4
- Paved **instrument** runway where code number is 1, when additional conspicuity is desirable

LOCATION — DISTANCE FROM THRESHOLD

🚫 TABLE 1 – AIMING POINT MARKING: LOCATION & DIMENSIONS

Parameter	LDA < 800 m	800–1200 m (excl.)	1200–2400 m (excl.)	≥ 2400 m
Distance: Threshold → start of marking	150 m	250 m	300 m	400 m
Length of stripe*	30–45 m	30–45 m	45–60 m	45–60 m
Width of stripe	4 m	6 m	6–10 m**	6–10 m**
Lateral spacing (inner sides)	6 m***	9 m***	18–22.5 m	18–22.5 m

*Length shall be at least that of the gap. **Width shall be at least that of TDZ barrettes. ***Or the width of the runway if less.

📄 SPECIAL RULE – VISUAL APPROACH SLOPE INDICATOR

On a runway equipped with a **VASIS/PAPI**, the beginning of the aiming point marking shall be **coincident with the visual approach slope origin**.

Touchdown Zone (TDZ) Marking

🚫 APPLICATION – MANDATORY

A TDZ marking **shall** be provided in the touchdown zone of a paved **precision approach runway** where the code number is **2, 3 or 4**.

RECOMMENDATION

Should also be provided on a paved **non-precision approach or non-instrument runway** (code 3 or 4) where additional conspicuity is desirable.

NUMBER OF TDZ MARKING PAIRS VS. LDA / DISTANCE BETWEEN THRESHOLDS

Landing Distance Available (or Distance Between Thresholds)	Pairs of Markings
Less than 900 m	1
900 m up to but not including 1 200 m	2
1 200 m up to but not including 1 500 m	3
1 500 m up to but not including 2 400 m	4
2 400 m or more	6

CHARACTERISTICS

A TDZ marking consists of **pairs of rectangular markings** symmetrically disposed about the runway centre line. Where marking is displayed at both approach directions, the number is based on the **distance between thresholds**.

Runway Side Stripe Marking

APPLICATION

Shall be provided between the thresholds of a paved runway where there is a **lack of contrast** between the runway edges and the shoulders or surrounding terrain.

RECOMMENDATION

Should be provided on a **precision approach runway irrespective of contrast**.

- Should consist of **two stripes**, one along each edge, with the outer edge of each stripe approximately on the edge of the runway
- Where runway is > 60 m wide, stripes should be located **30 m from the runway centre line**
- Width: at least **0.9 m** on runways ≥ 30 m wide; at least **0.45 m** on narrower runways

Taxiway Centre Line Marking

MANDATORY APPLICATION — CODE 3 OR 4

Taxiway centre line marking **shall** be provided on a paved taxiway, de-icing/anti-icing facility and apron where the **code number is 3 or 4**, providing continuous guidance between the runway centre line and aircraft stands.

RECOMMENDATION — CODE 1 OR 2

Should be provided on a paved taxiway, de-icing/anti-icing facility and apron where the **code number is 1 or 2** for continuous guidance.

MANDATORY — ON RUNWAYS AS PART OF TAXI-ROUTE

Taxiway centre line marking shall be provided on a paved runway when the runway is part of a standard taxi-route and:

- (a) there is **no runway centre line marking**, or
- (b) where the taxiway centre line is **not coincident** with the runway centre line

CHARACTERISTICS

WIDTH REQUIREMENT

A taxiway centre line marking shall be at least **15 cm** in width and **continuous in length** except where it intersects with a runway-holding position marking or intermediate holding position marking.

ENHANCED TAXIWAY CENTRE LINE MARKING

RECOMMENDATIONS — ENHANCED MARKING

1. Where it is necessary to denote proximity of a **runway-holding position**, enhanced taxiway centre line marking should be provided. It shall extend from the runway-holding position Pattern A to a distance of up to **47 m** in the direction of travel away from the runway.
2. On a straight section of taxiway, the marking should be located along the taxiway centre line. On a curve, it should continue from the straight portion at a **constant distance from the outside edge** of the curve.
3. At an intersection of a taxiway with a runway where the taxiway serves as an exit from the runway, the taxiway centre line marking should be **curved into the runway centre line marking**.

Isolated Aircraft Parking Position

MANDATORY RULE

An isolated aircraft parking position **shall** be designated, or the aerodrome control tower shall be advised of an area or areas suitable for parking of an aircraft which is known or believed to be the subject of **unlawful interference**, or which for other reasons needs isolation from normal aerodrome activities.

RECOMMENDATION

The isolated parking position should be located at the **maximum distance practicable** and in any case **never less than 100 m** from other parking positions, buildings or public areas. Care should be taken to ensure no underground utilities (gas, aviation fuel, electrical, communication cables) are beneath.

Runway-Holding Position Marking

MANDATORY RULE

A runway-holding position marking **shall** be displayed along a runway-holding position.

CHARACTERISTICS — PATTERN A AND PATTERN B

PATTERN SELECTION RULES

- At intersection of taxiway and **non-instrument, non-precision approach or take-off runway: Pattern A**
- Where a single holding position exists at intersection of a taxiway and a **precision approach CAT I, II or III runway: Pattern A**
- Where two or three holding positions exist at such an intersection — those **closer to the runway: Pattern A**; those **further: Pattern B**
- At a position established to avoid infringement of obstacle limitation surface or interference with radio/navaids: **Pattern A**

CRITICAL 2026 UPDATE – PATTERN DIMENSIONS

- Until 26 November 2026:** Dimensions shall be as shown in Pattern A1 (or A2) or Pattern B1 (or B2), as appropriate.
- As of 26 November 2026:** Dimensions shall be as shown in Pattern **A2** or Pattern **B2** only. **Patterns A1 and B1 are no longer valid after 2026.**

PATTERN SPECIFICATIONS SUMMARY

Pattern	Lines	Spaces	Width Each	Space Width
A1	4 lines	3 spaces	0.15 m each	0.15 m
A2 ✓ (post-2026)	4 lines	3 spaces	0.3 m each	0.3 m
B1	2 lines at 0.3 m each	1 space	0.3 m	0.6 m
B2 ✓ (post-2026)	2 lines at 0.3 m each	1 space	0.3 m	1.5 m

Intermediate Holding Position (IHP) Marking

RECOMMENDATIONS – APPLICATION & LOCATION

1. An IHP marking should be displayed along an **intermediate holding position**.
2. Should be displayed at the **exit boundary of a remote de-icing/anti-icing facility** adjoining a taxiway.

VOR Aerodrome Checkpoint Marking

CHARACTERISTICS – MANDATORY

A VOR aerodrome checkpoint marking shall consist of:

- A circle **6 m in diameter** with a line width of **15 cm**

RECOMMENDATIONS

1. When aircraft alignment in a specific direction is preferred, a **direction line** should be provided — passing through the centre of the circle, extending **6 m** outside the circle in the desired heading direction, terminating in an **arrowhead**. Line width: **15 cm**.
2. The marking should preferably be **white**, differing from taxiway marking colour.

Aircraft Stand Markings

💡 RECOMMENDATIONS

- Should be provided for designated parking positions on a **paved apron** and on a **de-icing/anti-icing facility**.
- Should include elements such as: **stand identification, lead-in line, turn bar, turning line, alignment bar, stop line, lead-out line**, as required.
- Stand identification (letter and/or number) should be included in the lead-in line, in a short distance after the beginning. Height should be adequate to be readable from the **cockpit** of aircraft using the stand.
- Lead-in, turning, and lead-out lines should be **continuous** and have a width of **not less than 15 cm**.

Apron Safety Lines

🚫 LOCATION – MANDATORY

Apron safety lines shall be located so as to define the areas intended for use by **ground vehicles and other aircraft servicing equipment** to provide safe separation from aircraft.

IN INDIA SPECIFIC

Apron safety lines shall be of **red colour** in India (contrasting with aircraft stand markings which are yellow).

💡 RECOMMENDATIONS

- Should include wingtip clearance lines and service road boundary lines as required.
- Should be **continuous** in length and at least **10 cm in width**.

Roadholding Position Marking

🚫 MANDATORY RULES

- **Application:** A roadholding position marking **shall** be provided at **all road entrances to a runway**.
- **Location:** Shall be located across the road **at the holding position**.
- **Characteristics:** Shall be in accordance with **local road traffic regulations**.

Mandatory Instruction Marking

🚫 APPLICATION – MANDATORY

Where it is **impracticable to install a mandatory instruction sign**, a mandatory instruction marking **shall** be provided on the surface of the pavement.

💡 RECOMMENDATION – WHEN TO SUPPLEMENT

Where operationally required, such as on taxiways exceeding **60 m in width**, a mandatory instruction sign should be supplemented by a mandatory instruction marking.

LOCATION

🚫 RULES

- Located on the **left-hand side** of the taxiway centre line marking
- On the **holding side** of the runway-holding position marking
- Distance between the nearest edge of the marking and the runway-holding position marking or taxiway centre line marking shall be **not less than 1 m**

💡 RECOMMENDATION

A mandatory instruction marking should **not** be located on a runway (except where operationally required).

CHARACTERISTICS

🚫 APPEARANCE RULES

- Inscription in **white on a red background**
- Except for a **NO ENTRY** marking: inscription identical to the associated mandatory instruction sign
- A **NO ENTRY** marking shall consist of the inscription "NO ENTRY" in white on a red background
- Where there is insufficient contrast between marking and pavement, an appropriate border (preferably **white or black**) shall be included

💡 RECOMMENDATIONS

1. Character height should be **4 m**
2. Background should be rectangular and extend a maximum of **0.5 m** laterally and vertically beyond the extremities of the inscription

Information Marking

🚫 APPLICATION — MANDATORY

Where an information sign would normally be installed and it is physically impossible to install a sign, an information marking **shall** be displayed on the surface of the pavement.

💡 RECOMMENDATION ON LOCATION

The information marking should be displayed across the surface of the taxiway or apron where necessary, and positioned so as to be **legible from the cockpit** of an approaching aircraft.

CHARACTERISTICS

📏 INFORMATION MARKING COLOURS

- (a) Inscription in **yellow**, when it replaces or supplements a **location sign**
- (b) Inscription in **black**, when it replaces or supplements a **direction or destination sign**
- Where insufficient contrast — (a) black background with yellow inscriptions; (b) yellow background with black inscriptions

💡 Part D — Lights: General & Beacons

PART D

Laser Emissions — Endanger Safety of Aircraft

⚠️ LASER PROTECTED ZONES

To protect aircraft safety against hazardous effects of laser emitters, the following protected zones should be established around aerodromes:

- **LFFZ** — Laser-Beam Free Flight Zone
- **LCFZ** — Laser-Beam Critical Flight Zone
- **LSFZ** — Laser-Beam Sensitive Flight Zone

Non-Aeronautical Lights Near Aerodrome

🚫 SAFETY RULE

A non-aeronautical ground light near an aerodrome which might endanger the safety of aircraft **shall** be extinguished, screened or otherwise modified to eliminate the source of danger.

