

INDIA METEOROLOGICAL DEPARTMENT

QUESTION BANK

OF

FORECASTERS TRAINING COURSE (FTC)

FINAL EXAMINATION

BASED ON 176-191 BATCHES

(2013-2021)

**PAPER-III: SYNOPTIC
METEOROLOGY & AVIATION**

PART A AND B

India Meteorological Department
Office of Climate Research & Services
Meteorological Training Institute
Forecasters Training Course, Final Examination
Paper-III : SYNOPTIC & AVIATION

- (1) Section A : SYNOPTIC Part-I, Part-II and Part III
(2) Section B : AVIATION

SECTION A – SYNOPTIC METEOROLOGY (MARKS 30)

Q I. Fill up the blanks

1. ----- are the synoptic scale weather systems which occur in middle latitude westerlies during the winter season.
2. ----- fog normally disappears in the morning when the sun heats the air.
3. ----- generally, occurs in rear of W.D.'s leading poor visibility conditions
4. ----- months are considered as the hot weather season/Pre-Monsoon Season.
5. _____ Jet Stream has a significant role to play on the southwest monsoon activity over India.
6. _____ of easterlies increases in _____ troposphere during the onset of SWM.
7. _____ is an example of gentle slope than a slope of 1:75.
8. _____ Fog occurs in the rear of a western disturbance.
9. _____ is the mechanism involved with the growth of small scale incipient lows to mature tropical cyclones.
10. _____ is a 'warm core high' over the Indian summer monsoon regime.
11. _____ is the mechanism leading to the development of tropical cyclones from incipient lows.
12. _____ is the southern hemisphere component of monsoon circulation.
13. _____ and _____ sectors of a jet stream core are associated with strong divergence.

14. _____ and _____ are the two types of duststorms.
15. _____ is the major cause for the setting up of monsoon circulation.
16. _____ is one of the synoptic technique for predicting cyclone movement.
17. _____ and _____ are two of the major disastrous weather events associated with a cyclone.
18. _____ states in India receive highest rainfall during January.
19. _____ is the main synoptic weather system involved with the active phase of monsoon over Gujarat and neighborhood.
20. clouds are favourable for the formation of hail.
21. _____ is the mechanism involved with the growth of small scale incipient lows to mature tropical cyclones.
22. For the low pressure system to be termed as a Super Cyclone, the T No. associated with the same has to be _____.
23. Fujiwara Effect is significant if the distance between the cyclones is _____.
24. The lowest pressure associated with a cyclone is observed in its _____ region.
25. A subsidence is observed in _____ of Cyclonic storm (CS).
26. Above normal pressure departures over central India are often indicative of _____ monsoon conditions.
27. Along with rainfall, _____ & _____ fields are also monitored while declaring the onset of southwest monsoon over Kerala.
28. Around a trough of low pressure are, isobars turn in _____ sense/direction.
29. Average slope of the warm front is
30. Before onset of the summer monsoon over India, a low pressure zone forms on the either side of the equator, roughly along 5deg N and S, which is known astrough.
31. Before onset of the summer monsoon over India, a low-pressure zone forms on the either side of the equator, roughly along 5deg N and S, which is known as --- ----- trough.

32. Convective Activity over Northeast India is called as-----
-----.
33. Convective Activity over..... India is called as Norwesters.
34. Coriolis force will deflect the air toward the ----- direction in Southern Hemisphere.
35. Cut off lows show _____ symmetry but asymmetric distribution in_____.
36. Cyclonic storms (CS) acquire lowest pressure in _____ stage.
37. Depression may recurve under the influence of _____.
38. During active/vigorous monsoon phase, monsoon trough will be positioned _____ of its normal position.
39. During pre monsoon season, norwesters originating over Bihar move towards _____ region.
40. ETC does not tilt with height.
41. For a cyclone to be termed as a super cyclone, its T. No. has to be_____.
42. For a low pressure system to be termed as cyclone, its T. No. should be _____ or more.
43. For severe heat wave, departure from normal is _____ °C.
44. Frontogenesis is the process is the process that _____ existing front.
45. Fujiwara effect is very effective when two cyclones are positioned within a distance of _____.
46. Heat wave is considered if T_{max} of a station reaches at least _____ °C or more for plains .
47. Height of storm surge depends upon _____.
48. If actual temperature of a station is _____ °C, the station is under severe heat wave.
49. Impact based system depends upon (Exposure), (.....) and (.....).
50. In Classification of low pressure system, _____ is the new terminology introduced for the wind speed range from 90 to 119 knots.
51. In general, _____ is the source of airmass.
52. In general, western Himalayan region receives intense precipitation activity, when the trough in mid-latitude westerlies is around longitude _____ and north of latitude _____

