

Table of Contents

1. WMO, WAFS and IMD

2. Aviation Met Offices in India (AMO, AMS, MWO, TCAC)

3. Notification — Advance Notice Requirements

4. Routine Met Observations (METAR, SPECI, AIREP/PIREP)

5. Types of Forecasts for Aviation

6. SIGWX Charts

7. SIGMET

8. AIRMET and GAMET

9. Warnings

10. Exchange of Meteorological Messages (VOLMET, ROBEX, ATIS)

Practice Q&A

Master Reference Tables

1. WMO, WAFS and IMD

Objective of Meteorological Services: To contribute towards the safety and efficiency of air navigation by providing the required meteorological information to operators, ATC, airfield management and others.

World Meteorological Organisation (WMO)

- Specialised agency of UN; looks after weather aspects of aviation in collaboration with ICAO.
- Purpose: facilitate worldwide cooperation in establishing networks of observatories, promoting rapid exchange of weather information, research, application of meteorology.
- **World Weather Watch (WWW):** coordinates world-wide weather activities using Global Observing System (GOS), Global Telecommunication System (GTS), and Global Data Processing System (GDPS).

World Area Forecast System (WAFS)

WAFS purpose: To provide global aeronautical en-route weather forecasts to Met Offices.

- **2** World Area Forecast Centres (WAFS) — at **Washington** and **London**.
- **19** Regional Area Forecast Centres (RAFC) at various places; one at **New Delhi**.
- WAFS prepares digital and gridded global forecasts of Upper Winds and Temperatures, Humidity, FL of Tropopause and its Temperature, Max Wind, Icing, Turbulence and CB clouds.
- Also prepares SIGWX forecasts, accidental release of Radioactive material and Volcanic activity.
- Prepared **4 times a day** and issued within **6 hr** of origin.

India Meteorological Department (IMD)

- National Met agency in India; web site: <https://mausam.imd.gov.in>
- Has **6** Regional Met offices (RMO) at Delhi, Mumbai, Kolkata, Chennai, Guwahati, and Nagpur.

2. Aviation Met Offices in India

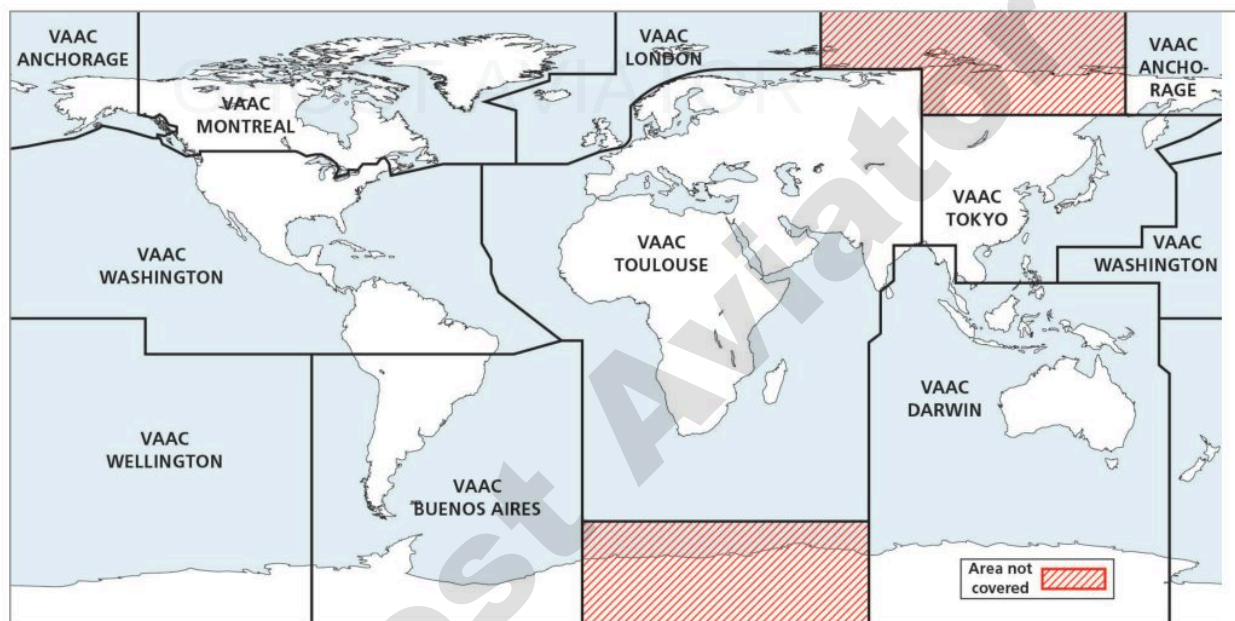
flowchart TD

IMD["IMD\n(National Level)"] --> AMO["AMO\nAerodrome Met Offices\n(Total 18 incl. 4 MWOs)\n24h current weather\nMETAR/SPECI/TAF/VOLMET/ATIS\nRadar & Satellite Pictures"]