💡 LIGHTS WHICH MAY CAUSE CONFUSION – ZONES OF ATTENTION

Particular attention should be directed to non-aeronautical ground lights visible from the air within these areas:

- **(a) Instrument runway code 4:** Before the threshold and beyond the runway end, extending at least **4500 m in length** from threshold and runway end, and **750 m either side** of the extended runway centre line
- **(b) Instrument runway code 2 or 3:** As (a), except length should be at least **3000 m**
- **(c) Instrument runway code 1 and non-instrument runway:** Within the approach area

Emergency Lighting

💡 RECOMMENDATION – APPLICATION

At an aerodrome provided with runway lighting and **without a secondary power supply**, sufficient emergency lights should be conveniently available for installation on at least the **primary runway** in the event of failure of the normal lighting system.

Note: Emergency lighting may also be useful to mark obstacles or delineate taxiways and apron areas.

💡 LOCATION

When installed on a runway, the emergency lights should, as a minimum, conform to the configuration required for a **non-instrument runway**.

Aerodrome Beacon

🚫 APPLICATION – WHEN REQUIRED (NIGHT OPERATIONS)

An aerodrome beacon **shall** be provided at an aerodrome intended for use at night if one or more of the following conditions exist:

- (a) Aircraft navigate predominantly by visual means
- (b) Reduced visibilities are frequent
- (c) It is difficult to locate the aerodrome from the air due to surrounding lights or terrain

🚫 LOCATION

The aerodrome beacon shall be located on or adjacent to the aerodrome in an area of **low ambient background lighting**.

💡 LOCATION RECOMMENDATION

The beacon should not be shielded by objects in significant directions and should **not dazzle a pilot approaching to land**.

CHARACTERISTICS — FLASH COLOURS & FREQUENCY

🚫 MANDATORY SPECIFICATIONS

- Shall show either **coloured flashes alternating with white flashes**, or **white flashes only**
- Frequency of total flashes: **20 to 30 per minute**
- **Land aerodrome beacons:** Coloured flashes shall be **green**
- **Water aerodrome beacons:** Coloured flashes shall be **yellow**
- **Combined water-and-land aerodrome:** Colour characteristics of whichever section is the principal facility

Identification Beacon

🚫 CHARACTERISTICS

- **Land aerodrome:** Shall show **flashing green**
- **Water aerodrome:** Shall show **flashing yellow**
- Characters transmitted in **International Morse Code**

Application — When to Provide Approach Lighting

APPROACH LIGHTING REQUIREMENTS BY RUNWAY TYPE

Runway Type	Requirement	System Type
Non-instrument runway (code 3/4, night, not good visibility)	RECOMMENDATION	Simple Approach Lighting System
Non-precision approach runway	MANDATORY (where physically practicable)	Simple Approach Lighting System
Precision approach runway CAT I	MANDATORY (where physically practicable)	CAT I Lighting System
Precision approach runway CAT II & III	MANDATORY	CAT II & III Lighting System

Simple Approach Lighting System (SALS)

LOCATION & CONFIGURATION

KEY DIMENSIONS

- Row of lights on the **extended centre line of the runway**
- Total length: at least **420 m** from the threshold
- Crossbar: **18 m or 30 m** in length, located at **300 m** from the threshold
- Gaps in a 30 m crossbar shall be kept to a minimum, not exceed **6 m**
- Centre line lights at longitudinal intervals of **60 m** (may be reduced to **30 m** to improve guidance)
- Innermost light located either **60 m or 30 m** from the threshold

ILS/MLS ANTENNA — OBSTACLE RULE

No object other than an **ILS or MLS azimuth antenna** shall protrude through the plane of the approach lights within a distance of **60 m** from the centre line. Any protruding antenna shall be treated as an obstacle and marked/lighted accordingly.

CHARACTERISTICS

LIGHT TYPE

- Fixed lights
- Colour: shall ensure system is **readily distinguishable from other aeronautical ground lights and extraneous lighting**
- Each centre line light shall consist of either: (a) a **signal source**, or (b) a **barrette at least 3 m in length**

Precision Approach CAT I Lighting System

LOCATION & CONFIGURATION

KEY DIMENSIONS – CAT I

- Row of lights on extended centre line extending over a distance of **900 m** from the runway threshold
- Crossbar: **30 m in length** at **300 m** from the runway threshold
- Centre line lights at longitudinal intervals of **30 m**, innermost light at **30 m** from threshold
- Crossbar spacing: **1 m to 4 m** (gaps on each side of centre line may improve directional guidance)

OPERATIONAL LIMITATION NOTE

Installation of an approach lighting system of **less than 900 m in length** may result in **operational limitations** on the use of the runway.

CHARACTERISTICS — CAT I

LIGHT TYPE & CONFIGURATION

- Centre line and crossbar lights: **fixed lights showing variable white**
- Each centre line light position shall consist of either:
 - (a) Signal light sources — 1 source in innermost 300 m, 2 sources in central 300 m, 3 sources in outer 300 m (distance information)
 - (b) A **barrette**
- If barrettes are used, each shall be supplemented by a **flashing light** (unless unnecessary given system characteristics and meteorological conditions)
- Flashing lights: flashed **twice a second in sequence**, beginning with the **outermost light progressing toward the threshold** (innermost light)

Precision Approach CAT II & III Lighting System

LOCATION & CONFIGURATION

⊖ KEY DIMENSIONS – CAT II & III

- Row of lights on extended centre line extending over a distance of **900 m** from the runway threshold
- Plus two **side rows of lights** extending **270 m** from the threshold
- Two crossbars: one at **150 m** and one at **300 m** from the threshold
- Centre line and side row lights at longitudinal intervals of **30 m**, with innermost lights at **30 m** from threshold
- Crossbar at **150 m** fills in the gaps between centre line and side row lights
- Crossbar at **300 m** extends on both sides to a distance of **15 m** from the centre line

CHARACTERISTICS — CAT II & III

▣ CENTRE LINE & SIDE ROW SPECIFICATIONS

- **Centre line (inner 300 m from threshold):** Barrettes showing **variable white** (where threshold is displaced ≥ 300 m, signal light sources showing variable white may be used)
- **Centre line (beyond 300 m):** Either a barrette as used in inner 300 m, OR two/three light sources showing variable white
- **Side rows:** Barrettes showing **red**
- Side row barrette length and spacing = equal to those of touchdown zone light barrettes
- Each barrette supplemented by a **flashing light** (unless unnecessary)
- Flashing lights: flashed **twice a second in sequence**, from outermost to innermost



Part F — Visual Approach Slope Indicator Systems (PAPI & APAPI)

PART F

When VASIS Must Be Provided

APPLICATION — VASIS REQUIRED WHEN:

- (a) The runway is used by **turbojet or other aeroplanes with similar approach guidance requirements**
- (b) A pilot of any type of aeroplane may have difficulty judging the approach due to:
 - (i) Inadequate visual guidance over water/featureless terrain by day, or absence of sufficient extraneous lights at night
 - (ii) Misleading information from deceptive surrounding terrain or runway slopes
- (c) Presence of objects in the approach area may involve serious hazard if an aeroplane descends below the normal approach path
- (d) Physical conditions at either end of the runway present a serious hazard in the event of an aeroplane **undershooting or overrunning** the runway
- (e) Terrain or meteorological conditions are such that the aeroplane may be subjected to **unusual turbulence during approach**

STANDARD SYSTEMS

The standard visual approach slope indicator systems shall consist of **PAPI** and **APAPI** systems.

PAPI — Precision Approach Path Indicator

DESCRIPTION

- Consists of a **wing bar of FOUR sharp transition multi-lamp (or paired single lamp) units** equally spaced
- Located on the **left side of the runway** unless physically impracticable

*Note: Where a runway is used by aircraft requiring visual roll guidance not provided by other external means, a second wing bar may be provided on the **opposite side**.*

PAPI — WHAT THE PILOT SEES



W W W W

TOO HIGH



R W W W

SLIGHTLY HIGH



R R W W

ON GLIDE PATH ✓



R R R W

SLIGHTLY LOW



R R R R

TOO LOW ⚠

Join live classes for guided practice and doubt clearing.

🚫 PAPI — FORMAL RULES

- **On or close to approach slope:** Two units nearest runway = **red**; two units farthest = **white**
- **Above approach slope:** One unit nearest runway = red; three units farthest = white. Further above: **all white**
- **Below approach slope:** Three units nearest runway = red; one unit farthest = white. Further below: **all red**

APAPI — Abbreviated Precision Approach Path Indicator

📄 DESCRIPTION

- Consists of a **wing bar of TWO sharp transition multi-lamp (or paired single lamp) units**
- Located on the **left side of the runway** unless physically impracticable

Note: Second wing bar on opposite side may be provided if visual roll guidance is required.

🚫 APAPI — WHAT THE PILOT SEES

- **On or close to approach slope:** Unit nearer the runway = **red**; unit farther from runway = **white**
- **Above approach slope:** Both units = **white**
- **Below approach slope:** Both units = **red**

📄 LIGHT UNIT CHARACTERISTICS

The PAPI and APAPI systems shall be suitable for both **day and night operations**.



Circling Guidance Lights

⊘ RULES

- Shall be provided when existing approach and runway lighting systems do **not satisfactorily permit identification of the runway and/or approach area** to a circling aircraft in the conditions for which it is intended.
- Shall be **fixed or flashing** lights of an intensity and beam spread adequate for the visibility and ambient light conditions.
- Flashing lights shall be **white**; steady lights either **white or gaseous discharge lights**.

Runway Lead-in Lighting System

💡 RECOMMENDATION

Should be provided where it is desired to provide visual guidance along a specific approach path (e.g., avoiding hazardous terrain, noise abatement).

- Each group: at least **three flashing lights** in a linear or cluster configuration
- Flashing lights and steady burning light shall be **white**
- Where practicable, flashing lights in each group shall **flash in sequence towards the runway**

Runway Threshold Identification Lights (RTIL)

💡 RECOMMENDATION — INSTALL WHEN:

- (a) At the threshold of a **non-precision approach runway** when additional threshold conspicuity is necessary or where it is not practicable to provide other approach lighting aids
- (b) Where a runway threshold is **permanently or temporarily displaced** and additional threshold conspicuity is necessary

⊘ LOCATION & CHARACTERISTICS

- Located **symmetrically about the runway centre line**, in line with the threshold and approximately **10 m outside** each line of runway edge lights
- Should be **flashing white lights** with a flash frequency between **60 and 120 per minute**
- Lights shall be visible **only in the direction of approach** to the runway

Runway Edge Lights

🚫 APPLICATION — MANDATORY

- Shall be provided for a runway intended for **use at night**
- Shall be provided for a **precision approach runway** intended for use by day or night

💡 RECOMMENDATION

Should be provided on a runway intended for takeoff with an operating minimum below an **RVR of the order of 800 m by day**.