53. In monsoon Season, chances of intensification of low pressure system to tropical cyclone is _____.
54. In the entire life period of a tropical storm, fall of pressure and increase in wind speed occurs during its _____ stage and horizontal expansion of its circulation occurs in its _____ stage.
55. In the tropical cyclone, the temperatures at the center are _____ than the surrounding regions.
56. Intense convective activity over east & northeast India are known as _____.
57. Interaction between two cyclones affecting their movement is termed as ----- and it is very effective when the cyclones are positioned within a distance of -----.
58. Interaction between two cyclones when they are positioned within 1500 Km, which influences their movement is called _____.
59. K Pm is the _____ air mass in which the air is moving _____ wards.
60. Low level jet is observed during _____ season and its core is observed at around _____ hPa level.
61. Low OLR values are related with _____ of SWM.
62. Lower tropospheric jet stream in the monsoon regime known as ----- Jet Stream.
63. Max. Pr.gradient is observed in _____ of a CS.
64. Microburst produces _____ damages whereas tornadoes generally have _____ damages.
65. Mid-tropospheric cyclonic circulations (MTCs) can cause active to vigorous monsoon conditions over the meteorological sub-divisions viz., _____.
66. Minor outbreak of polar air takes place in the _____ of _____ member of cyclone families.
67. MJO in phase ----- is favourable for good northeast monsoon activity.
68. Monsoon Depressions normally tilt _____ with Height.
69. Nor westers are frequently occurs over _____ part of India.
70. Norwesters are _____ occurring over northeast India during pre monsoon season and they are also termed as _____.
71. Norwesters are observed over _____, _____ part of country.

72. Onset of NE monsoon should not be attempted before _____ October.
73. Onset of North East Monsoon (NEM) is a _____ Process.
74. Petterson's development theory is based on development of -----
75. PNJ is observed over _____ at height _____.
76. Pressure difference of _____ and _____ is Zonal Index.
77. Pressure fall as well as windspeed associated with a Tropical Cyclone increases in _____ stage of the system whereas horizontal expansion of the system occurs in _____ stage of the system.
78. Pressure tendency is before passing of a cold front.
79. Rainfall / snowfall occurs over the sector of the W.D.
80. Red alert for heat wave warning means _____.
81. Reversal of low level winds from ----- to ----- is a chief synoptic scale feature associated with the setting in of northeast monsoon over the peninsular India.
82. Sub -Tropical Highs move morewards in summer hemisphere.
83. Subtropical westerly jet stream in the descending branch of the----- Cell.
84. Sub-tropical Westerly Jet stream shifts _____ as the southwest monsoon sets in over the Indian sub- continent.
85. T No. _____ is generally required to classify a low pressure system into a depression. Heaviest rainfall associated with a monsoon Depression always occurs in its _____
86. Thecirculation located over north/central Bay of Bengal feeds moisture to the convective activities over east and northeast India during premonsoon season.
87. The air behind a cold front is noticeably (colder/warmer) than the air ahead of it.
88. The boundary that separates different air masses is called a -----.
89. The circulation of westerly jet stream is confined between _____ in both the hemispheres.
90. The climatological location of TEJ core is close to _____ Latitude and around _____ hPa.
91. The convective activity over NE India is, generally, known as ----- ---, and more locally as Kalabaisakhi.

92. The convergence region for lower-level northeast and southeast trade winds is called the -----
93. The Cyclonic circulation associated with the Heat Low during the southwest monsoon season normally extends upto _____ Km.a.s.l.
94. The cyclonic systems that develop over Rajasthan and adjoining Pakistan area under the influence of western disturbances are called _____.
95. The Inter Tropical Convergence Zone (ITCZ) occurs in the ----- region.
96. The boundary that separates different air masses is called a -----.
97. ----- is a dry and warm air mass that has a source region over arid & semi arid locations.
98. ----- is a boundary that separates tropical continental air from tropical maritime air.
99. The region of maximum winds in the core of a jet stream is called -----.
100. Cold wave occurs ----- of the Western Disturbance
101. The jet stream that blows from east to west known as ----- stream.
102. The lowest pressure associated with a cyclone is found in its _____ region.
103. The mean position of STWJ over Indian sub-continent is at _____ latitude.
104. The most disastrous weather element associated with a tropical cyclone is the _____.
105. The right entrance and left exit sectors of an easterly jet maximum are conducive for _____.
106. The Tibetan High is having its maximum intensity usually at -----hPa.
107. The Tornado vortex may contain several _____ rotating within it.
108. The Tornado vortex may contain several _____ smaller vortices rotating within it.
109. Three major components of Impact based forecast are Hazard, and vulnerability.
110. Wall cloud region of a tropical cyclone is characterized by-----.
111. Warm sector completely _____ in fully occluded stage of an ETC.
112. Warming at Tropical cyclone eye is due to ----- compression.
113. Where these temperature differences are most pronounced, the winds aloft are strongest giving rise to -----.

114. Wind speed of a monsoon depression in the lower tropospheric levels range between ----- & ----- knots.
115. Withdrawal of southwest monsoon up to _____ latitude is considered for declaring the onset of North East Monsoon.

