INDIA METEOROLOGICAL DEPARTMENT

QUESTION BANK

OF

ADVANCED METEOROLOGICAL TRAINING COURSE (AMTC)

SEMESTER-I EXAMINATION

BASED ON 174-181 BATCHES

(2013-2021)

PAPER-IV: SYNOPTIC & AVIATION

PART A AND B

India Meteorological Department
Meteorological Training Institute
Advanced Meteorological Training Course
SEMISTER-I

PAPER-IV : SYNOPTIC & AVIATION

PART 'A' : Synoptic Met.

Q. 1 Fill in the blanks

1. ------ is a powerful application development tool mainly used for nowcasting weather in India Meteorological Department.
2. ------- is a visualization workstation currently being used by several forecasting offices in the India Meteorological Department.
3. ------ type of vorticity is generated from wind speeds changing over synoptic scale distances.
4. (iv) Above normal pressure departures over central India are indicative of --------- monsoon conditions.
5. (v) The validity period of now casting can range up to -------.
6. _____ over peninsular India in upper troposphere become strong during onset of monsoon.
7. _____ are the severe thunderstorms of _____ India.
8. _____ fog occurs in the rear of a Western disturbances (W.D).
9. _____ and _____ are two major disastrous weather elements associated with a cyclone.
10. _____ atmosphere is needed for any weather activity.
11. _____ Vertical wind shear helps formation of Tropical cyclone (High/Low).
12. _____ and _____ are two of the most disastrous weather elements associated with a tropical cyclone.

13. _____ for estimating the intensity of a cyclone is based upon the cloud features associated with the system.
14. _____ is the mechanism responsible for the development of a cyclone from initial low pressure stage and for a low pressure system to be termed as a cyclone; its associated wind speed has to be _____.
15. A _____ projection is similar to Mercator projection.
16. A _____ wind is a wind that turns anti-clockwise with height.
17. A low pressure system is termed as a super cyclone, if the wind speed associated with the same is _____ .
18. Along the _____ the value of pressure does not change.
19. An _____ wind sets in late morning, rises to a max. in the _____.
20. An air mass is characterized by similar properties of _____ and _____ in any horizontal direction.
21. Analysis of equal heights on _____ charts is called _____ analysis.
22. ----------and breeze occurs during ----------
23. Backing of geostrophic wind with height will bring _____ air.
24. Buoys are used for _____ over sea.
25. CISK mechanism is the co-operative interaction between _____ and _____ scale circulations.
26. Climatologically, cyclones are ------ frequent over the Arabian Sea than over the Bay of Bengal.
27. CLIPER is combination of _____ and _____.
28. Coriolis force deflects the wind to the ____ in the southern hemisphere.
29. Cylindrical maps have a lot of _____in the Polar Regions.
30. During the pre-monsoon months, Northeast India gets severe thunderstorm called _____.
31. Dust storms occurring during the later part of the Pre-monsoon season with more _____ are also classified as _____ type.
32. Easterly waves are prominently seen over _____ during ____ monsoon.
33. El-Nino is related to abnormal warming of _____ over _____.
34. Extra Tropical Cyclones (ETC) _____ tilts ____ with height.

35. For a low pressure system to be classified as a super cyclone its wind speed should be _____ and T. No. should be _____.
36. For a low pressure system to be termed as a cyclone, wind speed associated with the system has to be more than _____ whereas the T.No. associated with the system has to be greater than or equal to _____.
37. For a low pressure system to be termed as a super cyclone, the associated wind speed has to be _____ and the T.No. has to be _____.
38. For declaring the monsoon onset over Kerala, the parameters monitored other than rainfall are ------- & ---------
39. Forecast verification is a part of _____.
40. Heaviest rainfall zone of monsoon depressions usually lies in its ---------- sector.
41. If the temperature contrast across a front is lost because the colder air is warmed (or warmer air is cooled), or because the atmospheric motion causes the transition zone to weaken, the front is said to undergo _____.
42. If we consider the horizontal structure of a cyclone, the most severe weather is observed in the _____.
43. In COL area region winds are _____ .
44. In _____ technique for cyclone movement prediction, movement of similar storms of the past in similar synoptic situations is referred.
45. In India, main synoptic hours are ____ and _____.
46. In Northern Hemisphere Cyclonic circulation is _____ .
47. In the core region of a cyclone, the wind is in _____ type of balance.
48. In the Hadely cell convection loop, air rises over the ITCZ and descends over the ----
49. Interaction between two cyclones affecting their movement is termed as _____ and it is very effective when the cyclones are positioned within a distance of _____.
50. Interaction between two cyclones affecting their movement is termed as _____ and it is very effective when the cyclones are positioned within a distance of _____.