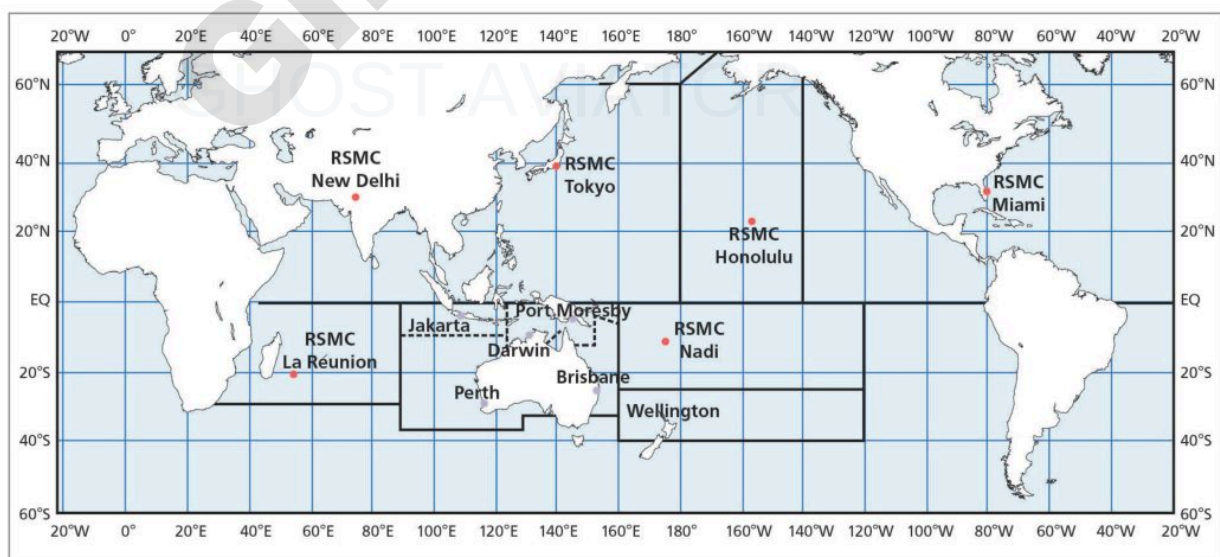
IMD --> AMS["AMS\nAeronautical Met Stations\n(Total 54)\nCurrent weather observations\nAeronautical forecasts from AMOs"]

IMD --> MWO["MWO\nMet Watch Offices\n(Total 4)\nDelhi, Mumbai, Kolkata, Chennai\nFIR met needs\nIssue SIGMET"]

IMD --> TCAC["TCAC\nTropical Cyclone Advisory Centre\n(ICA0)\nMonitor TC development\nAdvisory: position, movement,\ncentral pressure, winds"]



Volcanic Ash Advisory Centres



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Office	Total	Location/Details	Key Functions
AMO (Aerodrome Met Office)	18 (incl. 4 MWOs)	Major national and international airports	24h current weather; METAR/SPECI, RVR, weather forecasts, TAF, Landing Forecast, VOLMET, ATIS, Radar, Satellite pictures; provide forecasting cover to associated AMS
AMS (Aeronautical Met Station)	54	Smaller aerodromes	Current weather observations; aeronautical forecasts from AMOs during watch hours
MWO (Met Watch Office)	4	Delhi, Mumbai, Kolkata, Chennai	FIR meteorological needs; issue SIGMET
TCAC	—	ICAO designation	Monitor TC development; advisory on position, movement, central pressure and winds

OLBS (On-line Briefing System): AMOs provide web-based OLBS. Contents include:

- Wind and temperature forecast for **FL50 to FL530**
- **9 hr** and **30 hr** TAF
- National and WAFC SIGWX charts
- METARs of major airports
- Satellite imagery
- Synoptic features
- Route Forecast in T3 format for low level flights
- Local/Area forecasts for all airports in FIR
- Take-off data and SIGMET Warnings

3. Notification — Advance Notice Requirements

Advance Notice Required (before ETD):

Flight Type	Office	Advance Notice
National Flights	AMOs	3 hr
National Flights	AMSs	18–24 hr
International Flights (NDLS, Kolkata, Mumbai, Chennai, Nagpur, Banaras, Guwahati, Hyderabad, Thiruvananthapuram)	AMOs	3 hr
International Flights (above stations)	AMSs	12 hr
Non-scheduled Flights	AMOs	6 hr
Non-scheduled Flights	AMSs	18–24 hr

Notification given in respect of: time of departure, destination, route, level, type of met information required, time of briefing, and other necessary details.