Q 2. State whether the following are true or false with brief reasons

1. A forecaster often identifies the formation of a mid-tropospheric cyclonic circulation by analyzing the weather map of mean Sea Level.
 2. Adiabatic heating helps in the development of cyclonic vorticity.
 3. Advection Fog occurs when warm, moist air flows over colder water.
 4. After passage of WD rise in minimum temperature is observed over a station.
 5. Asymmetric thermal contrast is observed around the center of cut off lows.
 6. Axis along which the particles are separated is called the axis of dilatation.
 7. Bathymetry plays an important role in the estimation of storm surge.
 8. Before approach of WD fall in minimum temperature is observed over a station.
 9. Blocking high is more persistence than cut-off high.
 10. Cirrus clouds are favourable for the formation of hail.
 11. Clear-air turbulence (CAT) is the turbulent movement of air masses in the absence of any visual clues.
 12. Cold front is steeper than warm front.
 13. Cold wave occurs in the rear of the Western Disturbance.
 14. Convective Activity over Central India is called as ANDHIS.
 15. Coriolis force will deflect the air toward the right in Southern Hemisphere.
- P.T.O
16. Cyclonic Storms generally form over the Indian Seas during the southwest monsoon season.
 17. Cyclonic Storms generally forms over the Indian Seas during the southwest monsoon season.
 18. During high index cycle meridional exchange is maximum.
 19. During La Nina years, tropical cyclones forming over the Bay of Bengal are generally favourable for good northeast monsoon activity.

20. During monsoon season, chances are more for the development of a low pressure system into a cyclonic storm.
21. During monsoon season, chances of formation of cyclones are more.
22. During summer season, core of Sub tropical westerly Jet shifts towards north of its normal position.
23. During the northeast monsoon season, the equatorial trough over the Indian region is located along 15° N latitude throughout the season.
24. East coast of India is more prone to cyclones than the west coast.
25. Easterly wave activity is a dominant feature over south peninsular India during Southwest Monsoon Season.
26. Eye region of the Tropical Cyclone is the most dangerous part of the system.
27. Formation of STWJ is a global phenomena.
28. Frequency of formation of cyclone is more in Bay of Bengal as compared to Arabian Sea.
29. Frequency of tropical cyclones is more in Bay of Bengal than in Arabian Sea.
30. Frontolysis helps in the intensification process of existing front.
31. Heat low intensifies with height
32. Heaviest rainfall associated with a monsoon Depression always occurs in its southwest sector.
33. If a cyclone enters cold oceanic area, it intensifies.
34. Impact based forecast is transition from 'What weather will do' to 'what weather will be'.
35. In Indian seas, maximum number of cyclones form in the monsoon season.
36. In monsoon season, chances of intensification of low pressure system to tropical cyclone is very low.
37. In the core region of the cyclone, gradient wind balance exists.
38. In the winter months Sub -Tropical Highs are located over continental regions and in summer month they are over oceans.
39. Inflow and outflow is compensated in the upper layer of CS.
40. Intensification of low-pressure systems into cyclonic storm is very frequent during Southwest monsoon season.
41. Jet streams all over the globe blow from west to east.
42. Jet streams are strong current of air and usually seen in the upper troposphere.
43. Latent heat is an energy source for the development of ETC.

44. Lightning occurs only in Cumulo Nimbus clouds.
45. Majority of CAT cases are reported near Jet Streams.
46. Maximum intensity of a cyclone is attained during its mature stage.
47. Meandering of jet stream is a wrong concept.
48. Mid Latitude westerly's are weaker during the High Index.
49. Mid tropospheric vortices/circulations are almost stationary.
50. Monsoon Depressions (MD) generally has a vertical tilt
51. Occlusion is formed when a cold front overtakes a warm front.
52. On rare occasions monsoon depressions can intensify into Cyclonic Storms over the Bay of Bengal region.
53. Indian Seas during the southwest monsoon season.
54. On rare occasions monsoon depressions can intensify into Cyclonic Storms over the Indian Seas during the southwest monsoon season.
55. Only accurate and timely warning, guarantee safety and prevent socio-economic disruptions.
56. Persistence method of forecast is very effective for longer forecast intervals.
57. PFJ stream is stronger in summer months.
58. Pressure tendency reported at the coastal stations can give indication about an approaching cyclone.
59. Radiation fog generally disappears in the early morning before sun heats the ground.
60. Rainfall/snowfall occurs over the rear sector of the W.D.
61. Severe weather will not occur along cold fronts.
62. Steam fog forms when warm air flows across colder water.
63. Stratiform cloud is associated with warm front.
64. STWJ has important role in development of norwesters over east and northeast India.
65. Subtropical high is more intense over hemisphere.
66. Sub-tropical highs are more intense during summer as compared to the winter period.
67. Subtropical westerly jet stream in the descending branch of the Polar Cell.
68. TEJ is not a permanent Jet Stream like Sub Tropical Westerly Jet Stream.
69. The differences in air temperature at the surface are the main reason behind formation of Jet Streams.