51. Interaction between two cyclones which affects their movement is termed as _____.
52. Interaction between two cyclones which influences their movement is called _____ and the same is more effective if the cyclones are positioned within a distance of _____.
53. Isotach analysis generally done in which level charts _____.
54. The northeast monsoon season over India is also the chief ---------- season for the North Indian Ocean.
55. There is a divergence in _____ entrance and _____ exit of the jet maxima.
56. Katabatic wind occurs at night when cool air _____ the mountains.
57. Lines of equal pressure values are called _____.
(isotachs/isobars/isotherms/stremalines)
58. LLJ is observed during _____ monsoon at _____ hPa.
59. LOPAR is an example of _____ system.
60. Lowest pressure associated with the tropical cyclone is found in the _____ region where as the maximum disastrous weather is associated with the _____ region.
61. Method based on _____ gives reasonable cyclone movement forecast up to 24 hours whereas _____ method is more effective for longer forecast intervals.
62. Mid tropospheric circulations gives heavy rainfall over _____ during SWM.
63. Middle troposphere needs to be _____ for occurrence of Norwesters.
64. Mid-tropospheric cyclonic circulations (MTCs) can cause active to vigorous monsoon conditions over the meteorological sub-divisions viz., ----------.
65. Mid-tropospheric cyclonic circulations are the synoptic systems which cause heavy to very heavy rainfall over ----------during the southwest monsoon season.
66. Monsoon trough normally tilt -------- with height.
67. Monsoon trough vertically slops _____ with height.
68. Over the globe, the frequency of cyclone formation is maximum over _____.

69. Pr. Gradient type of Thunder Storm (TS) occurs over _____ India during _____ season.
70. Presence of high pressure over Head bay favours the occurrence of _____ in pre monsoon season.
71. Radial wind component is found in the _____ and _____ layers of a cyclone.
72. Rotor Clouds are associated with _____ waves.
73. Significant radial wind components are observed in the _____ and _____ layers of a cyclone.
74. Streamline spacing varies _____ with velocity of flow.
75. Sub-tropical Westerly Jet stream shifts ---------- as the southwest monsoon sets in over the Indian sub-continent.
76. Synoptic scale disturbances in the tropical belt usually move in a ----- direction.
77. T.No. derived from cloud features is used to indicate the _____ of a low pressure system and for a low pressure system to be considered as a depression, its T.No has to be _____.
78. TEJ is observed during _____ monsoon at _____ hPa.
79. The ---------- nature of the equatorial trough during the northeast monsoon season over India is in contrast to the semi-permanent monsoon trough during the southwest monsoon season.
80. The cyclonic circulation associated with the 'Heat Low' often extends up to ------ km above mean sea
81. **The intensity of the _____ high at the south Indian Ocean is found to be associated with the onset and subsequent fluctuations of Indian southwest monsoon.**
82. The Mid Tropospheric Cyclone is ____ cored below 600 hPa level and ____ cored above
83. The most important features of Madden-Julian Oscillation is its _____ propagation around the globe over all the three oceans (Indian, Pacific and Atlantic) throughout the year and _____ propagation over the Indian and Pacific oceans during the northern summer.