4. Routine Met Observations

METAR

METAR (Aerodrome Met Report, in aeronautical meteorological code): Issued every **half hour** by Met offices. Appended with TREND type of landing forecast.

SPECI

SPECI (Aerodrome Special Met Report, in aeronautical meteorological code): Issued immediately for **deterioration** in weather to specified conditions. In case of improvement, issued after **10 minutes** when conditions stabilise. Trend forecast is appended to each SPECI.

Aircraft Observations and Report (AIREP) / Pilot Report (PIREP)

- Routine aircraft observations during en-route and climb-out phase.

- When air-ground data link is used: automated observations made every **15 min** during en-route phase, and every **30 sec** during climb-out phase (first **10 min** of flight).
- Special observations made whenever SIGMET criteria are encountered or observed.
- Non-routine aircraft observations (e.g. Wind Shear, Icing, Turbulence) passed to ATS unit as soon as practicable.
- Complete report on Volcanic Activity submitted to AMO, transmitted to MWO of the region.

Aircraft is EXEMPT from making observations if:

- Aircraft is not equipped with RNAV equipment, OR
- Flight duration is **2 hr or less**, OR
- Flight is **1 hr or less** from the landing place, OR
- Altitude of aircraft is below **1500 m (5000 ft)**

Contents of Air Reports (AIREP sections):

- **Section 1:** Information on Identification, Position (Lat/Long), Time, FL or Altitude
- **Section 2:** Operational Information — ETA and Endurance
- **Section 3:** Met Information — Air Temp., Wind, TS, Turbulence, Icing and Humidity (if available)

Example: AIREP IA120 BHP 1200 UTC FL350 MS54 270/40KT TS SCT CB TOP FL400=

5. Types of Forecasts for Aviation

Forecast Type	Validity Period	Example
Nowcasting	Less than 24 hr	TREND, TAF, Aerodrome Warnings
Short Range Forecast	1 to 3 days	—
Medium Range Forecast	4 to 10 days	—
Long range / Extended Range Forecast	Beyond 10 days	IMD Forecast of Monsoon, onset date etc.

(a) TAF — Terminal Aerodrome Forecast

- Issued by **AMOs** for own and associated AMSs.
- TAF valid for at least **9 hr** and a maximum of **30 hr**.
- TAF valid for 9 hr: issued every **3 hr**.
- TAF valid for 12–30 hr: issued every **6 hr**, commencing **0000 UTC**.

(b) TREND — Landing Forecast

- Issued by **AMOs (except Jaipur and Safdarjung)**.
- Appended to METAR or SPECI as trend forecast.
- Validity: **2 hr**.
- **PROB not used** in TREND forecast.
- **NOSIG** = no significant change in weather.

(c) Forecast for Take Off

- Issued by AMOs, within **3 hr** before ETD.
- Contents: **Surface wind (averaged for the past 2 min only)**, Temperature, QNH and any other element as required.

(d) ARFOR — Area Forecast

Contains: Upper winds and temperatures at various levels, significant weather, clouds, freezing level, turbulence, icing, jet stream, tropopause, max wind, wind shear data, airfield warning and supplementary phenomena.

(e) CODAR

Upper air report from an aircraft (other than weather reconnaissance aircraft), in Figure Code.

(f) WITEM

Forecast upper wind and temperature for aviation.

(g) ROFOR — Route Forecast

Route forecast for aviation in coded form. Contains: upper winds/temps at various levels, significant weather, clouds, freezing level, turbulence, icing, jet stream, tropopause and maximum wind.

(h) Local/Area Forecast

- Issued **3 times a day** for validity of **12 hr**.
- IST issue times: **0700** (valid 0730–1930), **1300** (valid 1330–0130), **1800** (valid 1830–0930).
- Area Forecast covers **100 NM** or more; Local Forecast covers **50 NM** around.
- Contains: surface wind, visibility, weather, clouds, upper winds and temperature, sun rise/set, warnings, etc.