70. The differences in mean sea level pressure at the surface are the main reason behind formation of Jet Streams.
71. The divergence in the higher levels will increase lower level convergence.
72. The pressure fall is maximum in the mature stage of a tropical cyclone.
73. The radial component of wind is significant in the middle layer of a cyclone.
74. The terms 'polar' and 'tropical' describes the temperature condition of an air mass.
75. Thunderstorm with hail causes area specific damage.
76. Tibetan high intensifies with height.
77. Tropical cyclones do not form near equator.
78. Troughs and ridges are aligned along same latitude in High index.
79. Upper air circulation associated with depression are generally extends up to 500 hPa.
80. Upper air cyclonic circulation associated with monsoon Depression normally do not extend beyond 500 hPa.
81. Upper level divergence usually causes downward vertical motion in the lower levels of the troposphere.
82. Wall cloud of CS has is a very devastating area.
83. Warm air advection in lower troposphere and cold air advection in middle troposphere reduces the conditions of instability in the atmosphere.
84. Warm air sector reduces during cyclonic stage of ETC.
85. WD becomes weak whenever the anticyclone over central parts of India shifts to the Bay of Bengal.
86. Weak monsoon conditions are observed during southward movement of TEJ.
87. When a tropical storm is within 3 degrees or more to the south of a ridgeline, its chances of re-curvature is more.
88. When air possesses uniform characteristics over a large area it is called an Air mass.
89. When colder air mass moves over the warm surface of ocean, convective clouds are formed.
90. Wind shear is the change of wind, in direction or speed but not both.

Q3. Write short notes

1. A forecaster often identifies the formation of a mid-tropospheric cyclonic circulation by analyzing the weather map of mean Sea level.
2. Chief characteristics of STWJ
3. CLIPER method.
4. Convective activity of NW India
5. Criteria for inclusion of change group “ BECMG” and “TEMPO” in TAF.
6. Cyclone families and their characteristics
7. Cyclonic Storms generally form over the Indian Seas during the southwest monsoon season.
8. Define a Jet stream. Discuss briefly the reason of their meandering and mechanism of formation.
9. Define heat wave. What are criteria for heat wave & severe heat wave ?
10. Describe location /formation of heat low during summer season.
11. Describe the semi-permanent features associated with the southwest monsoon, bringing out their role played in intra-seasonal rainfall.
12. Describe the synoptic features associated with the active and break phases of southwest monsoon.
13. Detailed classification of heat waves and cold waves
14. Disastrous Weather elements associated with a cyclone.
15. Discuss the influence of mid-latitude westerly troughs on monsoon activity over the Indian region.
16. Discuss the influence of Tropical Cyclones/Typhoons over the west Pacific Ocean on Indian summer monsoon.
- 17.** Discuss the life cycle of a mature tropical cyclone/cyclonic storm. (5)
18. Distinct synoptic features of Norwesters and Dust storms.
19. Favorable conditions for intensification of synoptic systems.
20. Features of NE monsoon.
21. Heat Low intensifies with height.
22. Important features of monsoon onset.
23. Influence of Indian Ocean Dipole on SW monsoon.
24. Interactions of two cyclones
25. Jet streams and their characteristic features.
26. Life cycle of a cyclone.

27. Mention genesis criteria, as laid down by Gray, for tropical cyclone/Cyclonic storm.
28. Mid latitude westerly troughs and monsoon activity.
29. Monsoon depression and associated rainfall
30. Monsoon depression.
31. Onset criterion and features of NEM.
32. Rainfall pattern associated with monsoon depressions.
33. Responsibility of AMOs and AMSs
34. Salient features of NE monsoon.
35. Somali low level Jet.
36. Structure of a cyclone
37. Sub tropical westerly jet stream
38. Synoptic conditions for convective activities.
39. Synoptic features associated with the 'break phase' of southwest monsoon.
40. Tropical Easterly Jet.
41. Types of fronts, frontogenesis & frontolysis.
42. WAFC SIGWX charts.
43. Weather associated with WD.
44. Weather associated with Western Disturbances
45. What are different stages of development of Impact based Forecast ?
46. What are different types of heat wave warnings ?
47. What are three cases of moisture Supply of WD? Explain any one type of weather associated with WD.
48. What is WD?
49. What precautions to be taken by common men during period of heat waves?
50. Zonal index and Index cycle.

Q 4. Answer the following

1. Albedo of dry snow is approximately :
2. Arithmetic Mean of all station rainfall data available in the state.
3. Both the above method will lead to same result.
4. Briefly explain the different disastrous weather elements associated with a tropical cyclone.

5. Briefly explain the various methods for forecasting the movement of cyclones.
6. Characteristics of Cut off lows & high .
7. Define Fronts. Discuss the role of frontogenesis and frontolysis in the formation of fronts?
8. Describe the Convective Activity and its types over Northwest India.
9. Describe the Convective Activity and its associated synoptic conditions over Northeast India.
10. Describe the semi-permanent associated with the southwest monsoon, bringing out the role played by each of them on the intra-seasonal rainfall.
11. Describe the synoptic features associated with the active and break phases of southwest monsoon.
12. Discuss Climatological characteristics (Genesis,frequency,intensity,movement) of Tropical cyclones over the North Indian Ocean. Why is frequency of Tropical Cyclones more in Bay of Bengal than in Arabian Sea.
13. Discuss favourable environmental conditions for formation of CS and its vertical structure.
14. Discuss Gray's cyclogenesis parameter for the formation of a CS. Briefly explain weather associated with it.
15. Discuss Horizontal and vertical structure of tropical cyclone
16. Discuss the changes observed in the met variables after the western disturbance moves away from the station
17. Discuss the influence of mid-latitude westerly troughs on monsoon activity over the Indian region.
18. Discuss the influence of Tropical cyclones/Typhoons over the west Pacific Ocean on Indian summer monsoon.
19. Discuss with reasons the various synoptic conditions observed during the approach of a WD over a station.
20. District Area weighted average rainfall.
21. Explain the difference between the lobar and depression and the distribution of rainfall associated with them during SWM.
22. For calculations of average rainfall for a state which method is more appropriate
23. For Estimation of snow cover Polar Orbiting Satellites are always preferred over Geostationary Satellites: True/False
24. Fujiwara effect