84. The point where the warm front becomes the occluded front is called the _____ point.
85. The process of drier air around the cloud begins to be drawn into the cloud is called as _____.
86. The right entrance and left exit sectors of an easterly jet maximum are conducive for --------.
87. The thunder storms of northeast India are known as _____.
88. The unique feature of the Kelvin wave is its unidirectional propagation, which moves _____ along a western boundary of the coast _____ along an eastern boundary of the coast, and cyclonically around a closed boundary
89. Thunderstorm is associated with _____ scale phenomenon.
90. Thunderstorms are example of _____ scale systems.(Micro/Meso/Synoptic/Macro)
91. Tibetan high is a _____ core high and _____ with height.
92. Time scale of a mesoscale system is _____ long.
93. To consolidate the huge amount of information available now-a-days with the forecaster,
94. To the south of the monsoon trough during the active phase of Indian southwest monsoon _____ flow prevails in the lower troposphere upto about 400 hPa level with _____ to the north of the trough
95. Tropical weather systems generally move from -------- to ----------
96. Dust storms occurring during the later part of the Pre-monsoon season are _____ and
97. Warm & moist air mass is ------- than a warm & dry air mass.
98. Warm sector of Extra Tropical Cyclones (ETC) reduces in the _____ stage.
99. Western Depressions with _____ isobars are the intense weather systems observed during _____ season.
100. When upper-level divergence of air above a surface low pressure area is stronger than the convergence of surface air, the surface pressure will _____ and the storm itself will _____.
101. Wind speed increases downstream leads to _____.
102. Wind speed increasing downstream signifies _____ .

103. Wind speed of a monsoon depression in the lower tropospheric levels range between ---- & ---- knots.

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

1. During the northeast monsoon season, when cyclones over the Bay of Bengal recurve northeastwards, northeast monsoon activity over the southern peninsula will not be affected.
2. The normal seasonal rainfall during the northeast monsoon season is highest for the sub-division of Tamil Nadu.
3. Two isobars can pass through one point & they intersect each other.
4. Weather forecasting in tropics is less challenging than that in mid-latitudes.
5. Weather forecasting in tropics is less challenging than that in the mid-latitudes.
6. 'Heat low' weakens with height
7. The relative humidity is usually lowest around middle or late afternoon.
8. See Breeze is seen during night time.
9. A mid-latitude cyclone is born in a region where there is a strong temperature gradient with forced lifting, perhaps an old stationary front.
10. A peculiar feature of the monsoon depression is the concentration of rainfall in its northwesten sector and after formation of the depression, the forecasters predict heavy rain along the northern and northwestern sector of the anticipated track.
11. Active weather occurs west of easterly wave trough.
12. Advance and onset of SWM are having different criterion.
13. Ahead of trough in westerly found cloudiness rain etc. and Rear of trough in westerly found clear sky, fair weather, possibility of fog.
14. All dust storms are of similar types
15. Anti-cyclonic circulation in the atmosphere generally lead to decreases in surface temperatures.
16. Approach of Easterly waves can't be noticed with vertical Time Section charts.
17. Areas of heat wave and cold wave conditions can't be identified using change charts.

18. At surface level Convergence is associated with clear sky and Divergence is associated with cloudiness.

19. At the core of a cyclone, the wind is in gradient wind balance.
20. At the core of a cyclone, the wind is in inertial flow balance.
21. Northeast monsoon season is the major rainfall period for the Indian sub-continent.
22. The cyclonic circulation associated with the Heat Low during southwest monsoon season often extends upto mid-tropospheric levels.
23. CISK is a positive feedback mechanism.
24. Clear Air Turbulence (CAT) occurs due to CB Clouds.
25. Cold front moves faster than a warm front due to its gentle slope.
26. Cyclone has the chance of recurvature, if the ridgeline is positioned to the South of its position
27. Cyclones do not form during northeast monsoon season.
28. Cyclonic Storms generally form over the Indian Seas during the southwest monsoon season.
29. Monsoon Depressions always move in a west-northwestward direction.
30. Development of cyclones from low pressure is more in monsoon season.
31. Divergence of air at the earth's surface causes clouds & precipitation over the region
32. Down slope wind is also called as Mountain Wind.
33. During monsoon season, posiblility of formation of cyclone is very large.
34. During the passage of cyclone over a station, that station can experience large variations in wind speed as well as wind direction.
35. East coast of India is more prone to cyclones than the west coast.
36. Fair weather prevails during the pre-monsoon season over the Indian sub-continent.
37. Fog forms in the rear sector of western disturbance in the winter season.
38. Formation of cyclone is more during monsoon season.
39. Frequency of Tropical cyclone is more in Bay of Bengal than Arabian Sea.
40. Fronts making lesser angle with the axis of dilation will experience Frontolysis.
41. Heat low weakens with height.