6. SIGWX Charts

Chart Type	Prepared By	Validity	Issue Frequency	Level Coverage
Global SIGWX (WAFC)	WAFC	24 hr	Based on 00, 06, 12, 18 UTC	High: FL250–FL630; Medium: FL100–FL250
National SIGWX (India)	MWO Chennai (single chart)	24 hr	Based on 00, 06, 12, 18 UTC; 6 times a day in India	Medium: FL100–FL250; High: FL250–FL630

Exam Tip: SIGWX key numbers — Global SIGWX: WAFC prepares **4** forecasts per day. High level = FL250–FL630; Medium level = FL100–FL250. National SIGWX: MWO **Chennai** compiles them; valid **24hr**; issued based on 00, 06, 12, 18 UTC data.

7. SIGMET

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SIGMET: Information issued for aircraft in flight by MWOs (Mumbai, Kolkata, New Delhi, Chennai) for their FIRs, for occurrence or expected occurrence of en-route weather which may affect safety of aircraft operations.

- Issued every **3 hr**, commencing **010 UTC**.
- Validity: not more than **4 hr**.
- For Volcanic Ash and Tropical Cyclones: issued up to **12 hr** before period of validity; updated every **6 hr**.
- SIGMETs are passed to **FIC/ACC** for further communication to aircraft in flight.

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SIGMET Criteria:

Phenomenon	Code	Description
Thunderstorm (Obscured)	OBSC TS	TS obscured in cloud
Thunderstorm (Embedded)	EMBD TS	TS embedded in cloud layers
Thunderstorm (Frequent)	FRQ TS	Little/no separation between adjacent TS (>75% area)
Squall line	SQL TS	Squall line with TS
Squall line with heavy hail	TSGR	TS + heavy hail
Tropical Cyclone	—	10-min mean wind $\geq$ 34 kt + cyclone name
Severe Turbulence	SEV TURB	Low level strong surface winds, rotor streaming, in cloud or not in cloud
Severe Icing	SEV ICING	In clouds other than convective clouds; severe icing from Freezing Rain (FZRA)
Severe Mountain Wave	SEV MTW	Down draught $\geq$ 3.0 m/sec , or SEV TURB observed or forecast
Duststorm	HVY DS	Heavy dust storm
Sandstorm	HVY SS	Heavy sandstorm
Volcanic Ash	VA	VA + Volcano name
Radio Active Cloud	—	Radioactive cloud

TS Coverage Classification:

- **ISOL TS:** Individual TS — less than **50%** area covered
- **OCNL TS:** Well separated TS — **50–75%** area covered
- **FRQ TS:** Little or no separation between adjacent TS — greater than **75%** area covered

Note: Separate SIGMETs issued to local ATC for Light or MOD Hail and MOD Icing for light aircraft — not disseminated outside the aerodrome of issue.

8. AIRMET and GAMET

AIRMET: SIGMET for low level flights; issued by **MWO**.

GAMET: An area forecast in abbreviated plain language for a FIR or sub-area thereof; prepared by the **AMOs**; exchanged with Met offices in adjacent FIRs.

9. Warnings

Aerodrome Warning

- Issued by **AMOs** for expected weather which could adversely affect aircraft on ground and aerodrome facilities and services (safety, proper picketing and mooring of aircraft).
- Validity: **not exceeding 4 hr**.
- **Wind warning:** Speed **30 kt** or more, OR Direction of **20 kt** wind changes by **45 degrees**.
- **Weather warning:** Squall (+ expected direction), TC, DS, SS, TS, GR, Frost, SN, Hoar Frost or Rime, FZ Precipitation, Raising Sand or Dust, VA, Tsunami.
- Warnings for **gliders and light aircraft and helicopters**: when wind expected to reach **17 kt or more**; issued with prefix "*Warnings for Light Aircraft*".
- Passed on to local ATS units; amendments and cancellations done as applicable; not disseminated beyond the aerodrome of origin.

Wind Shear Warning

- Issued by **AMOs** for observed or expected occurrence of wind shear adversely affecting aircraft on approach path, take off path, during circling, or on RW during landing/take off.
- Coverage: up to **500 m (1600 ft)** above runway.
- WS above 500 m due to topography is also included.
- Also included as supplementary information in METAR, SPECI and SPECIAL reports (abbreviated plain language).
- Microburst reported by pilots is also included in the warning.
- Example: WS WRNG MBST APCH RWY 30
- Aircraft wind shear warning example: WS WRNG B747 REPORTED MOD WS IN APCH RWY 28 AT 1000

10. Exchange of Meteorological Messages

(a) VOLMET

VOLMET: A global network of radio stations, divided into regions, each having VOLMET stations that broadcast MET information for aircraft in flight on a published schedule with **5 minute intervals** allocated to each station, on the same HF/VHF frequency. Two types:

- **D-VOLMET (Data Link VOLMET):** Provides current METAR, SPECI, 9hr TAF, SIGMET, Special AIREPs not covered by SIGMET, and where available AIRMET.
- **VOLMET Broadcast:** Provides METAR, SPECI, TAF, SIGMET by continuous and repetitive voice broadcasts. VOLMET Radio Telephony Broadcasts in India are made on HF Channel from Mumbai and Kolkata in turn every half an hour.