LOCATION

🚫 POSITIONING RULES

- Along the **full length of the runway**, in two parallel rows equidistant from the centre line
- Along the edges of the area declared for use as the runway or **outside the edges at a distance of not more than 3 m**
- Uniformly spaced at intervals of **not more than 60 m** for an instrument runway
- Uniformly spaced at intervals of **not more than 100 m** for a non-instrument runway

💡 WHERE RUNWAY WIDTH > 60 M

The distance between the rows of lights should be determined taking into account the nature of the operations, the light distribution characteristics, and other visual aids serving the runway.

CHARACTERISTICS — COLOURS

🚫 RUNWAY EDGE LIGHT COLOURS

Fixed lights showing **variable white**, EXCEPT:

- (a) In the case of a **displaced threshold**, the lights between the beginning of the runway and the displaced threshold shall show **red** in the approach direction
- (b) A section of lights **600 m** or **one-third of the runway length**, whichever is less, at the remote end of the runway (from the end where takeoff run is started), **may show yellow**



Variable White (Normal)



Red (Displaced threshold — approach dir.)



Yellow (Last 600 m or 1/3 — takeoff end)

Runway Threshold & Wing Bar Lights

APPLICATION OF THRESHOLD LIGHTS

🚫 MANDATORY

Runway threshold lights **shall** be provided for a runway equipped with runway edge lights, except on a **non-instrument or non-precision approach runway where the threshold is displaced** and wing bar lights are provided.

LOCATION OF THRESHOLD LIGHTS

🚫 RULES

- **Threshold at extremity of runway:** Lights placed in a row at right angles to the runway axis, as near to the extremity as possible and in any case **not more than 3 m outside the extremity**
- **Displaced threshold:** Lights placed at right angles to the runway axis at the displaced threshold
- **Number — Non-instrument or Non-precision approach (Cat. I incl.):**
 - At least **six lights**, equally spaced between the rows of runway edge lights, or symmetrically disposed in two groups with a gap equal to the TDZ marking/lighting gauge or no more than half the distance between edge light rows
- **Number — CAT II or III:** Uniformly spaced between the rows of runway edge lights at intervals of **not more than 3 m**

WING BAR LIGHTS

💡 RECOMMENDATION — WING BAR LIGHTS

Should be provided on a **precision approach runway when additional conspicuity is desirable**. Shall be provided on a non-instrument or non-precision approach runway where the threshold is displaced and runway threshold lights are required but are not provided.

🚫 WING BAR LIGHTS — LOCATION

- Symmetrically disposed about the runway centre line at the threshold in two groups (wing bars)
- Each wing bar formed by **at least five lights** extending at least **10 m outward** from and at right angles to the line of runway edge lights
- Innermost light of each wing bar in the line of runway edge lights

CHARACTERISTICS — THRESHOLD & WING BAR LIGHTS

COLOUR

Fixed **unidirectional lights showing green** in the direction of approach to the runway.

Runway End Lights

APPLICATION & LOCATION

- Shall be provided for a runway equipped with runway edge lights
- *Note: When threshold is at the runway extremity, fittings serving as threshold lights may be used as runway end lights.*
- Placed on a line at right angles to the runway axis as near to the end of the runway as possible, in any case **not more than 3 m outside the end**

NUMBER — RECOMMENDATION

At least **six lights**, either equally spaced between the rows of runway edge lights, or symmetrically disposed in two groups with a gap of not more than half the distance between edge light rows.

For **CAT III runway**: Spacing between runway end lights, except between two innermost lights if a gap is used, should **not exceed 6 m**.

CHARACTERISTICS

COLOUR

Fixed **unidirectional lights showing red** in the direction of the runway.

Runway Centre Line Lights

APPLICATION — MANDATORY

- Shall be provided on a **precision approach runway category II or III**
- Shall be provided on a runway intended for use for takeoff with an operating minimum below an **RVR of the order of 400 m**

💡 RECOMMENDATIONS — PROVIDE ALSO ON:

- Precision approach runway category I, particularly when used by aircraft with **high landing speeds** or where width between edge lights > 50 m
- Runway for takeoff with RVR minimum **400 m or higher** when used by aeroplanes with **very high takeoff speed**, particularly where width between edge lights > 50 m

LOCATION

🚫 SPACING & OFFSET RULES

- Along the centre line of the runway, from the threshold to the end
- May be uniformly offset to the same side of the runway centre line by **not more than 60 cm** where not practicable to locate them on the marking
- Longitudinal spacing: **approximately 15 m**
- *Note: Existing centre line lighting spaced at 7.5 m need not be replaced.*

CHARACTERISTICS — RUNWAY CENTRE LINE LIGHT COLOURS

🚫 COLOUR CODING — CRITICAL FOR EXAM!

Section	Colour
From threshold to point 900 m from the runway end	○ Variable White
From 900 m to 300 m from the runway end	● Alternate Red & Variable White
Last 300 m to runway end	● Red

Exception: For runways less than 1800 m in length, the alternate red and variable white lights shall extend from the midpoint of the runway usable for landing to 300 m from the runway end.

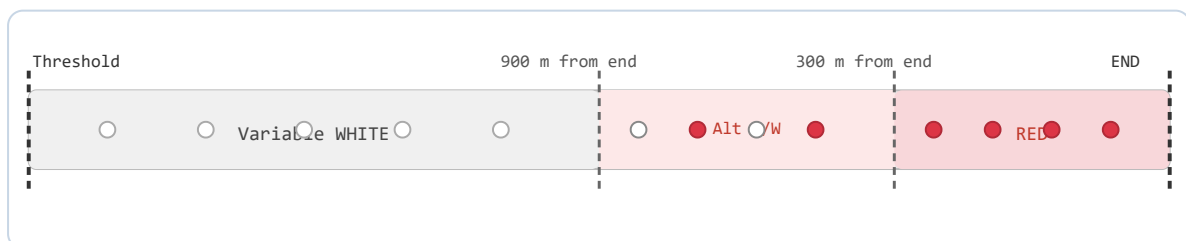


Fig. — Runway Centre Line Light Colour Coding (Colour zones for a runway of 1800 m or more)

Runway Touchdown Zone (TDZ) Lights

🛑 APPLICATION

Shall be provided in the touchdown zone of a **precision approach runway category II or III**.

LOCATION

🛑 EXTENT & PATTERN

- Extend from the threshold for a longitudinal distance of **900 m**
- Exception: On runways less than 1800 m in length, shortened so it **does not extend beyond the midpoint** of the runway
- Formed by **pairs of barrettes** symmetrically disposed about the runway centre line
- Lateral spacing between innermost lights of a pair = equal to the lateral spacing for TDZ marking
- Longitudinal spacing between pairs of barrettes: **30 m or 60 m**
- *Note: For operations at lower visibility minima it may be advisable to use a 30 m spacing.*

CHARACTERISTICS

🛑 KEY TECHNICAL SPECS

- A barrette shall be composed of **at least three lights** with a spacing between lights of **not more than 1.5 m**
- TDZ lights shall be **fixed unidirectional lights showing variable white**

💡 BARRETTE LENGTH RECOMMENDATION

A barrette should be **not less than 3 m** nor more than **4.5 m in length**.

Simple Touchdown Zone Lights (STZL)

📌 PURPOSE

Provides pilots with enhanced situational awareness in all visibility conditions and helps enable pilots to decide whether to commence a go-around if the aircraft has not landed by a certain point on the runway.

🛑 WHEN STZL SHOULD BE PROVIDED

Except where TDZ lights are provided at an aerodrome where:

- The approach angle is greater than **3.5 degrees**, and/or
- The Landing Distance Available combined with other factors increases the risk of an overrun

Simple TDZ Lights should be provided — a pair of fixed unidirectional lights showing variable white, located on each side of the runway centreline, visible to the pilot in the direction of approach.

Stopway Lights

🛑 APPLICATION, LOCATION & CHARACTERISTICS

- **Application:** Shall be provided for a stopway intended for **use at night**
- **Location:** Along full length of stopway in two parallel rows equidistant from centre line; also across the end of the stopway at right angles to stopway axis, not more than **3 m outside the end**
- **Colour:** Fixed unidirectional lights showing **red** in the direction of the runway

🚦 Part H — Taxiway Lighting & Aerodrome Signs

PART H

Taxiway Centre Line Lights

🛑 APPLICATION – MANDATORY

Taxiway centre line lights **shall** be provided on an exit taxiway, taxiway, de-icing/anti-icing facility and apron intended for use in **runway visual range conditions less than 350 m** to provide continuous guidance between the runway centre line and aircraft stands, except that these lights need not be provided where:

- Traffic density is light, and
- Taxiway edge lights and centre line marking provide adequate guidance

💡 RECOMMENDATIONS

- Should be provided on a taxiway intended for use at night in RVR conditions of **350 m or greater**, and particularly on complex taxiway intersections and exit taxiways
- Should also be provided as components of an **Advanced Surface Movement Guidance and Control System (ASMGCS)**

CHARACTERISTICS — EXIT TAXIWAY VS. REGULAR TAXIWAY

🚫 TAXIWAY CL LIGHTS COLOUR RULES

- **Regular taxiway (not exit taxiway) and runway part of standard taxi-route:** Fixed lights showing **green**, beam dimensions visible only from aeroplanes on or in the vicinity of the taxiway
- **Exit taxiway:** Fixed lights — alternate taxiway centre line lights shall show **green and yellow**:
 - From beginning near runway centre line to the perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface (whichever is farthest from runway)
 - Thereafter: all lights show **green**
 - Light nearest to the perimeter shall always be **green**
- Where aircraft may follow the same centre line in both directions: all centre line lights shall show **green to aircraft approaching the runway**

LOCATION — TAXIWAY CL LIGHTS ON TAXIWAYS

💡 SPACING RECOMMENDATIONS

- Straight section: longitudinal intervals of **not more than 30 m**, except:
 - (a) Larger intervals up to **60 m** where meteorological conditions allow adequate guidance
 - (b) Intervals less than 30 m on short straight sections
 - (c) For use in **RVR < 350 m**: longitudinal spacing shall **not exceed 15 m**
- On a taxiway curve: continue from straight portion at a constant distance from the outside edge of the curve, spaced so as to give a clear indication of the curve

Taxiway Edge Lights

🚫 APPLICATION

- Shall be provided at the edges of a holding bay, de-icing/anti-icing facility, apron etc., intended for use at night, and on a taxiway not provided with taxiway centre line lights and intended for use at night
- Shall be provided on a runway forming part of a standard taxi-route and intended for taxiing at night where the runway is not provided with taxiway centre line lights

💡 LOCATION — SPACING

- Straight section and runway forming part of standard taxi-route: uniform longitudinal intervals of **not more than 60 m**
- Lights on a curve: intervals **less than 60 m** so that a clear indication of the curve is provided
- Holding bay, de-icing/anti-icing facility, apron: uniform longitudinal intervals of **not more than 60 m**

COLOUR

Taxiway edge lights shall be **fixed lights showing blue**.