42. Heaviest rainfall associated with a monsoon depression occurs always in its southwest sector
43. High pressure areas and Depressions is mesoscale phenomenon.
44. High unstable condition of atmosphere is necessary for growth of thunder storm cell.
45. If the surface cyclone, intensify then upper tropospheric divergence is decreasing.
46. In a dust devil the air circles around and rises vertically upward.
47. In geotropic wind we consider the curvature effect.
48. In its mature stage, the intensity of a cyclone goes on decreasing.
49. In low pressure area the pressure at the center is highest value.
50. In Pilot chart, we are computing the thickness between two levels.
51. In Planetary scale horizontal scale is > 1000 kms and vertical scale is > 10 kms.
52. In the high/high pressure area usually clouds are present.
53. In Vertical Time section chart many station for one day data are plotted and analysed.
54. Isobars may start/end/terminate anywhere in between the surface chart.
55. Large values of CAPE and CINE are favorable for the occurrence of convective activity.
56. Low OLR values may be associated with the onset of South West Monsoon (SWM).
57. Mid latitude westerlies are more zonal in the high index cycle.
58. Monsoon Depression (MD) is likely to recurve under the influence of Tibetan High.
59. Monsoon trough tilts more south wards in its western end.
60. More number of cyclones form close to the equator.
61. Norwesters generally occur in late afternoon.
62. Numerical Weather Prediction model outputs need to be interpreted and value added before
63. Only amount of rainfall is required for declaring onset of NE monsoon.
64. Position of the upper troposphere ridge influences the movement of a cyclone.
65. Prediction of thunderstorms can be made more than a month ahead in the time scale of Long
66. Pressure gradient thunder storms are weak and short lived.

67. Rapid growth of water droplets is seen in cloud burst process.
68. Reversal of winds from southwesterly to northeasterly over the southern peninsula in October is due to reversal of north-south pressure gradient over the region.
69. Sea breeze strength is stronger in warm days but weaker during cloudy conditions.
70. Several observational studies on Australian summer monsoon have clearly indicated that strong low-level westerlies and weak upper-level easterlies are the main wind components for an active monsoon, and that weak low-level westerlies or easterlies and strong upper-level easterlies are the wind components indicative of a break or an inactive monsoon.
71. Severe weather is observed ahead of a young cyclone.
72. Southerly air may be a precursor for the approach of a W.D.
73. Streamlines do not cross each other.
74. Sufficiently large CAPE helps in the development of deep convection.
75. The designation for a cool, moist air mass is cP.
76. The low pressure area is associated with convergence and downward motion of the air.
77. The middle layer of the cyclone is associated with radial wind component.
78. The middle layer of the cyclone is associated with significant radial wind component.
79. The modification of air mass takes place only thermodynamically.
80. The most severe weather associated with a cyclone is found in its eye region.
81. The propagation of the equatorial Kelvin wave is unidirectional i.e. eastward only.
82. The radiation fog occurs mainly in the forward sector of a W.D
83. The radiation fog occurs mainly in the rear sector of WDs.
84. The ridge is associated with convergence and downward motion of the air.
85. The summer monsoon over North America is not as strong or persistent as the Indian summer monsoon though it shares most of the basic characteristics of its Indian counterpart.
86. Tibetan High is most prominently seen at 500 hPa.
87. Tornadoes may cause massive damage in very large strip along their path.
88. Tornados extend vertically upwards from ground.

89. Tropical cyclone form near equator.

90. Tropical cyclone is a meso-scale system.

91. Tropical cyclones do not tilt with height.

92. Tropical cyclones generally form over the Indian Seas during the southwest monsoon season.

93. Validity for Nowcast is 24 hours & it can provide forecast for a wider region.

94. Vertical time section charts are useful tools for local weather forecasting.

95. Very close to the equator, formation of cyclone is maximum.

96. Warm front has a gentle slope.

97. West coast of India receives less rainfall than east coast during the southwest monsoon season

98. Wind and pressure are field variables.

99. Wind can't be a flow across the streamline.

Q. 3 Write short notes on the following

1. Active – break cycle in southwest monsoon
2. Briefly describe the life cycle of a cyclone.

a. Briefly explain the disastrous weather elements associated with a cyclone.