25. Vertical structure of a Tropical cyclone/Cyclonic storm
26. Justify the statement that the Sub-Tropical Jet is the most steady flow over the globe. Briefly describe the mechanism of formation of jet streams.
27. Latent heat of snow
28. Main NEM rainfall synoptic features
29. Mention the chief characteristics and importance of Polar Frontal Jet (PFJ).
30. Name Jet streams which are prominent in subtropics and middle tropics. Briefly describe the characteristics of any one of them.
31. Rainfall resolution of India came in year
32. Snow surface temperature is measured at
33. Snow to water ratio is always 10:1 is it True/False
34. Spatial resolution of CARTOSAT1
35. Spatial resolution of CARTOSAT2
36. Specific heat of snow
37. Sutcliffe's development theory
38. Thermal capacity of snow
39. Two Benefits of NEM
40. What are the ONSET criteria of NEM.
41. What do you mean by the fronts and frontal surfaces? Define the role of frontogenesis in the development of ETC. Discuss its life cycle.
42. What is zonal index and index cycle? Define synoptic conditions in which a low and high index cycle may occur.
43. Which one would be more likely to activate as an ice nuclei; Silver Iodide or Clay particle.
44. Write down the equation for estimation of 'snow melt' based on 'Energy Balance Approach'.
45. Write down the equation for estimation of 'snow melt' based on 'Linear Degree Day Approach'.
46. Write down the theories describing the development of the mid latitude synoptic systems. Discuss any one of them in details.
47. Zonal index & Zonal cycle.

Section B : AVIATION METEOROLOGY





Q I. Fill up the blanks

1. _____ is a major hazard for aviation especially when operating at low levels.
2. _____ is the weather forecast which gives the information about expected weather forecast about variation in visibility conditions on the runway for shorter duration.
3. _____ maintains continuous watch of meteorological condition within its FIR whereas _____ has responsibility to watch the same over its local Aerodrome and its associated AMSs.
4. _____ is the Technical Commission of _____ for setting standards and guidelines for International Aviation Meteorological Services.
5. provide advisory information to MWOs regarding the position, direction and speed of movement, central pressure and maximum surface wind of tropical cyclones.
6. A special current weather observation shall be recorded if accident occurred at or in the vicinity of the local aerodrome and more than minutes have elapsed since the recording of the previous routine/ special/ additional report at the station.
7. A TAF with validity 0900 to 1800 UTC is issued by an AMO at _____ UTC.
8. Accepted Standards and Recommended Practices of ICAO are commonly known as _____.
9. ADDITIONAL REPORT based on current weather observation is issued for _____ and _____.
10. Aeronautical Information Publication (AIP) gives details of _____ available at an aerodrome.
11. AFTN is abbreviation of
12. All correspondences in respect of an aircraft accident are maintained
13. All SIGMET messages shall be issued by _____ only.
14. An aircraft when descending into increasing wind speed will the runway.

15. An aircraft when descending into..... wind speed will the runway.
- 16.
17. An altimeter set to the QFE for an aerodrome reads _____, when the aircraft is on the ground at that aerodrome.
18. An expected cessation at 1500UTC of a significant weather is indicated in Trend Forecast as _____
19. An expected cessation time of significant weather for which trend forecast given at 0530UTC is.....
20. Ceilometer is used for _____.
21. Copies of documents supplied to VVIP/VIP flights should be preserved for a period of _____ days.
22. Flight of an aircraft is dependent on the _____ essential factors.
23. For long haul flights necessarily requires the aerodrome forecast of _____ validity.
24. Forecast for freezing level is required to be mentioned in _____ and _____ message.
25. Forecast position of cyclone center in the WC SIGMET is mentioned for the _____ of the validity period.
26. Global Wind/Temp Upper air charts are updated at every _____ hours from World Area Forecast Centers
27. ICAO became the specialized agency of the United Nations in the yearand its Head Quarters is situated at.....
28. If the pilot sets subscale of the altimeter in flight with the _____ then the altimeter then reads the altitude of the aircraft from the mean sea level.
29. If there is a strong headwind _____ is reduced.
30. IMD provides Aviation Met. Services through _____ AMOs (including _____ MWOs) _____ AMSs.
31. In a day _____ Local/Area forecasts are issued for an airport having 24 hour ATC watch.
32. In case of serious accidents involving loss of life the messages should commence with the identifier _____ & should be authorised for _____ clearance.
33. In India single national Significant Weather Chart is prepared at _____ MWO.