-  Taxiway CL — Green (or Green/Yellow on exit)
-  Taxiway Edge — Blue
-  Runway Edge — Variable White
-  Threshold / Wing Bar — Green
-  Runway End / Stopway — Red

Part I — Aerodrome Signs

PART I

General Rules for Aerodrome Signs

GENERAL RULES — ALL SIGNS

- Signs shall be **frangible**. Those near a runway or taxiway shall be **sufficiently low to preserve clearance** for propellers and engine pods of jet aircraft. The installed height shall not exceed the dimension specified with the **longer side horizontal**.
- The **only signs** on the movement area utilizing **red** shall be **mandatory instruction signs**.
- Signs shall be **retro reflective and/or illuminated** when intended for use at night in association with non-instrument runways where the code number is 1 or 2.

Mandatory Instruction Signs

APPLICATION

A mandatory instruction sign shall be provided to identify a location beyond which an **aircraft taxiing or vehicle shall not proceed unless authorized by the aerodrome control tower**.

TYPES OF MANDATORY INSTRUCTION SIGNS

- Runway designation signs
- Category I, II or III holding position signs
- Runway-holding position signs
- Road-holding position signs
- NO ENTRY** signs

A NO ENTRY sign shall be provided when entry into an area is prohibited.

🚫 APPEARANCE — MANDATORY INSTRUCTION SIGNS

- Inscription in **white on a red background**
- Where environmental factors require enhanced conspicuity — the outside edge of the white inscription shall be supplemented by a **black outline**:
 - **10 mm wide** for runway code numbers 1 and 2
 - **20 mm wide** for runway code numbers 3 and 4



Part J — Visual Aids for Denoting Obstacles

PART J

Objects to be Marked and/or Lighted

🚫 MANDATORY MARKING & LIGHTING REQUIREMENTS

- A fixed obstacle that extends above a **take-off climb surface within 3,000 m of the inner edge** shall be marked and, if runway is used at night, lighted.
- A fixed object (other than an obstacle) **adjacent to a take-off climb surface** shall be marked and, if used at night, lighted.
- A fixed obstacle above a **horizontal surface** shall be marked and, if aerodrome used at night, lighted.
- A fixed object that extends above an **obstacle protection surface** shall be marked and, if runway used at night, lighted.
- **Vehicles and mobile objects** (excluding aircraft) on the movement area of an aerodrome are obstacles and shall be marked and, if used at night or low visibility, lighted (except aircraft servicing equipment and vehicles used only on aprons may be exempt).
- **Elevated aeronautical ground lights** within the movement area shall be marked to be conspicuous by day. Obstacle lights shall **not** be installed on elevated ground lights or signs in the movement area.
- All obstacles within the distance specified from the centre line of a taxiway, apron taxiway or aircraft stand taxi lane shall be marked and, if taxiway used at night, lighted.

MARKING OF OBJECTS

COLOUR & PATTERN RULES

- All fixed objects to be marked shall, whenever practicable, be **coloured**; if not practicable, **markers or flags** shall be displayed on or above them (objects conspicuous by shape, size, or colour need not be otherwise marked).
- All mobile objects to be marked shall be coloured or display flags.
- An object shall be coloured to show a **chequered pattern** if it has essentially unbroken surfaces and its projection on any vertical plane equals or exceeds **4.5 m in both dimensions**.
- The pattern: rectangles of **not less than 1.5 m and not more than 3 m on a side**, with corners in the darker colour, colours contrasting each with the other and with the background.
- **Colours:** **Orange & White** or alternatively **Red & White**, except where such colours merge with the background.

MARKING VS. LIGHTING TRADE-OFF

Obstacles should be both marked **and** lighted, except that the **marking may be omitted** when high-intensity obstacle lights by day light the obstacle.

⚡ Quick Reference — Key Values & Memory Aids

EXAM PREP

420 m

minimum

Simple Approach
Lighting System Length

900 m

minimum

CAT I / CAT II & III
Approach Lighting Length

300 m

from threshold

Crossbar location
(SALS & CAT I)

9 m²

minimum

Signal Area Size

6 m

from threshold

Threshold Marking
Stripe Commencement

100 m

minimum

Isolated Parking
from Other Positions

47 m

max

Enhanced Taxiway CL
Marking Extension

6 m Ø

diameter

VOR Aerodrome
Checkpoint Circle

900 m

extent

TDZ Lights extend
from threshold

15 m

spacing

Runway CL Light
longitudinal spacing

20–30

flashes/min

Aerodrome Beacon
Flash Frequency

60–120

flashes/min

RTIL Flash
Frequency



Multiple Choice Questions — Visual Aids for Navigation

All questions are based directly on the DGCA regulations in this chapter. Correct answers are indicated in green.

Q1. An aerodrome is obligated to have at least how many wind direction indicators?

- ☒ **A One** CORRECT
- ☐ B Two
- ☐ C As many as required by size

Q2. At which aerodrome is a signaling lamp mandatory?

- ☐ A All aerodromes
- ☒ **B Controlled aerodrome (in the control tower)** CORRECT
- ☐ C Only international aerodromes

Q3. What is the minimum size of the signal area?

- ☐ A 6 m square
- ☒ **B 9 m square** CORRECT
- ☐ C 12 m square

Q4. What colour are runway markings?

- ☒ **A White** CORRECT
- ☐ B Yellow
- ☐ C Orange

Q5. What colour are taxiway markings, runway turn pad markings, and aircraft stand markings?

- ☐ A White
- ☒ B Yellow **CORRECT**
- ☐ C Blue

Q6. In India, apron safety lines shall be of which colour?

- ☐ A Yellow
- ☐ B White
- ☒ C Red **CORRECT**

Q7. At an intersection of two runways, which runway's markings take priority?

- ☐ A Whichever runway is longer
- ☒ B The more important runway (precision approach > non-precision > non-instrument) **CORRECT**
- ☐ C The runway with the higher code number

Q8. Where shall runway designation markings be located?

- ☒ A At the threshold of a paved runway **CORRECT**
- ☐ B At the mid-point of the runway
- ☐ C At both the threshold and the runway end

Q9. In the case of parallel runways, each runway designation number shall be supplemented by a letter. For two parallel runways, the letters used are:

- ☒ A L and R **CORRECT**
- ☐ B L, C, R
- ☐ C 1 and 2

Q10. The length of a stripe plus a gap in a runway centre line marking shall be:

☐ A Not less than 30 m or more than 50 m

☒ B Not less than 50 m or more than 75 m **CORRECT**

☐ C Not less than 60 m or more than 90 m

Q11. The minimum width of a runway centre line stripe on a CAT II & III precision approach runway is:

☐ A 0.45 m

☐ B 0.30 m

☒ C 0.90 m **CORRECT**

Q12. The stripes of the threshold marking shall commence how far from the threshold?

☐ A 3 m

☒ B 6 m **CORRECT**

☐ C 9 m

Q13. How many threshold marking stripes are required for a runway of width 45 m?

☐ A 8

☐ B 10

☒ C 12 **CORRECT**

Q14. An aiming point marking is mandatory on which of the following?

☐ A Non-instrument runway with code number 1 or 2

☒ B Paved instrument runway where code number is 2, 3 or 4 **CORRECT**

☐ C All paved runways regardless of code

Q15. For an LDA of 1200 m up to but not including 2400 m, what is the distance from threshold to the beginning of the aiming point marking?

☐ A 250 m

☒ B 300 m **CORRECT**

☐ C 400 m

Q16. A touchdown zone marking shall be provided on a paved precision approach runway where the code number is:

☐ A 1, 2, 3 or 4

☒ B 2, 3 or 4 **CORRECT**

☐ C 3 or 4 only

Q17. How many pairs of TDZ markings are required when the landing distance available is 2400 m or more?

☐ A 4

☐ B 5

☒ C 6 **CORRECT**

Q18. The minimum width of a taxiway centre line marking is:

☒ A 15 cm **CORRECT**

☐ B 20 cm

☐ C 30 cm

Q19. An isolated aircraft parking position must be located at least how far from other parking positions?

☐ A 50 m

☐ B 75 m

☒ C 100 m **CORRECT**

Q20. The enhanced taxiway centre line marking shall extend from the runway-holding position Pattern A to a distance of up to how far in the direction of travel away from the runway?

- ☐ A 30 m
- ☒ B 47 m **CORRECT**
- ☐ C 60 m

Q21. What is the diameter of a VOR aerodrome checkpoint marking circle?

- ☐ A 4 m
- ☒ B 6 m **CORRECT**
- ☐ C 8 m

Q22. A mandatory instruction marking shall consist of an inscription in:

- ☐ A Black on a yellow background
- ☐ B Yellow on a black background
- ☒ C White on a red background **CORRECT**

Q23. An information marking that replaces a location sign shall have an inscription in which colour?

- ☒ A Yellow **CORRECT**
- ☐ B Black
- ☐ C White

Q24. The flash frequency of an aerodrome beacon shall be:

- ☐ A 10 to 20 per minute
- ☒ B 20 to 30 per minute **CORRECT**
- ☐ C 30 to 60 per minute

Q25. What is the light shown by an aerodrome identification beacon at a land aerodrome?

- ☐ A Flashing white
- ☒ B **Flashing green** **CORRECT**
- ☐ C Flashing yellow

Q26. What is the light shown by an aerodrome identification beacon at a water aerodrome?

- ☐ A Flashing green
- ☒ B **Flashing yellow** **CORRECT**
- ☐ C Flashing white

Q27. The minimum length of a Simple Approach Lighting System from the threshold is:

- ☐ A 300 m
- ☒ B **420 m** **CORRECT**
- ☐ C 900 m

Q28. The crossbar of a Simple Approach Lighting System is located at what distance from the threshold?