3. Briefly explain the mechanism leading to the formation of tropical cyclones from incipient lows. How this will be affected if the cyclone enters cold water.
4. Broad steps involved in the task of weather analysis and forecasting.
5. Chief features of NE monsoon.
6. Classification of air masses and fronts.
7. Classification of weather forecasts in terms of their validity period.
8. Climatological conditions favourable for cyclogenesis.
9. Components of SWM and their influence in the monsoon season.
10. Define a thunderstorm and the synoptic conditions required for its development. Discuss NW and NE India convective activity highlighting their contrasting features. Describe any two indices helpful in thunderstorm forecasting.
11. Define a Trough and Ridge with a suitable diagram and show the wind flow and pressure around a LOPAR and HIPAR either in Northern or Southern hemisphere.

12. Define a W.D. and cases associated with its rainfall distribution over the country.
13. Define monsoon. Discuss some of the onset criterion as observed on synoptic charts.
14. Define Western Disturbance (W.D). Discuss different synoptic conditions of WD's leading variation in spatial distribution of rainfall over the country.
15. Describe any 3 components of SWM with their importance.
16. Describe briefly the different patterns of stream lines.
17. Describe the CLIPER method of cyclone track prediction.
18. Describe the dynamical potential parameters required for the development of a low pressure system in to a cyclone with supporting examples.
19. Describe the synoptic & atmospheric circulation features associated with the advance and withdrawal phases of southwest monsoon over India.
20. Describe the synoptic conditions required for convective activity of NE India.
21. Describe the synoptic conditions required for NW India convective activity.
22. Discuss the thermal indices and synoptic process helpful in predicting thunder storm clouds.
23. Describe various criteria for cold wave warning. What is cold day? When ground frost occurs?
24. Discuss Anabatic wind OR Katabatic Wind.
25. Discuss favorable conditions for the convective activity over Northeast India.
26. Discuss the contrasting features of synoptic conditions for NW and NE India convective activity in pre monsoon season. Describe some useful thermal indices used in thunderstorm forecasting.
27. Discuss the importance of any two semi permanent systems during the SWM.
28. Discuss the role of the state of ocean influences the formation, development and decay of tropical cyclone.
29. Discuss the synoptic conditions of a WD likely to give fairly wide-spread to wide-spread rainfall over the central parts of country.
30. Discuss types of forecast and forecasting techniques.
31. Draw a Trough, Ridge and COL region with a suitable diagram and discuss associated weather with them. Show the wind flow and pressure around a LOPAR and HIPAR in N. H and S.H.

32. Easterly wave.
33. El-Nino – Modoki & Indian Summer monsoon
34. Environmental factors supporting formation of Tropical cyclone and Life cycle of Tropical cyclones.
35. Explain any three parameters favourable for cyclogenesis (3 Marks)
36. Explain CLIPER method of prediction of cyclone movement
37. Explain the CLIPER method for the prediction of cyclone track.
38. Explain the factors which can lead to the decay of cyclones along with reasons.
39. Frontogenesis and frontolysis.
40. Genesis and tracking of monsoon depressions.
41. How do you indentify Western Disturbances (WD) on synoptic charts? Discuss synoptic conditions observed during the approach and after the movement of a W.D. over New Delhi. Discuss various synoptic conditions of East- ward moving WD and associated weather conditions.
42. Define air mass and discuss the condition of its modification.
43. Importance of surface and upper air charts in weather forecasting.
44. In general how the low pressure systems move in the northern hemisphere? How the pressure values of the coastal stations can be used to explain the expected movement of cyclone?
45. Life cycle of an ETC
46. Life cycle of a cyclone
47. Life cycle of a tropical cyclone.
48. Operational criteria for declaring the onset of southwest monsoon over Kerala, followed by the India Meteorological Department.
49. Prediction methods for Tropical cyclone movement.
50. Public weather Services and its importance.
51. Rain producing systems during the southwest monsoon
52. Defiine recent objective criterion used in IMD for onset of south west monsoon (SWM).
53. Role of CISK mechanism in the growth of Thunderstorm.