Mumbai broadcasts: METARs of Mumbai, Ahmadabad, Chennai, Colombo, Karachi and Male; TAFs of Mumbai, Male, Colombo.

Kolkata broadcasts: METARs of Kolkata, Delhi, Dhaka, Yangon, Katmandu and Male; TAFs of Kolkata, Delhi, Ho-Chi-Minh.

(b) ROBEX (Routine OPMET Bulletin Exchange)

Routine METAR/SPECI of international aerodromes and their alternates are exchanged outside India under ROBEX scheme. Air Reports are also exchanged under ROBEX.

(c) ATIS (Automatic Terminal Information System)

Available at important aerodromes in India. Purpose: to continually broadcast semi-hourly current weather information for general use of the operators.

(d) Current Weather Display

Computer-based display systems at Kolkata, Delhi and Mumbai and Chennai for current weather information in ATC and Met Offices.

Quick Revision Summary

- WAFC: **2** (Washington + London) | RAFC: **19** (one at New Delhi) | IMD RMO: **6**
- AMO: **18** (incl. 4 MWOs) | AMS: **54** | MWO: **4** (DMKC)
- METAR: every **30 min** | SPECI: immediately for deterioration, **10 min** after improvement
- TAF: at least **9 hr**, max **30 hr**; 9hr TAF every **3 hr**; 12–30hr TAF every **6 hr** from 0000 UTC
- TREND: validity **2 hr**; PROB not used; NOSIG = no significant change
- SIGMET: every **3 hr** from 010 UTC; validity max **4 hr**; VA/TC up to **12 hr**, updated **6 hr**
- SIGMET issued by MWO; AIRMET = SIGMET for low level flights
- Aerodrome Warning validity: max **4 hr**; wind warning at **30 kt** or direction change of **45°** for 20 kt winds
- Wind Shear Warning: up to **500 m (1600 ft)** above runway
- AIREP exempt: no RNAV, flight $\leq$ **2 hr**, $\leq$ **1 hr** from landing, below **1500 m (5000 ft)**
- Local Forecast: **3 times/day**, **12 hr** validity, covers **100 NM**
- High-level SIGWX: FL **250–630**; Medium: FL **100–250**
- ISOL TS < **50%** | OCNL TS **50–75%** | FRQ TS > **75%**
- VOLMET: **5 min** intervals; D-VOLMET = data link; Mumbai/Kolkata alternate HF every **30 min**

Practice Q&A

Q1. For non-scheduled National Flights, advance notice (before ETD) is required to be given to AMOs: (a) 24 hr (b) 18 hr (c) 6 hr

✅ Answer: (c) 6 hr — Non-scheduled flights must give 6 hours notice to an Aerodrome Met Office. Scheduled national flights need 3 hours for an AMO, and an Aeronautical Met Station needs 18–24 hours.

❌ (a) 24 hr and (b) 18 hr are not the AMO figures; 18–24 hr is the AMS notice.

💡 AMO: scheduled 3 hr, non-scheduled 6 hr. AMS: 18–24 hr.

Q2. For non-scheduled National Flights, advance notice to AMSs is required: (a) 3 hr (b) 18–24 hr (c) 6 hr

✅ Correct Answer: (b) 18–24 hr
AMSs require 18–24 hr advance notice for all flight types (national, non-scheduled, and international at non-major stations).

🎓 AMS always needs more advance notice than AMO. Remember: AMS = 18-24 hr for most flight categories.

Q3. The World Area Forecast System (WAFS) provides the Met Offices with: (a) High-quality en-route forecasts of winds and temperature (b) SIGMET (c) TREND

✅ Answer: (a) high-quality en-route forecasts of winds and temperature — WAFS supplies global forecasts of upper winds and temperature, and significant weather charts, to Met Offices.

❌ (b) SIGMET is issued by Met Watch Offices. (c) TREND is a landing forecast appended to a METAR.

💡 WAFS: upper winds, temperature and SIGWX charts.