34. In India the designated centres for VOLMET broadcast are..... and
35. In laser ceilometers laser beam can be produced by _____ diode.
36. In local reports and in METAR, maximum of..... Present weather shall be used.
37. In METAR, RVR value of of all the runway shall be reported.
38. Landing forecasts is issued routinely in India named _____with validity period of _____
- 39.
40. Light aircraft warning has to be issued if expected wind speed reach to _____.
41. Light aircraft warning has to be issued if expected wind speed reaches to _____.
42. Light aircraft warning has to issued if expected wind speed reach to _____The forecast of surface pressure is included in _____
43. Local and Area forecast are to be issued by _____and both forecasts are valid over the _____and _____around.
44. Local/Area forecast shall be issued by an aerodrome Met. Station. (state True or False).
45. Message of very serious aircraft accidents should commence with the identifier _____.
46. Met park can be selected _____m apart from the central runway line and _____m apart from the threshold.
47. Met. T-3 form of documentation shall be issued for flights upto NM distance.
48. Met. T-3 form of documentation shall be issued for flights upto NM distance.
49. National SIGWX Charts meant for Medium-level forecasts for flight levels between_____ and_____
50. Normally documentation shall be provided in Met.T-3 form for flights upto.....NM.
51. QFF is the value of the atmospheric pressure at a particular place and time reduced to _____.
52. Regional office of ICAO situated at Bangkok is concerned with aviation related matter ofRegion.

53. ROBEX transmission consists of _____ and _____ messages.
54. SIGMET for tropical cyclone can be issued upto _____ hours before the commencement of the validity period.
55. SIGMET has a validity of maximum 6 hrs (state True or False).
56. SIGMET warnings are issued by all Aerodrome Meteorological Offices (True / False).
57. TAF of VIDP is included in VOLMET Broadcast from _____
58. TAF with 9 hrs validity are issued for _____ flights.
59. TAFs issued for domestic flight operation has a validity of _____.
60. TAFs issued for international flight operations has a validity of
61. TAFs issued for international flight operations has a validity of
62. Take off forecast issued at every 3 hours has a validity for _____ hours.
63. Take off forecast issued byand used for
64. The ARFOR/Local forecast is issued for an aerodrome andNM around.
65. The Aviation Meteorological Services are provided by IMD throughMWOs into associatedFIR of Indian air space.
66. The change indicator BECMG can have a maximum validity of _____ hours.
67. The code word CAVOK is used to replace the visibility, _____ and _____ groups.
68. The flight of an aircraft is dependent on four essential factors are.....
69. The forecast of QNH value is included in _____
70. The four essential factors are.....on which the flight of an aircraft is dependent.
71. The Head Quarter of ICAO is situated at..... and there areregional offices.
72. The height of tropopause increases with height as one moves towards the _____.
73. The indicatoris inserted in METAR report when it contains fully....observation.

74. The landing forecast is appended to and is valid for hours.
75. The Local/Area forecast issued at 0530UTC for an aerodrome shall be valid for period from
76. The Local/Area forecast shall be issued forNM around of airport.
77. The mean sea level pressure of ICAO standard atmosphere (ISA) is.....mb.
78. The MWOs issue WC SIGMET based on given by TCAC New Delhi.
79. The number of change group in TAF should not normally exceedgroups.
80. The QFE setting is done at the time of
81. The responsibility of issuance of TCAC advisory information for regions andhas been assigned to TCAC New Delhi.
82. The responsibility of meteorological watch over _____ FIR is being handled by MWO Kolkata.
83. The Secretary General of WMO is elected foryears and there are Technical Commissions in WMO.
84. The station level pressure with reference to aerodrome reference point is known as _____.
85. The symbol  in SIGWX chart denotes _____.
86. The symbol  stands for _____.
87. The symbol  in SIGWX chart denotes _____.
88. The symbol in SIGWX charts  stands for _____.
89. The take-off forecast is issued by AMO at everyhours.
90. The take-off forecast is issued by AMO for period ofhours validity period.
91. The transmissometer is used to assess the and
92. The turbulence produced by large multi-engine aircraft over narrow area to its rear is known as _____.
93. The validity of WS SIGMET message shall be even more than 6 hours.
94. The VIP messages should be prefixed with the term_____.
95. There areRegional Association (RA) of WMO & India comes under region
96. There areregional associations of WMO and India comes underregion.

97. Trend forecast appended to METAR is valid for _____ hours.
98. VOLMET Broadcast consists current METAR/SPECI, _____ and _____ of selected stations.
99. VOLMET Broadcast in India is made from _____ and _____
100. VOLMET Broadcast is made from _____ and _____ in India for providing Meteorological information to _____ aircraft.
101. VOLMET broadcast issued by Kolkata contains METAR, TAF and SIGMET _____ and _____ (name at least two stations).
102. W M O has _____ R.As , and India comes under _____.
103. WAFC SIGWX Charts meant for Medium-level forecasts for flight levels between _____ to _____.
104. Wake turbulence is produced by _____ over narrow area to its _____.
105. When the forecast wind direction is “variable” and speed is 2 knots, the wind direction and speed shall be indicated in a TAF as _____
106. Wind shear reported by pilot may be included in Local routine report & METAR asinformation under RMK.
107. World Area Forecast Centers transmit Upper air winds and temperature in _____ coded form.