54. Structure of a cyclone
55. Structure of M.D. and associated rainfall.
56. Structure of Tropical Cyclones and Disaster weather associated with Tropical cyclones.
57. Synoptic method of cyclone track prediction
58. Synoptic methods (any two) of tropical cyclone forecasting.
59. Technology employed in nowcasting of Thunderstorms.
60. The cross equatorial low level jet during Indian summer monsoon.
61. Tibetan Anticyclone as one of the key factors in the development of Indian monsoon circulation.
62. Types & validity ranges involved in weather and climate forecasting.
63. Use of surface and upper air charts in weather forecasting
64. What are charts in meteorology? Describe any one charts and the process of analysis?
65. What is the disastrous weather elements associated with a cyclone? Describe the important features of them.
66. What are the Synoptic conditions associated with the approach of W.D OR passage of W.D.
67. What are the three stages of life cycle of Thunderstorms? Explain in brief.
68. What are thermal and geostrophic winds? How they are related with each other?
69. What are western disturbances? What is the weather phenomena associated with WDs?
70. What do you understand by the Indian Ocean Dipole (IOD)? Examine its relevance to India's monsoon rains.
71. What is Map Projection? Describe the types of Map Projection?
72. What is mean by Diurnal Variation/Diurnal Effect in atmosphere?
73. What is meant by recurvature of cyclone? What are the situations in which recurvature can occur?
74. What is Short range forecast? Give some examples of Short-range forecast. Describe different tools used for Short range forecasting.
75. What is streamline and isotach. Describe the patterns of streamline?

76. What is streamline and isotach. Describe the patterns of streamline?
77. What is surface chart? Describe the process of analysis?
78. What is thermal and geostrophic wind and also describe relation between them?
79. What is Western Disturbance?

PART 'B' : Aviation Met.

Q. 1 Fill in the blanks

1. ---------- code format are updated at every ------- hours per day by WAFCs.
2. _____ present in stratosphere provides protection to our life. In the atmosphere, the layer above the troposphere is _____.
3. _____ and _____ are two forms of Route forecasts other than WAFC charts.
4. _____ are not disseminated beyond the aerodrome of origin.
5. _____wind is desirable for take-off of an aircraft.
6. Local/Area forecast is Valid for …….. n.m around Airport. (100,150, 200)
7. A Local/Area Forecast shall be valid for ____ hours, where ATC watch is maintained for 24 hours.
8. Aerodrome warning for an AMS is issued by _____.
9. Aeronautical climatological information are prepared in the form of _____ and _____.
10. Air pressure and temperature determine the _____ of the aircraft
11. All the domestic TAF are issued at .....hour prior to its validity period.
12. Aviation Meteorological Messages are usually transmitted under _____ priority.
13. CAT phenomenon is associated with_____.

i) METAR is a weather report encoded from _____ weather observations.

i) Visibility of 11300 M is reported in METAR as _____.

ii) Cloud group in additional METAR is reported in _____ order of height.

14. In local routine reports, present weather information should be representative of condition at the aerodrome within a radius of .....Km of the aerodrome reference point (ARP).

15. In order to issue wind shear warning, _____ is one of the source of information.

16. Indian airspace is divided into …….. Flight information region. (SIX, Eight, Four)

17. Light aircraft warning has to be issued if expected wind speed reaches to …….

18. Local and Area forecasts are meant for the aerodrome and _____ around.

19. Local/Area forecast is Valid for …….. n.m around Airport. (100,150, 200)

20. Maximum …… numbers of weather phenomenon can be reported at same time.

21. Meaning of 'NOSIG' in trend forecast is ……

22. Most of the Clear Air Turbulence (CAT) are reported near _____.

23. Observed mean wind is exactly southerly 16 knots and wind speed increases to 30 knots in gust. In METAR it shall be reported as ……..

24. Observed QNH is 1004.8hPa. It will be reported in METAR as …….

25. RVR is incorporated in METAR whenever visibility/RVR is less than …….. metres.

26. RVR is incorporated in METAR whenever visibility/RVR is less than …….. metres.

27. RVR is reported in METAR when visibility is less then …… meters. (1500,2500,3500)

28. SIGMET for volcanic ash can have validity up to ------ hours whereas for mountain wave turbulence the same can be issued for ---- hours.