- ☐ A 150 m
- ☒ B **300 m** **CORRECT**
- ☐ C 450 m

Q29. The total length of a CAT I precision approach lighting system from the threshold is:

- ☐ A 420 m
- ☐ B 720 m
- ☒ C **900 m** **CORRECT**

Q30. In the CAT II & III approach lighting system, the side row lights show:

- ☐ A Variable white
- ☒ B Red CORRECT
- ☐ C Alternate red and white

Q31. In a CAT II & III approach lighting system, how far from the threshold do the side rows of lights extend?

- ☐ A 150 m
- ☐ B 300 m
- ☒ C 270 m CORRECT

Q32. The PAPI system consists of how many light units?

- ☐ A Two
- ☒ B Four CORRECT
- ☐ C Six

Q33. In the PAPI system, when on or close to the approach slope, the pilot will see:

- ☐ A All four lights white
- ☐ B Three red and one white
- ☒ C Two nearest runway as red and two farthest from runway as white CORRECT

Q34. When "Too High" in a PAPI approach, the pilot sees:

- ☒ A All four lights white CORRECT
- ☐ B Three white and one red
- ☐ C All four lights red

Q35. When "Too Low" in a PAPI approach, the pilot sees:

- ☐ A All four lights white
- ☐ B Three red and one white
- ☒ C All four lights red **CORRECT**

Q36. The APAPI system consists of how many light units?

- ☒ A Two **CORRECT**
- ☐ B Three
- ☐ C Four

Q37. In an APAPI system, when above the approach slope, the pilot sees:

- ☒ A Both units white **CORRECT**
- ☐ B Both units red
- ☐ C One red and one white

Q38. What colour is an aerodrome beacon at a land aerodrome?

- ☐ A Yellow or yellow/white
- ☒ B Green or green/white **CORRECT**
- ☐ C White or white/green

Q39. Runway edge lights shall be uniformly spaced at intervals of not more than:

- ☐ A 30 m for instrument runways; 60 m for non-instrument runways
- ☒ B 60 m for instrument runways; 100 m for non-instrument runways **CORRECT**
- ☐ C 100 m for instrument runways; 150 m for non-instrument runways

Q40. The last 600 m or one-third of runway length (whichever is less) of runway edge lights from the takeoff end may show:

- ☐ A Red
- ☒ B Yellow **CORRECT**
- ☐ C Alternate red and white

Q41. Runway threshold and wing bar lights shall show which colour?

- ☒ A Fixed green (unidirectional, in the direction of approach) **CORRECT**
- ☐ B Fixed white
- ☐ C Flashing white

Q42. Runway end lights shall show which colour?

- ☐ A White
- ☐ B Yellow
- ☒ C Red **CORRECT**

Q43. Runway centre line lights from 900 m to 300 m from the runway end show:

- ☐ A Variable white only
- ☒ B Alternate red and variable white **CORRECT**
- ☐ C All red

Q44. Taxiway markings and aircraft stand markings are:

- ☐ A Red
- ☒ B Yellow **CORRECT**
- ☐ C White

Q45. Taxiway edge lights shall be:

- ☐ A Fixed showing green
- ☐ B Fixed showing yellow
- ☒ C **Fixed showing blue** CORRECT

Q46. Mandatory instruction signs on an aerodrome shall have the following colours:

- ☒ A **White inscription on a red background** CORRECT
- ☐ B Yellow inscription on a black background
- ☐ C Black inscription on a yellow background

Q47. Which of the following describes a location sign?

- ☐ A Red writing on a white background
- ☐ B Yellow writing on a black background
- ☒ C **Black writing on a yellow background** CORRECT

Q48. Runway threshold identification lights (RTIL), when provided, should be:

- ☐ A Fixed green
- ☐ B Fixed white
- ☒ C **Flashing white (60–120 flashes/minute)** CORRECT

Q49. A barrette in a touchdown zone lighting system shall be composed of at least:

- ☐ A Two lights
- ☒ B **Three lights** CORRECT
- ☐ C Five lights

Q50. Stopway lights shall show which colour in the direction of the runway?

- ☐ A Yellow
- ☒ B Red **CORRECT**
- ☐ C White

Q51. When a runway threshold is permanently displaced, arrows shall be provided on the portion of the runway before the displaced threshold. All markings before the displaced threshold shall be:

- ☐ A Painted yellow
- ☒ B Obscured (except the runway centre line marking, which shall be converted to arrows) **CORRECT**
- ☐ C Removed entirely

Q52. Patterns A1 and B1 for runway-holding position markings are no longer valid after:

- ☐ A 26 November 2024
- ☒ B 26 November 2026 **CORRECT**
- ☐ C 26 November 2028

Q53. The number of stripes on each side of the centre line of a runway which has a width of 45 m is:

- ☐ A 6
- ☐ B 8
- ☒ C 6 (since total is 12, each side has 6) **CORRECT**

Q54. What is a "barrette"?

- ☒ A Three or more ground lights closely spaced together to appear as a bar of lights **CORRECT**
- ☐ B A frangible structure on which approach lights are fixed
- ☐ C A CAT 2 or 3 holding position

Q55. The runway centre line marking on an exit taxiway shall consist of lights showing:

- ☐ A All green
- ☒ B Alternate green and yellow (from runway CL to ILS/MLS critical area boundary), then all green
- ☐ C All yellow

CORRECT

Q56. The longitudinal spacing of runway centre line lights should not exceed what value for use in RVR conditions less than 350 m on a taxiway?

- ☐ A 30 m
- ☒ B 15 m
- ☐ C 7.5 m

CORRECT

Q57. To protect against laser emitters around aerodromes, which of the following zones should be established?

- ☐ A LFFZ only
- ☐ B LFFZ and LCFZ only
- ☒ C LFFZ, LCFZ, and LSFZ

CORRECT

Q58. For an instrument runway with code number 4, non-aeronautical lights should be extinguished within how far from the threshold and runway end?

- ☐ A 3000 m
- ☒ B 4500 m
- ☐ C 6000 m

CORRECT

Q59. TDZ lights shall be provided in the touchdown zone of a precision approach runway of category:

- ☐ A I, II or III
- ☒ B II or III only
- ☐ C I only

CORRECT

Q60. The LDI (Landing Direction Indicator) should be in the form of:

- ☐ A An L-shape
- ☒ B A "T" shape
- ☐ C An arrowhead

CORRECT

Visual Aids for Navigation

PART 2 — SIGNS · MARKERS · OBSTACLES · RFF · DECLARED
DISTANCES · FOD

PART K

Aerodrome Signs (Complete)

PART L

Markers (All Types)

PART M

Obstacle Lighting — Full Table

PART N

Restricted Use Areas

PART O

Rescue & Fire Fighting

PART P

Declared Distances · CWY · SWY

PART Q

Wildlife Hazard · FOD Control

PART R

53 MCQs + Official Answer Key

✈ Ghost Aviator

Signs, Markers, Obstacles, RFF & More

ICAO ANNEX 14

CAR SECTION-4 SERIES B PART I ISSUE II

EFFECTIVE 01/01/2021

□ Part K — Aerodrome Signs (Complete)

PART K

⊖ SIGN COLOUR SUMMARY – THE MASTER RULE

- The **only signs on the movement area** using red shall be **mandatory instruction signs**.
- Information signs other than a location sign: inscription in **black on a yellow background**.
- Location sign: inscription in **yellow on a black background** — stand-alone signs shall have a **yellow border**. Memory aid: "**Black Square, you are there.**"

SIGN COLOUR/STYLE QUICK REFERENCE

27 MANDATORY INSTRUCTION White on Red	NO ENTRY NO ENTRY SIGN White on Red	A LOCATION SIGN Yellow on Black (Yellow Border)	← G DIRECTION SIGN Black on Yellow
← APRON DESTINATION SIGN Black on Yellow	VOR VOR CHECKPOINT Black on Yellow	AERODROME NAME AERODROME ID SIGN Conspicuous colour Char height ≥ 3 m	2500m→ INTERSECTION TAKE- OFF SIGN Black on Yellow

Information Signs — Detailed Rules

🚫 WHEN EACH INFORMATION SIGN IS MANDATORY

- **Runway exit sign:** Shall be provided where there is an operational need to identify a runway exit.
- **Runway vacated sign:** Shall be provided where the exit taxiway is not provided with taxiway centre line lights and there is need to indicate to a pilot leaving a runway the perimeter of the ILS/MLS critical/sensitive area or the lower edge of the inner transitional surface (whichever is farther from the runway centre line).
- **Intersection take-off sign:** Shall be provided when there is an operational need to indicate the remaining take-off run available (**TORA**) for intersection take-offs.
- **Direction sign:** Shall be provided when there is an operational need to identify the designation and direction of taxiways at an intersection.
- **Combined location and direction sign:** Shall be provided when it is intended to indicate routing information prior to a taxiway intersection.

💡 DESTINATION SIGN RECOMMENDATION

A destination sign should be provided to indicate the direction to a specific destination on the aerodrome, such as **cargo area, general aviation, etc.**

Location Sign — Rules

🚫 MANDATORY RULES

- Shall be provided **in conjunction with a runway designation sign** except at a runway/runway intersection.
- Shall be provided **in conjunction with a direction sign**, except it may be omitted where an aeronautical study indicates it is not needed.
- Where a taxiway ends at a "T" intersection and identification is necessary, a **barricade, direction sign and/or other appropriate visual aid shall be used.**

📏 APPEARANCE

- Inscription in **yellow on a black background**
- Stand-alone location sign shall have a **yellow border**
- Memory: "**Black Square — You Are There**"

Taxiway Designators — Rules

⊖ RULES FOR NAMING TAXIWAYS

- A taxiway shall be identified by a designator used **only once** on an aerodrome — comprising a single letter, two letters, or a combination of a letter or letters followed by a number.
- The use of words such as **"inner" and "outer"** shall be avoided wherever possible.
- The letters **I, O, and X** shall **not** be used (to avoid confusion with numerals 1, 0 and the closed-marking).
- The use of numbers alone is reserved for **runway designation**.
- **Apron stand designators shall not be the same as taxiway designators.**

Aerodrome Identification Sign

⊖ RULES

- Shall be provided at an aerodrome where there is **insufficient alternative means of visual identification of the aerodrome**.
- Shall be placed on the aerodrome so as to be legible, in so far as is practicable, at **all angles above the horizontal**.
- Shall consist of the **name of the aerodrome**.
- Colour shall give **adequate conspicuity** when viewed against its background.
- Characters shall have a height of **not less than 3 m**.

Aircraft Stand Identification Signs

⊖ APPEARANCE

An aircraft stand identification sign shall consist of an inscription in **black on a yellow background**. An aircraft stand identification marking shall be supplemented with an aircraft stand identification sign where feasible.

Road-Holding Position Sign

⊖ RULES

- Shall be provided at **all road entrances to a runway**.
- Located **1.5 m** from one edge of the road (left or right as appropriate to local traffic regulations) at the holding position.
- Consists of an inscription in **white on a red background**.