Q 2. Answer questions /True False with justification (In case the statement is false, correct the statement.)

1. Aerodrome warning can be issued 3 hours prior to expected occurrence of weather phenomena. Aerodrome warning cannot be issued for any forecast phenomena. (state True or False).
2. The symbol in SIGWX charts **—V—V—** stands for

(i) visible ash cloud	(ii) very good visibility
(iii) volcanic eruption	(iv) severe squall line.

 (True/False with reason)
3. A visibility of 850 metres can be reported in a TAF.
4. Actual altitude of a flight level at a place decreases if mean sea level pressure at that place becomes higher than the Standard.
5. Aerodrome warning cannot be issued for any forecast phenomena. (state True or

False).

6. Aerodrome warning for a light aircraft for an Aeronautical Met. Station.
7. Aerodrome Warning for Wind can only be issued when expected wind speed 30KT or more.
8. Aerodrome warning shall be issued only for observed phenomenon (True / False).
9. AIP India contains only information about Meteorological services in India.
10. Air pressure and temperature determine the air density and hence determine the lift of the aircraft.
11. Aircraft flying in the area of the Jet stream can become hazardous due to meteorological phenomena. What is the phenomenon called and explain the reason.
12. Airport meteorological instruments used for current weather observation.
13. Amendment of Local forecast and TAF may be necessary on issue of Aerodrome warning.
14. An "AIRMET" is a warning for high level flights and issued by MWOs whenever required. (True or False).
15. At all AMO briefing for VVIP flights should be provided by the Meteorologist-A or Meteorologist-B of the station.
16. Aviation Meteorological Services are provided as per Civil Aviation Requirements (CAR) and Annex-3.
17. Aviation weather hazards associated with cumulonimbus cloud.
18. Aviation weather hazards.
19. Change group always be necessary in a TAF to indicate expected occurrence of fog during the validity period of the TAF.
20. Contents of immediate intimation about an aircraft accident.
21. Criteria for issuing SPECIAL and ADDITIONAL reports.
22. Criteria for issuing SPECIAL for wind in current weather reports.
23. Effect of meteorological parameter on aircraft operation.
24. Even though there are indications about the height of the tropopause in SIGWX charts but they are not relevant or essential for flight documentation in the tropics, why?
25. Explain the term BECMG and what is the visibility forecast for 2400 UTC?"
26. For a flight from AMS Ranchi to Gaya, associated AMO Patna should transmit

MET-T4 to the AMS Ranchi.

27. Functions and responsibilities of MWO, AMO and AMS.
28. Head wind is safer for both landing and takeoff for an Aircraft.
29. If an aircraft is missing or is completely inaccessible such an occurrence associated with the operation of an aircraft will be treated as “Incident”.
30. In SIGWX chart OCNL term is used to describe the Cumulonimbus cloud. What does it mean?
31. Information on wind shear is to be included as supplementary information in local routine and special reports and METAR. **(True / False)**
32. It is not necessary that all correspondence in respect of an aircraft accident are maintained confidential. **(True / False)**
33. List the elements of SIGWX charts and explain any two elements of your choice.
34. Local routine MET Report/special report is not transmitted beyond aerodrome of origin.
35. Local/Area forecast shall be issued by an aerodrome Met. Station. (State True or False).

36. LOCAL SPECIAL and ADDITIONAL criteria for visibility in current weather reports used in India.
37. METAR doesn't have any nowcasting component.
38. National Significant weather chart contains only tropical cyclone information
39. NWP models Forecast Meteogram is helpful for issue of TAF.
40. Procedure adopted on getting intimation about an aircraft accident.
41. Refer to the following TAF extract: BECMG 1821 2000 BR BKN004 BECMG 2124 0500 FG.
42. Responsibilities of AMOs.
43. ROFOR is issued by AMS and directly given to the pilot.
44. SIGMET has a validity of maximum 6 hrs (state True or False).
45. Terminal Aerodrome Forecast.
46. The ALTIMETER Settings, QNH and QFF is always same.
47. The Altimeter setting, QNH is always equal to the mean sea level pressure value as in the synoptic weather charts.
48. The engine efficiency of an aircraft is greater with lower outside temperature.

(True/False with reason)

49. The head quarter of ICAO is situated at Geneva.
50. The indicator AUTO is inserted in METAR and local routine reports when observations are from automatic observing system .
51. The main purpose ICAO is to develop the principles & techniques for international air navigation.
52. The station level pressure with reference to aerodrome reference point is used for terrain clearance.
53. The Tropical Cyclone Advisories are disseminated to whom?
54. The weather in vicinity shall not be reported in METAR.
55. Trend forecast can also be issued for expected occurrence of fog.
56. Tropical Cyclone Advisory Centre (TCAC).
57. Vertical Cross Section chart is very helpful for ROFOR.
58. VVIP flight briefing procedure.
59. What are the instruments used for taking current weather observations. Explain the use of Transmissometer.
60. What is TAF and what is its validity for domestic and international flights.
61. Wind shear report practice for aviation in India.
62. World Area Forecast System (WAFS).