Q4. IMD has Regional Met offices:

(a) 4 (b) 5 (c) 6

✅ Answer: (c) 6 — IMD has six Regional Met Offices: Delhi, Mumbai, Kolkata, Chennai, Guwahati and Nagpur.

❌ (a) 4 and (b) 5 are too few.

💡 6 Regional Met Offices.

Q5. There are Aerodrome Met Offices:

(a) 17 (b) 18 (c) 19

✅ Answer: (b) 18 — There are 18 Aerodrome Met Offices (AMOs).

❌ (a) 17 and (c) 19 are not the number.

💡 18 AMOs, 54 Aeronautical Met Stations.

Q6. There are Aeronautical Met Stations:

(a) 56 (b) 54 (c) 52

✅ Answer: (b) 54 — There are 54 Aeronautical Met Stations (AMS).

❌ (a) 56 and (c) 52 are not the number.

💡 54 Aeronautical Met Stations.

Q7. In AIREP, Met Information is contained in Section:

(a) 1 (b) 2 (c) 3

✅ **Correct Answer: (c) 3**

Section 3 of the AIREP contains Met Information: Air Temp., Wind, TS, Turbulence, Icing, and Humidity. Section 1 = Identification/Position/Time. Section 2 = Operational (ETA/Endurance).

🎓 Remember: 1=Who/Where/When, 2=Operations, 3=Weather (Met). "3 = Met" mnemonic.

Q8. TAF are generally valid for:

(a) 18 hr (b) 12 hr (c) 30 hr

✅ **Correct Answer: (c) 30 hr**

TAF is valid for at least 9 hr and a maximum of 30 hr. The maximum validity is 30 hr.

❌ (a) 18 hr and (b) 12 hr: These are intermediate validities, not the maximum. The maximum TAF validity is 30 hr.

🎓 TAF: min 9hr, max 30hr. 9hr TAF issued every 3hr; 12–30hr TAF issued every 6hr from 0000 UTC.

Q9. The validity of Landing Forecast (TREND) is:

(a) 1 hr (b) 2 hr (c) 3 hr

✅ **Correct Answer: (b) 2 hr**

TREND (landing forecast) appended to METAR/SPECI has a validity of 2 hr.

🎓 TREND validity = 2hr. PROB not used in TREND. NOSIG = no significant change. Issued by AMOs (except Jaipur and Safdarjung).

Q10. The Landing Forecast (TREND) is appended to: (a) METAR and SPECI (b) TAF (c) AIREP

✓ Answer: (a) METAR and SPECI — The landing forecast, called TREND, is appended to a METAR or SPECI and is valid for two hours after the time of the report.

✗ (b) A TAF is a separate aerodrome forecast. (c) An AIREP is an aircraft report.

💡 TREND = METAR/SPECI + 2 hours.

Q11. Local/Area Forecast is issued three times a day valid for next: (a) 18 hr (b) 12 hr (c) 9 hr

✓ **Correct Answer: (b) 12 hr**

Local/Area forecasts are issued 3 times a day for a validity of 12 hr each.

🎓 Local forecast: 3× daily, 12hr valid, 100NM area, 50NM local. IST issue times: 0700, 1300, 1800.

Q12. Area Forecast covers an area: (a) 100 NM (b) 100 km (c) 50 NM

✓ **Correct Answer: (a) 100 NM**

Area Forecast covers 100 NM or more around. Local Forecast covers 50 NM around.

🎓 Area = 100 NM. Local = 50 NM. Note: nautical miles (NM), not km.

Q16. CODAR is:

(a) Radar Report (b) Coded ARFOR (c) Upper report from an aircraft, other than weather reconnaissance aircraft

✅ **Correct Answer: (c) Upper report from an aircraft, other than weather reconnaissance aircraft**

CODAR is an upper air report in Figure Code from any aircraft other than weather reconnaissance aircraft.

🏠 CODAR = Upper Air aircraft report (Figure Code). Not ARFOR (which is Area Forecast). Not radar.

Q18. SIGMET is a notice of severe weather for:

(a) actual (b) expected (c) both

✅ **Correct Answer: (c) both**

SIGMET is issued for occurrence OR expected occurrence of en-route weather which may affect safety of aircraft operations. So it covers both actual and expected phenomena.

🏠 SIGMET = actual OR expected severe weather. Key: "occurrence or expected occurrence."

Q19. SIGMET is issued for aircraft:

(a) in flight (b) on ground (c) both

✅ **Correct Answer: (a) in flight**

SIGMET is specifically issued for aircraft IN FLIGHT by MWOs for their FIRs. Aerodrome Warnings cover ground operations.