VOR Aerodrome Checkpoint Sign

🚫 RULES

- When a VOR aerodrome check-point is established, it shall be indicated by a **VOR aerodrome check-point marking AND sign**.
- Sign consists of an inscription in **black on a yellow background**.

ARIWS — Advanced Runway Incursion Warning System

📘 DEFINITION & PURPOSE

ARIWS (Advanced Runway Incursion Warning System) is a system used for **warning a pilot about runway incursion in near real time**. It is a safety system designed to detect and warn pilots when there is an unauthorised entry onto an active runway, helping prevent runway incursions and collisions.

◆ Part L — Markers

PART L

🚫 GENERAL RULE — ALL MARKERS

Markers shall be **frangible**. Those located near a runway or taxiway shall be sufficiently low to preserve clearance for propellers and for the engine pods of jet aircraft.

Unpaved Runway Edge Markers

🚫 APPLICATION

Shall be provided when the extent of an unpaved runway is **not clearly indicated** by the appearance of its surface compared with the surrounding ground.

Stopway Edge Markers

💡 RECOMMENDATION

Should be provided when the extent of a stopway is not clearly indicated by its appearance compared with the surrounding ground. Shall be **sufficiently different from runway edge markers** to ensure the two types cannot be confused.

Edge Markers for Snow-Covered Runways

RECOMMENDATION

Should be used to indicate the usable limits of a snow-covered runway when the limits are not otherwise indicated.

Taxiway Edge Markers

RECOMMENDATION

Should be provided on a taxiway where the code number is **1 or 2** and **taxiway centre line or edge lights** or taxiway centre line markers are not provided.

Unpaved Taxiway Edge Markers

RECOMMENDATION

Where the extent of an unpaved taxiway is not clearly indicated by its appearance compared with the surrounding ground, markers should be provided.

Boundary Markers

APPLICATION & COLOUR

- Shall be provided at an aerodrome where the **landing area has no runway**.
- Shall be coloured to contrast with the background: a single colour (**orange or red**), or two contrasting colours (**orange and white**, or alternatively **red and white**), except where such colours merge with the background.

Obstacle Markers

⊘ RULES

- Shall be located in **conspicuous positions** so as to retain the general definition of the object and shall be recognizable in clear weather from:
 - A distance of at least **1000 m** for an object to be viewed **from the air**
 - **300 m** for an object to be viewed from the ground in all directions in which an aircraft is likely to approach the object
- The shape of markers shall be **distinctive** to ensure they are not mistaken for markers employed to convey other information.
- The hazard presented by the object shall not be increased.



Part M — Obstacle Marking & Lighting (Detailed)

PART M

Colour Rules for Object Marking

⊘ WHEN OBJECTS ARE SMALL (BOTH DIMENSIONS < 1.5 M)

An object shall be coloured in a **single conspicuous colour** if its projection on any vertical plane has both dimensions less than **1.5 m**. Colour: **orange or red**, except where such colours merge with background.

⊘ WHEN OBJECTS ARE LARGE (BOTH DIMENSIONS ≥ 4.5 M)

An object shall be coloured to show a **chequered pattern** if it has essentially unbroken surfaces and its projection on any vertical plane equals or exceeds **4.5 m in both dimensions**. Pattern: rectangles of **1.5 m to 3 m on a side**, corners in the darker colour. Colours: **orange & white** or **red & white**.

⊘ MOBILE OBJECT MARKINGS

- Emergency vehicles on the manoeuvring area: **red**
- Other service vehicles: **yellow**
- Follow-me vehicles: **yellow** (flashing low-intensity lights)

Lighting of Objects — Use of Obstacle Lights

➊ RULES

- The presence of objects which must be lighted shall be indicated by **low-, medium- or high-intensity obstacle lights**, or a combination.
- One or more low-, medium- or high-intensity obstacle lights shall be located. Lights shall be arranged to **depict the outline of the object**.

Low-Intensity Obstacle Lights

➋ TYPES AND COLOURS

- **Type A (fixed obstacle):** Fixed Red
- **Type B (fixed obstacle):** Fixed Red
- **Type E:** Flashing Red
- Spaced at longitudinal intervals **not exceeding 45 m**
- **Vehicles — Emergency/Security:** Flashing Blue
- **Vehicles — Other service:** Flashing Yellow
- **Follow-me vehicles:** Flashing Yellow

Medium-Intensity Obstacle Lights

➌ TYPES AND SPACING

- Spaced at longitudinal intervals **not exceeding 900 m**
- **Type A:** Flashing White
- **Type B:** Flashing Red
- **Type C:** Fixed Red

High-Intensity Obstacle Lights

➍ TYPE

- **High-intensity obstacle lights** shall be Flashing White

Wind Turbines

RULE

A wind turbine shall be **marked and/or lighted** if it is determined to be an obstacle. When lighting is deemed necessary, **medium intensity obstacle lights shall be used**.

CHARACTERISTICS OF OBSTACLE LIGHTS — COMPLETE TABLE

Light Type	Colour	Signal Type / Flash Rate	Peak Intensity (cd) – Day (>500 cd/m ²)	Peak Intensity (cd) – Twilight (50–500 cd/m ²)	Peak Intensity (cd) – Night (<50 cd/m ²)
Low Intensity, Type A (fixed obstacle)	Red	Fixed	N/A	N/A	10
Low Intensity, Type B (fixed obstacle)	Red	Fixed	N/A	N/A	32
Low Intensity, Type C (Mobile obstacle)	Yellow / Blue	Flashing (60–90 fpm)	N/A	40	40
Low Intensity, Type D (Follow Me Vehicle)	Yellow	Flashing (60–90 fpm)	N/A	200	200
Low Intensity, Type E	Red	Flashing	N/A	N/A	32
Medium Intensity, Type A	White	Flashing (20–60 fpm)	20,000	20,000	2,000
Medium Intensity, Type B	Red	Flashing (20–60 fpm)	N/A	N/A	2,000
Medium Intensity, Type C	Red	Fixed	N/A	N/A	2,000
High Intensity, Type A	White	Flashing (40–60 fpm)	200,000	20,000	2,000
High Intensity, Type B	White	Flashing (40–60 fpm)	100,000	20,000	2,000



Closed Runways and Taxiways, or Parts Thereof



MANDATORY RULES

- A **closed marking shall be displayed** on a runway or taxiway, or portion thereof, which is **permanently closed** to use by all aircraft.
- When permanently closed: all normal runway and taxiway markings shall be **obliterated**.
- Lighting on a closed runway or taxiway or portion thereof **shall not be operated**, except as required for maintenance purposes.



RECOMMENDATION — TEMPORARILY CLOSED

A closed marking should be displayed on a temporarily closed runway or taxiway or portion thereof, except that such marking may be omitted when the closing is of short duration and adequate warning by air traffic services is provided.

Pre-Threshold Area



RULES

- When the surface before a threshold is paved, **exceeds 60 m in length**, and is **not suitable for normal use by aircraft**, the entire length before the threshold shall be marked with a **chevron marking**.
- A chevron marking shall **point in the direction of the runway** and be placed as shown in Fig. 17.
- A chevron marking shall be of **yellow colour**.
- It shall have an **overall width of 0.9 m**.

Unserviceable Areas



MANDATORY RULES

- **Unserviceability markers** shall be displayed wherever any portion of a taxiway, apron or holding bay is **unfit for the movement of aircraft** but it is still possible for aircraft to bypass the area safely.
- On a movement area used at night, **unserviceability lights** shall be used.
- Markers and lights shall be placed at intervals **sufficiently close so as to delineate the unserviceable area**.

🚫 MARKERS & LIGHTS

- **Unserviceability markers** shall consist of conspicuous upstanding devices such as **flags, cones, or marker boards**.
- **Unserviceability light:** A **red fixed light**. The intensity shall be sufficient to ensure conspicuity considering the intensity of adjacent lights and the general level of illumination.



Part O — Rescue and Fire Fighting (RFF)

PART O

📋 PRINCIPAL OBJECTIVE

The principal objective of a rescue and fire fighting service is to **save lives** in the event of an aircraft accident or incident occurring at, or in the immediate vicinity of, an aerodrome. Rescue and fire fighting equipment and services shall be provided at an aerodrome.

Level of Protection & Aerodrome Category

🚫 HOW THE AERODROME RFF CATEGORY IS DETERMINED

- Based on the **overall length** of the longest aeroplane normally using the aerodrome **AND** its **maximum fuselage width**.
- The level of protection shall be **appropriate to the aerodrome category**.
- Exception: Where the number of movements of the aeroplanes in the highest category normally using the aerodrome is **less than 700 in the busiest consecutive three months**, the level of protection provided shall be **not less than one category below the determined category**.
- *Note: Either a take-off or a landing constitutes a movement.*

AERODROME CATEGORY FOR RFF — COMPLETE TABLE

Aerodrome Category	Aeroplane Overall Length	Maximum Fuselage Width
1	0 m up to but not including 9 m	2 m
2	9 m up to but not including 12 m	2 m
3	12 m up to but not including 18 m	3 m
4	18 m up to but not including 24 m	4 m
5	24 m up to but not including 28 m	4 m
6	28 m up to but not including 39 m	5 m
7	39 m up to but not including 49 m	5 m
8	49 m up to but not including 61 m	7 m
9	61 m up to but not including 76 m	7 m
10	76 m up to but not including 90 m	8 m

1-3

Light / GA aircraft
<18 m

4-5

Regional jets
18-28 m

6-7

Narrow-body jets
28-49 m

8-9

Wide-body jets
49-76 m

10

A380 class
76-90 m
MAX 8 m FW

Extinguishing Agents

⊖ RULES

- Both **principal and complementary agents** shall be provided at an aerodrome.
- The **principal extinguishing agent** should be **foam**.
- The **complementary extinguishing agent** should be a **dry chemical powder** suitable for extinguishing hydrocarbon fires.
- Complementary agents shall comply with the appropriate specifications of the **Bureau of India Standards (BIS) / ISO**.

Response Times

⊖ CRITICAL VALUES

- A response time **not exceeding 3 minutes** shall be maintained by RFF services for any point of each operational runway and for any other part of the movement area.
- The **operational objective** is to achieve a response time **not exceeding 2 minutes** to any point of each operational runway, in **optimum visibility and surface conditions**.

3 min

maximum

RFF Response Time
(movement area)

2 min

operational objective

RFF Response Time
(optimum conditions)

700

movements / 3 months

Threshold for category
reduction allowance

1,000 m

from threshold

Emergency access road
provision target

Emergency Access Roads

💡 RECOMMENDATION

Emergency access roads should be provided on an aerodrome where terrain conditions permit, so as to facilitate achieving minimum response times. Particular attention should be given to provision of ready access to approach areas up to **1,000 m from the threshold**, or at least within the aerodrome boundary.