Q3. Write in brief on of the following.

1. Aerodrome warning for a light aircraft for an Aeronautical Met. Station.
2. Aviation Meteorological services provided by IMD to AAI at various airports.
3. Criteria for reporting SPECIAL.
4. Altimeter subscale setting.
5. ICAO standard atmosphere.
6. Terminal Aerodrome Forecast.
7. Aviation weather hazards.
8. VVIP flight briefing.
9. Aerodrome warning for a light aircraft for an Aeronautical Met. Station.
10. Airport meteorological instruments used for current weather observation.
11. Aviation weather hazards associated with cumulonimbus cloud.

12. Aviation weather hazards.
 13. Briefly discuss weather elements affecting aircraft operations.
 14. Centre of TC given as “N1318 E08812” pertains to what time?
 15. Contents of immediate intimation about an aircraft accident.
 16. Criteria for issuing SPECIAL and ADDITIONAL reports.
 17. Criteria for issuing SPECIAL for wind in current weather reports.
 18. Effect of Cumulonimbus (CB) cloud and its associated weather phenomena on Aviation.
-
19. Effect of meteorological parameter on aircraft operation.
 20. Effect of meteorological parameter on aircraft operation.
 21. Functions and responsibilities of MWO, AMO and AMS.
 22. ICAO Standard Atmosphere
 23. ICAO standard atmosphere.
 24. ii. Trend type landing forecast.
 25. iii. Importance of ICAO standard atmosphere.
 26. List the elements of SIGWX charts and explain any two elements of your choice.
 27. List the responsibilities of TCAC
-
28. LOCAL SPECIAL and ADDITIONAL criteria for visibility in current weather reports used in India.
 29. LOCAL SPECIAL and ADDITIONAL criteria for visibility in current weather reports used in India
 30. Procedure adopted on getting intimation about an aircraft accident.
 31. Responsibilities of AMOs.
 32. Terminal Aerodrome Forecast.
 33. Tropical Cyclone Advisory Centre (TCAC).
 34. VOMF CHENNAI FIR TC LEHAR OBS AT 0300Z N1230 E09000 CB TOP FL480 WI 120NM OF CENTRE MOV WNW 06KT INTSF FCST AT 1500Z TC CENTRE N1318 E08812=
 35. VOMF SIGMET 4 VALID 261000/261500 VOMM-
 36. VVIP flight briefing procedure.
 37. What are the instruments used for taking current weather observations. Explain

the use of Transmissometer.

38. What is forecast for intensity of the system?
 39. What is the height of top of CB?
 40. What is the period of validity of this SIGMET?
 41. What is the speed and direction of movement of TC?
 42. Wind shear report practice for aviation in India.
 43. World Area Forecast System (WAFS).
 44. Write a brief note on "On line briefing service"
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Based on following SIGMET answer the questions:

VOMF SIGMET 4 VALID 261000/261500 VOMM-

VOMF CHENNAI FIR TC LEHAR OBS AT 0300Z N1230 E09000 CB TOP FL480 WI
120NM OF CENTRE MOV WNW 06KT INTSF FCST AT 1500Z TC CENTRE N1318
E08812=

- i. What is the period of validity of this SIGMET?
- ii. Centre of TC given as "N1318 E08812" pertains to what time?
- iii. What is the height of top of CB?
- iv. What is the speed and direction of movement of TC?
- v. What is forecast for intensity of the system?

Q4. Write a short note

1. Centre of TC given as "N1320 E07250" pertains to what time?
2. Criteria for issuing SPECIAL report on wind, visibility and RVR.
3. Documentation to be provided for a Mumbai - London flight at FL340 with ETD 2245UTC and endurance 15 hrs on any day 'dd'.
4. List all the documents which have to be kept in the **safe custody of Officer-in-charge** of AMOs/AMSs in case of aircraft accident.
5. Meteorological broadcasts for air traffic services.
6. On line briefing service

7. Wind shear warning.
8. SIGMET warning.
9. Write a short note on “First Information Report” on aircraft accident.
10. Write down any two criteria for inclusion of a change group with respect to wind in a TAF.

Based on following SIGMET answer the questions:

VABF SIGMET 02 VALID 150600/151200 VABB-

VABF MUMBAI FIR TC TAUKTAE OBS AT 0600Z N1320 E07250 CB TOP FL420

WI 50NM OF CENTRE MOV NNW 05KT INTSF FCST 1200Z CENTRE N1380

E07240=

- I. What is forecast for intensity of the system?
- II. What is the forecast position of TC at 1200UTC?
- III. What is the height of top of CB?
- IV. What is the period of validity of this SIGMET?
- V. What is the speed and direction of movement of TC?