🏠 SIGMET = for aircraft IN FLIGHT. Aerodrome Warning = for aircraft ON GROUND. Key distinction for DGCA.

Q20. SIGMET is issued by:

(a) WAFC (b) AMO (c) MWO

✅ **Correct Answer: (c) MWO**

SIGMETs are issued by the 4 Met Watch Offices (MWO) at Mumbai, Kolkata, New Delhi,

and Chennai for their respective FIRs.

🏠 SIGMET issuers: MWO (4 in India: DMKC — Delhi, Mumbai, Kolkata, Chennai).
AIRMET also issued by MWO (for low level flights).

Q21. SIGMET is valid for:

(a) 4 hr (b) 8 hr (c) 9 hr

✅ **Correct Answer: (a) 4 hr**

SIGMET validity is not more than 4 hr. Exception: for Volcanic Ash and Tropical Cyclones — up to 12 hr before validity, updated every 6 hr.

🏠 SIGMET max validity = 4 hr. VA/TC SIGMET can be issued up to 12 hr before validity period and updated every 6 hr.

Q22. SIGMET is not issued for:

(a) Rain (b) Volcanic Ash (c) SEV Icing

✅ **Correct Answer: (a) Rain**

Rain by itself is not a SIGMET criterion. SIGMET criteria include: TS (OBSC/EMBD/FRQ/SQL), TC, SEV TURB, SEV ICING, SEV MTW, HVY DS, HVY SS, VA, Radioactive Cloud. Plain rain is not included.

🏠 SIGMET excludes plain rain. Remember the SIGMET list: TS types, TC, SEV TURB, SEV ICING, SEV MTW, DS, SS, VA, Radioactive cloud.

Q23. AIRMET is SIGMET issued by a MWO for the safety of:

(a) low-level aircraft (b) high-level flights (c) all

✅ **Correct Answer: (a) low-level aircraft**

AIRMET is SIGMET for low level flights, issued by MWO.

🎓 AIRMET = AIR-MET = SIGMET for Low Level. MWO issues both SIGMET (all levels) and AIRMET (low level).

Q24. GAMET is an area forecast in abbreviated plain language for: (a) low level flights (b) high level flights (c) all level flights

✅ Answer: (a) low level flights — GAMET is an area forecast in abbreviated plain language for low-level flights in a FIR or sub-area, up to FL100.

❌ (b) and (c): high-level flights are served by SIGWX charts and SIGMET.

💡 GAMET = low-level area forecast.

**Q25. The validity of Airfield warnings is not exceeding:
(a) 3 hr (b) 4 hr (c) 6 hr**

✅ **Correct Answer: (b) 4 hr**
Aerodrome (Airfield) Warning validity does not exceed 4 hr.

🎓 Aerodrome Warning = max 4 hr validity. Wind warning: 30kt or 45° direction change for 20kt winds. For light aircraft: 17kt threshold.

**Q29. Wind Shear Warning is issued for observed or expected wind shear above runway (up to):
(a) up to 500 m (b) above 500 m (c) 300 m**

✅ **Correct Answer: (a) up to 500 m**
Wind Shear Warning covers up to 500 m (1600 ft) above runway. WS above 500 m due to topography is also included as additional information.

🎓 WS Warning = up to 500m (1600ft) above runway. Remember: 500m = ~1600ft — both given in text.

Q30. VOLMET is a MET information for aircraft:

(a) on ground (b) in flight (c) both

✓ **Correct Answer: (b) in flight**

VOLMET is a global network of radio stations that broadcast MET information specifically for aircraft in flight.

🎓 VOLMET = for aircraft IN FLIGHT (radio broadcast). ATIS = for operators/pilots on ground (broadcast at aerodrome).

Q32. VOLMET consists of:

(a) SIGMET only (b) TAF only (c) TAF and METAR

✓ **Correct Answer: (c) TAF and METAR**

VOLMET broadcasts METAR, SPECI, TAF, and SIGMET. The basic components are METAR and TAF at minimum.

🎓 VOLMET full content: METAR + SPECI + TAF + SIGMET (+ Special AIREPs + AIRMET in D-VOLMET).

Q34. Global SIGWX Charts are issued times a day:

(a) Two (b) Three (c) Four

✓ **Correct Answer: (c) Four**

WAFIC prepares 4 SIGWX forecasts of 24 hr validity, based on 00, 06, 12, and 18 UTC data — i.e., 4 times per day.