Fire Stations

💡 RECOMMENDATIONS

- All RFF vehicles should normally be housed in a **fire station**.
- Satellite fire stations should be provided whenever the response time cannot be achieved from a single fire station.
- The fire station should be located so that access into the runway area is **direct and clear**, requiring a **minimum number of turns**.

Communication and Alerting Systems

RECOMMENDATIONS

- A **discrete communication system** should be provided linking a fire station with the control tower, any other fire station on the aerodrome and the RFF vehicles.
- An **alerting system** for RFF personnel, capable of being operated from that station, shall be provided at a fire station, any other fire station on the aerodrome and the **aerodrome control tower**.

Radio Altimeter Operating Area

MANDATORY

A radio altimeter operating area **shall** be established in the pre-threshold area of a **precision approach category II & III runway**.



Part P — Declared Distances, Clearway & Stopway

PART P

Declared Distances — Definitions

FOUR DECLARED DISTANCES

- **TORA — Takeoff Run Available:** The length of runway declared available and suitable for the **ground run of an aeroplane taking off**.
- **TODA — Takeoff Distance Available:** The length of the takeoff run available **plus the length of the clearway**, if provided.
- **ASDA — Accelerate-Stop Distance Available:** The length of the takeoff run available **plus the length of the stopway**, if provided.
- **LDA — Landing Distance Available:** The length of runway which is declared available and suitable for the **ground run of an aeroplane landing**.

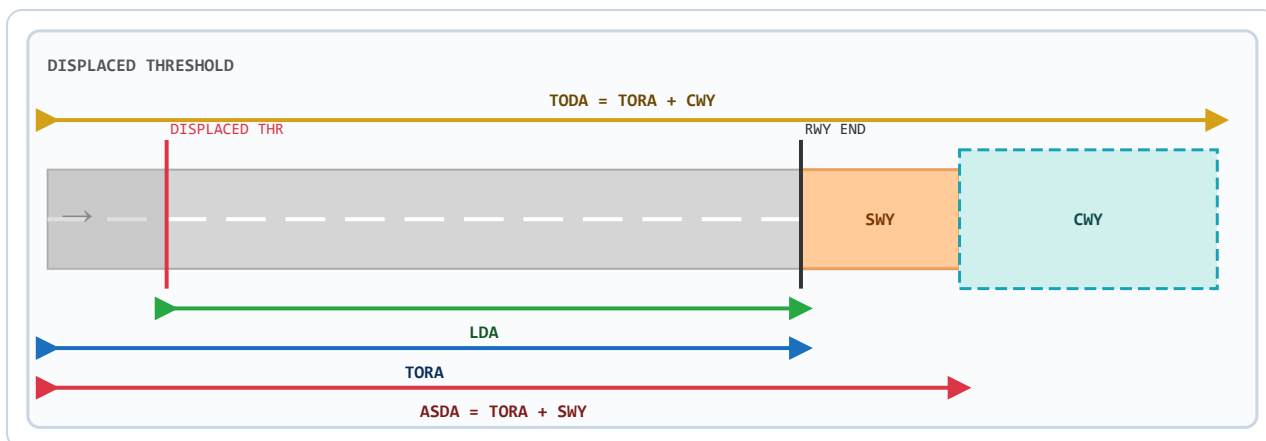


Fig. – Declared Distances: LDA, TORA, ASDA, TODA (with Displaced Threshold, Stopway, Clearway)

Clearway (CWY)

DEFINITION

A defined **rectangular area on the ground or water** under the control of the appropriate authority, selected or prepared as a suitable area over which an aeroplane may make a portion of its initial climb to a specified height.

- Should extend laterally to a distance of at least **75 m** on each side of the **extended centre line of the runway**
- The ground in a clearway should **not project over a plane having an upward slope of 1.25%**
- An object situated on a clearway which may endanger aeroplanes in the air should be regarded as an obstacle and should be **removed**

Stopway (SWY)

DEFINITION

A defined **rectangular area on the ground at the end of takeoff run available** prepared as a suitable area in which an aircraft can be stopped in the case of an **abandoned takeoff**.

- Shall have the **same width as the runway** with which it is associated
- Should be capable, in the event of an abandoned takeoff, of **supporting the aeroplane without inducing structural damage** to the aeroplane



Wildlife Hazard Management

⚠ HAZARD STATEMENT

The presence of **wildlife (birds and other animals)** on and within the aerodrome vicinity may pose a **serious hazard to aircraft operational safety**. Therefore, to reduce the risk to aviation safety, **active assessments, reporting and management of wildlife** are necessary.

📋 WILDLIFE HAZARD MANAGEMENT PROGRAMME (WHMP)

A **WHMP** is a method for aerodrome operators to adopt reasonable wildlife risk control measures, in order to **prevent wildlife from colliding with aircraft**.

Foreign Object Debris (FOD) Control

📋 DEFINITION OF FOD

FOD is defined as an **inanimate object within the movement area** which has no operational or aeronautical functions, and which has the potential to be a hazard to aircraft operations.

⚠ SOURCES OF FOD

FOD can be generated from:

- **Personnel**
- **Aerodrome infrastructure** (pavements, lights, signs)
- **The environment** (wildlife, snow, ice)
- **Equipment** operating at the aerodrome (aircraft, vehicles, maintenance equipment, fueling trucks, aircraft servicing equipment, construction equipment)

🚫 HAZARD STATEMENT & ACTION

The presence of FOD on the movement area may pose a **significant hazard** to the safety of aircraft operations — FOD has the potential to **damage aircraft during critical phases of flight**, which can lead to **catastrophic loss of life and airframe**, and increased maintenance and operating costs.

FOD hazards can be reduced through the implementation of an **FOD control program**, which would normally include **FOD prevention, detection, removal and evaluation**.



Part R — DGCA Exam MCQ Bank (53 Questions with Answers)

OFFICIAL MCQs

Official Question Bank — Chapter 11 MCQs

These questions and answers are reproduced directly from the DGCA study material. Correct answers from the official answer key are shown in green.

Q1. Which of the following Annexes to the Chicago convention contains minimum specifications for the design of aerodromes?

- ☒ **A Annex 14** **CORRECT**
- ☐ B Annex 11
- ☐ C Annex 6

Q2. "Clearway" is a defined rectangular area established to:

- ☐ A Reduce the risk of damage to aircraft running off a runway
- ☐ B Protect aircraft during take-off or landing operations
- ☒ **C Permit aircraft to make a portion of its initial climb to a specific height** **CORRECT**

Q3. The STOPWAY is a defined rectangular area on the ground at the end of take-off run available prepared as a suitable area where:

- ☐ A A landing aircraft can be stopped if overcoming the end of runway
- ☒ **B An aircraft can be stopped in the case of an abandoned take-off** **CORRECT**
- ☐ C A landing aircraft can be stopped only in emergency

Q4. "ASDA" (Accelerate Stop Distance Available) is:

- ☐ A The length of the take-off run available plus the length of stopway and clearway (if provided)
- ☒ **B The length of the take-off run available plus the length of stopway (if stopway provided)** **CORRECT**
- ☐ C The length of the runway plus the length of stopway available (if stopway provided)

Q5. "Instrument runways" are the following runways intended for the operation of aircraft using instrument approach procedures:

- ☒ **A Non precision approach runways, precision approach runways category I, II and III**
- ☐ B Instrument approach runways, precision approach runways category I, II and III
- ☐ C Precision approach runways category I, II and III

CORRECT

Q6. "TODA" take-off distance available is:

- ☒ **A The length of the take-off run available plus the length of the clearway (if provided)**
- ☐ B The length of the take-off run available plus the length of stopway and clearway (if provided)
- ☐ C The length of the take-off run plus the length of the stopway

CORRECT

Q7. The light shown by an "Aerodrome Identification Beacon" at a land aerodrome shall be:

- ☐ A White and green colour identification given by Morse Code
- ☒ **B Green colour identification given by Morse Code**
- ☐ C Blue colour identification given by Morse Code

CORRECT

Q8. Taxiway edge lights shall be:

- ☐ A Fixed showing green
- ☐ B Fixed showing yellow
- ☒ **C Fixed showing blue**

CORRECT

Q9. In the case of parallel runways, each runway designation number shall be supplemented:

- ☒ **A By a letter — for example 2 parallel runways "L" and "R"; for 3: "L", "C" and "R"**
- ☐ B By a letter for 2 parallel runways only
- ☐ C By a number like "o" and "o1" for 2 parallel runways

CORRECT

Q10. In the "PAPI" system the pilot during an approach will see the two units nearest the runway as red and the two units farthest from the runway as white when:

- ☐ A Above the approach slope
- ☒ B On or close to the approach slope **CORRECT**
- ☐ C Only on the approach slope

Q11. Runway threshold identification lights, when provided, should be:

- ☐ A Fixed green
- ☐ B Fixed white
- ☒ C Flashing white **CORRECT**

Q12. What is a "barrette"?

- ☒ A Three or more ground lights closely spaced together to appear as a bar of lights **CORRECT**
- ☐ B A frangible structure on which approach lights are fixed
- ☐ C A CAT 2 or 3 holding position

Q13. What is the length of an approach lighting system of a precision-approach runway CAT II?

- ☐ A 600 m
- ☒ B 900 m **CORRECT**
- ☐ C 300 m

Q14. Runway end lights shall be:

- ☐ A Fixed lights showing variable red
- ☒ B Fixed unidirectional lights showing red in the direction of the runway **CORRECT**
- ☐ C Fixed lights showing variable white

Q15. Aerodrome signs should be in the following configuration:

- ☐ A Mandatory instruction signs, black backgrounds with red inscriptions
- ☒ B **Information signs, yellow or black background with black or yellow inscriptions**
- ☐ C Mandatory instruction signs, red background with black inscriptions

CORRECT

Q16. The "PAPI" shall consist of:

- ☐ A Two wing bars of 4 sharp transition multi-lamp or paired units equally spaced
- ☒ B **A wing bar of 4 sharp transition multi-lamp or paired units equally spaced**
- ☐ C Two wing bars of 6 sharp transition multi-lamp or paired units equally spaced

CORRECT

Q17. Runway threshold lights shall be:

- ☐ A Fixed lights green colours
- ☐ B Fixed lights showing green or white colours
- ☒ C **Fixed unidirectional lights showing green in the direction of approach to the runway**

CORRECT

Q18. Taxiway centreline lights other than an exit taxiway shall be:

- ☐ A Fixed lights showing blue
- ☒ B **Fixed lights showing green**
- ☐ C Fixed lights showing yellow

CORRECT

Q19. How many red lights must a pilot see, whose aircraft, in final approach, is following a normal glide path defined by a PAPI?

- ☒ A **2**
- ☐ B None
- ☐ C 3

CORRECT

Q20. Runway edge lights expected in the case of a displaced threshold shall be:

- ☐ A Fixed lights, white or yellow colour
- ☐ B Flashing white
- ☒ C **Fixed lights showing variable white**

CORRECT

NOTE: Between runway beginning and displaced threshold, lights show RED in approach direction

Q21. The abbreviation PAPI stands for:

- ☒ A **Precision Approach Path Indicator**
- ☐ B Precision Approach Power Index
- ☐ C Precision Approach Path Index

CORRECT

Q22. High intensity obstacle lights should be:

- ☐ A Flashing red
- ☒ B **Flashing white**
- ☐ C Fixed orange

CORRECT

Q23. Low intensity obstacle lights on mobile objects shall be:

- ☐ A Fixed red or preferably orange
- ☒ B **Flashing blue / yellow**
- ☐ C Flashing red or preferably yellow

CORRECT

Q24. Low intensity obstacle lights on fixed objects shall be:

- ☐ A Flashing red
- ☒ B **Fixed red / Flashing Red**
- ☐ C Fixed red (only)

CORRECT

Q25. The runway edge lights shall be:

☐ A Red

☒ B White (variable white) **CORRECT**

☐ C Green

Q26. The aerodrome category for rescue and fire fighting is based on:

☒ A The over-all length of the longest aeroplane normally using the aerodrome and its maximum fuselage width **CORRECT**

☐ B The over-all length of the longest aeroplane

☐ C The longest aeroplane maximum width only

Q27. Regarding declared airfield distances the ASDA is:

☐ A The distance from the start of the take-off run to the last point capable of bearing the full weight of the aircraft under normal operating conditions

☒ B The distance from the start of the take-off run to the end of the stopway **CORRECT**

☐ C The area beyond the end of the prepared surface only available to aircraft stopping in an emergency

Q28. "A defined rectangular area on the ground at the end of take-off run available prepared as a suitable area in which an aircraft can be stopped in the case of an abandoned take-off" is the definition for:

☐ A Runway strip

☐ B Runway end safety area

☒ C Stopway **CORRECT**

Q29. Where a parking bay is provided at an aerodrome suitable for the parking of an aircraft which is known or believed to be the subject of unlawful interference, what is the minimum distance that this parking bay needs to be separated from any other parking areas, buildings?

- ☒ **A 100 m** **CORRECT**
- ☐ B 50 m
- ☐ C 200 m

Q30. Crash/Rescue (emergency) services provision is categorised according to physical characteristics of the type of aeroplane using the aerodrome. Upon what are the categories based?

- ☐ A Overall length and maximum takeoff mass
- ☒ **B Overall length and fuselage width** **CORRECT**
- ☐ C Maximum number of passengers on board

Q31. How is a paved pre-threshold area which is greater than 60 m in length but not suitable for any use by aircraft, marked?

- ☐ A By white arrows directing approaching aircraft to the displaced threshold
- ☐ B By a yellow X
- ☒ **C By a white X** **CORRECT**

Q32. Which of the following systems describes an abbreviated precision approach path indicator?

- ☐ A Ten light units arranged on one side of the runway in the form of a single wing bar of four light units, with a bisecting longitudinal line of six lights
- ☐ B Twenty light units symmetrically disposed about the runway centre line in the form of two wing bars of four light units each, with bisecting longitudinal lines of six lights
- ☒ **C A wing bar of 2 sharp transition multi-lamp units normally located on the left side of the runway unless it is physically impracticable to do so** **CORRECT**

Q33. What colour are emergency vehicles painted that are used on the manoeuvring area of an aerodrome?

- ☒ **A A single conspicuous colour, preferably red or yellowish green** **CORRECT**
- ☐ B Green
- ☐ C Orange

Q34. Alternate yellow/green centre line lights of a taxiway indicate:

- ☐ A The proximity of a runway
- ☒ **B An ILS/MLS critical/sensitive area** **CORRECT**
- ☐ C A stopway

Q35. When taxiing on a surface with white markings, you are rolling on a:

- ☐ A Movement Area
- ☒ **B Runway** **CORRECT**
- ☐ C Clearway

Q36. What colour are apron safety line markings?

- ☐ A White
- ☐ B Red
- ☒ **C A contrasting colour from the taxiway markings** **CORRECT** **In India = RED**

Q37. Runway centre line lights shall be fixed lights showing variable ____ from the threshold to the point 900 m from the runway end, alternate ____ and variable ____ from 900 m to 300 m from runway end, and ____ from 300 m to the runway end.

- ☒ **A White, red and white, red** **CORRECT**
- ☐ B White, yellow and white, red
- ☐ C Green, yellow, red

Q38. What colour is an aerodrome beacon at a land aerodrome?

- ☐ A Yellow or yellow/white
- ☐ B Green or green/white
- ☒ C **White or white/green**

CORRECT (per Answer Key)

Regulation: Green flashes + White flashes

Q39. Which of the following describes a location sign?

- ☐ A Red writing on a white background
- ☒ B **Yellow writing on a black background**
- ☐ C Black writing on a yellow background

CORRECT

Q40. When on or close to the approach slope, the wing bar of a PAPI shows:

- ☒ A **Two red lights and two white lights**
- ☐ B Four red lights
- ☐ C Three white lights and one red light

CORRECT

Q41. Which of the following is not a mandatory instruction sign?

- ☐ A Taxi-holding position sign
- ☐ B Road holding position sign
- ☒ C **Direction sign**

CORRECT

Q42. The number of stripes on each side of the centre line of a runway which has a width of 45 m is:

- ☐ A 3
- ☒ B **6**
- ☐ C 4

CORRECT

Q43. Mandatory instructions signs on an aerodrome shall have the following colours:

- ☒ **A White inscription on a red background** **CORRECT**
- ☐ B Yellow inscription on a black background
- ☐ C Black inscription on a yellow background

Q44. Taxiway markings and aircraft stand markings are:

- ☐ A Red
- ☒ **B Yellow** **CORRECT**
- ☐ C White

Q45. Taxiway centre line lights other than an exit taxiway shall be:

- ☒ **A Fixed lights showing green.** **CORRECT**
- ☐ B Fixed lights showing yellow.
- ☐ C Fixed lights showing blue.

Q46. ARIWS is a system used for:

- ☐ A Warning a pilot about bird activity on take off path
- ☐ B Cautioning a pilot about wind shear on finals in real time
- ☒ **C Warning a pilot about runway incursion in near real time** **CORRECT**

Q47. You see a board painted in white with letters in red on taxi-track edge. This board is a:

- ☐ A Information sign
- ☒ **B Mandatory instruction sign** **CORRECT**
- ☐ C Holding position sign

Q48. An aiming point marking shall be provided at:

- ☒ **A Each approach end of paved instrument runway where the code number is 2, 3 or 4**
- ☐ B Paved taxi track joining precision approach runway
- ☐ C Paved runways not provided with touch down zone markings

CORRECT

Q49. LFFZ is established around an aerodrome to:

- ☐ A Protect aircraft from low flying aircraft
- ☒ **B Protect aircraft from laser emitters**
- ☐ C Protect aircraft from low flying fighter aircraft in military areas

CORRECT

Q50. VASIS shall be provided to serve the approach to a runway:

- ☐ A Not served by visual approach aids
- ☐ B Not served by non visual approach aids
- ☒ **C Whether or not the runway is served by visual approach aids or by non-visual aids, where turbo jet operations take place**

CORRECT

Q51. Identify the correct Taxiway designator:

- ☐ A I2 (*I not allowed*)
- ☐ B X1 (*X not allowed*)
- ☒ **C Z2**

CORRECT

Q52. Wildlife hazard at aerodromes is caused due to the presence of:

- ☐ A Wild animals.
- ☐ B Animals.
- ☒ **C Birds and animals.**

CORRECT

Q53. Aerodrome Operations Vehicles are considered to be:

- ☐ A FOD.
- ☐ B Flight Operation Hazards.
- ☒ C A possible source of FOD. **CORRECT**



Official Answer Key

DGCA SOURCE

ANSWERS – Q1 TO Q53 (VERIFIED ANSWER KEY)

1	A	2	C	3	B	4	B	5	A	6	A	7	B
8	C	9	A	10	B	11	C	12	A	13	B	14	B
15	B	16	B	17	C	18	B	19	A	20	C	21	A
22	B	23	B	24	B	25	B	26	A	27	B	28	C
29	A	30	B	31	C	32	C	33	A	34	B	35	B
36	C	37	A	38	C	39	B	40	A	41	C	42	B
43	A	44	B	45	A	46	C	47	B	48	A	49	B
50	C	51	C	52	C	53	C						

🚫 THE COMPLETE COLOUR CODE – COMMIT TO MEMORY

GHOST AVIATOR

Ghost Aviator

GHOST AVIATOR

Join live classes for guided practice and doubt clearing.

Item	Colour	Type
Runway markings	White	Painted surface
Taxiway / Aircraft stand / Turn pad markings	Yellow	Painted surface
Apron safety lines (India)	Red	Painted surface
Chevron marking (pre-threshold)	Yellow	Painted surface
Runway edge lights	Variable White (Red near displaced thr; Yellow last 600 m / 1/3)	Fixed
Runway threshold / wing bar lights	Green (unidirectional)	Fixed
Runway end lights	Red	Fixed unidirectional
Runway CL lights — normal section	Variable White	Fixed
Runway CL lights — 900→300 m from end	Alt. Red & Variable White	Fixed
Runway CL lights — last 300 m	Red	Fixed
TDZ lights	Variable White	Fixed unidirectional
Stopway lights	Red	Fixed unidirectional
Taxiway CL lights (regular)	Green	Fixed
Taxiway CL lights (exit taxiway)	Alternate Green & Yellow → Green	Fixed
Taxiway edge lights	Blue	Fixed
Mandatory instruction sign	White on Red	Sign
Location sign	Yellow on Black (+ yellow border)	Sign
Direction / destination sign	Black on Yellow	Sign
Aerodrome beacon (land)	Green/White flashing	Light
Aerodrome beacon (water)	Yellow/White flashing	Light
PAPI on glide path	2 Red + 2 White	Approach aid
Low intensity obstacle (fixed)	Red (fixed)	Obstacle light
Medium intensity obstacle (Type A)	White (flashing 20–60 fpm)	Obstacle light

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Item	Colour	Type
High intensity obstacle	White (flashing 40–60 fpm)	Obstacle light

Reference: ICAO Annex 14 · CAR Section-4, Series 'B', Part I Issue II · Effective 01/01/2021

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