🎓 Global SIGWX: 4 times/day (00, 06, 12, 18 UTC). National SIGWX (India): 6 times/day. Both valid for 24 hr.

Q35. Global SIGWX Charts for Medium-level are issued for Flight Levels:

(a) 150 & 200 (b) 100 & 250 (c) 100 & 150

✓ **Correct Answer: (b) 100 & 250**

Medium-level SIGWX covers FL100 to FL250. High-level covers FL250 to FL630.

🎓 Medium SIGWX: FL100–FL250. High SIGWX: FL250–FL630. "100-250 is medium, 250-630 is high." Easy to remember.

Q40. Individual TS which cover less than 50% area is termed as:

(a) ISOL TS (b) FRQ TS (c) OCNL TS

✓ **Correct Answer: (a) ISOL TS**

ISOL TS = Individual TS, less than 50% area covered. OCNL TS = 50–75%. FRQ TS = >75%.

🎓 Mnemonic: "I (ISOL) <50%, O (OCNL) 50-75%, F (FRQ) >75%" — I O F in order of increasing coverage.

Q41. If TS cells have no separation between adjacent TS and cover an area more than 75%, it is termed as:

(a) FRQ (b) ISOL (c) OCNL

✓ **Correct Answer: (a) FRQ**

FRQ TS: little or no separation between adjacent TS, covering more than 75% of the area.

🎓 FRQ = Frequent = >75% = no separation. Represents the worst scenario for en-route TS avoidance.

Master Reference Tables

Key Numerical Values

GHOST AVIATOR

Ghost Aviator

GHOST AVIATOR

Parameter	Value
WAFC locations	2 (Washington + London)
RAFC total / India RAFC	19 / New Delhi
IMD Regional Met Offices (RMO)	6 (Delhi, Mumbai, Kolkata, Chennai, Guwahati, Nagpur)
AMO total (incl. MWOs)	18 (incl. 4 MWOs)
AMS total	54
MWO total / locations	4 — Delhi, Mumbai, Kolkata, Chennai
METAR frequency	Every 30 min
SPECI improvement delay	10 min after conditions stabilise
AIREP auto-link en-route	Every 15 min
AIREP auto-link climb-out	Every 30 sec (first 10 min)
AIREP exemption: flight duration	≤ 2 hr
AIREP exemption: from landing	≤ 1 hr
AIREP exemption: altitude	Below 1500 m (5000 ft)
TAF minimum validity	9 hr
TAF maximum validity	30 hr
TAF issue: 9hr validity	Every 3 hr
TAF issue: 12–30hr validity	Every 6 hr from 0000 UTC
TREND validity	2 hr
Take-off Forecast: advance	Within 3 hr before ETD
Local Forecast: frequency	3 times/day
Local Forecast: validity	12 hr
Area Forecast coverage	100 NM or more
Local Forecast coverage	50 NM
Global SIGWX: frequency	4 times/day (00, 06, 12, 18 UTC)

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SIGWX High Level	FL 250–630
SIGWX Medium Level	FL 100–250
SIGWX validity	24 hr
SIGMET frequency	Every 3 hr from 010 UTC
SIGMET validity (general)	Max 4 hr
SIGMET for VA/TC: issue lead	Up to 12 hr before validity
SIGMET for VA/TC: update	Every 6 hr
SEV MTW down draught threshold	≥ 3.0 m/sec
TC SIGMET threshold	10-min mean wind ≥ 34 kt
Aerodrome Warning validity	Not exceeding 4 hr
Wind warning threshold	30 kt or direction change 45° for 20kt wind
Light aircraft wind warning	Wind expected to reach 17 kt
Wind Shear Warning coverage	Up to 500 m (1600 ft) above RWY
VOLMET broadcast interval	5 min allocated per station
ISOL TS coverage	Less than 50%
OCNL TS coverage	50–75%
FRQ TS coverage	Greater than 75%

Mnemonics

Mnemonic	Meaning
DMKC	MWO locations: Delhi, Mumbai, Kolkata, Chennai
I <50, O 50-75, F >75	ISOL / OCNL / FRQ TS coverage
"TREND = 2 hr, No PROB"	Landing forecast validity and PROB rule
"SIGMET = MWO, for flight"	Issued by MWO, for aircraft in flight
"30kt = Aero Warning, 17kt = Light AC"	Wind thresholds for aerodrome warnings
"500m WS = Low Level"	Wind Shear Warning applies up to 500m/1600ft AGL
"TAF: 9-30hr, TREND: 2hr"	Forecast validity comparison