29. SIGMET shall be issued for tropical cyclone upto _____ prior to the commencement of validity.

30. Surface Wind Direction of 230 degrees and speed 100 knots will be reported in a TAF as_____.

31. Surface wind shall be measured in an airport at a height of _____.

32. TAF issued in India for international flights has a validity of ____ hours.

33. TAFs valid for ……..hrs for domestic flights. (9, 12, 15)

34. Temperature _____ freezing level pose the problem of_____ ice.

35. The ARFOR/ Local forecast is issued for an aerodrome and ……NM around.

36. The Asia Pacific regional HQ of ICAO is located at ……..

37. The average wind of …..….Minutes is to be reported in METAR.

38. The forecast of surface pressure is included in.....

39. The international TAFs are issued for the .....hours validity period.

40. The number of change & probability groups shall not normally exceed .....groups.

41. The strong _____ are often associated with gust front from _____.

42. The temperature forecast in take-off forecast is considered correct if the actual value is within _____ of the forecasted value.

43. The turbulence produced by large multi-engine aircraft over narrow area to its rear is known as .....

44. Validity of National TAF is _____ hours.

45. Validity period of trend forecast is ---------(2 hours, 4 hours , 6 hours)

46. VOLMET broadcast is the plain language information about current weather information of selected aerodromes with 9 hourly TAF and SIGMET. This information is broadcasted in India from -------- and ---------- MWOs.

47. WAF Global upper-air wind/temperature and humidity forecast data transmitted in thinned

48. When descending into _____ wind speed the aircraft overshoots.

49. When pilot sets the altimeter in flight with respect to -------- then the altimeter reads the altitude of the aircraft from the mean sea level whereas if altimeter setting is done by ----- then the altimeter will read zero after landing the airfield.

Q. 2. State True or False with proper justifications:

1. 'CAVOK' just means weather is favourable for safe flight operations.
2. Sigmet is issued by MWO for their respective AMS station.
3. Aerodrome warning is issued for cyclone.
4. A lightning was observed by an aeronautical observer on duty and he reported thunderstorm at the aerodrome, however no thunder heard and no precipitation was

observed at the aerodrome. Do you think the observer's reporting is correct? State the reason?

5. Aerodrome operating minima (AOM) are criteria used by pilots to determine whether they may land or take off from any runway at night or in IMC (Instrument Meteorological Conditions).
6. An Altimeter of an aircraft on touching the ground reads aerodrome elevation then its subscale is set to be at QFE.
7. An expected occurrence of surface wind speed of 100kts or more shall not be included in TAF.
8. At a particular airport there were two runway visual range values available representing the two touchdown zones of two runways. The observer at that station reported only one value in the METAR. Do you think the reporting is correct? State the reason.
9. Both QNH and QFF has same value always.
10. CAVOK just means weather is favorable for safe flight operations.
11. Climatologically, frequency of dust storm/sand storm is maximum over Assam.
12. Data for the low level SIGWX chart (SWL) is provided by WAFC.
13. Delhi, Kolkata and Mumbai are VOLMET broadcast centres in India.
14. Dense Fog in an Aerodrome is one of the conditions for issuing SIGMET warning.
15. For occurrence of Turbulence, presence of convective cloud is mandatory.
16. Head wind is safer for both landing and takeoff for an Aircraft.
17. In a particular METAR it is seen in the place of visibility group "1400SW 6000N". Is it a correct reporting? State the reason.
18. Local/Area forecast has a usual validity of 6 hrs and covers 25 NM around the airport concerned.
19. Local/Area forecast is issued by MWO only and it has a usual validity of 9 hrs and covers 25 NM around the airport concerned.
20. Prevailing visibility is the greatest visibility equalled or exceeded throughout at least three-forth (3/4) of the horizon circle, which need not necessarily be continuous.

21. TAF is required for pre-flight planning & in-flight re-planning by operators & pilots.
22. The biggest threat for air navigation due to weather can be attributed to wind shear.
23. Head wind is safer for both landing and takeoff for an aircraft.
24. The biggest threat for air navigation due to weather can be attributed to wind shear.
25. Head wind is safer for both landing and takeoff for an aircraft.
26. The change group "PROB" shall be used in TAF when expected chance of occurrence of phenomena is more than 50 %.
27. The diameter and the life time of a typical microburst are in the order of 4 km and less than 5 minutes.
28. The engine efficiency of an aircraft is greater with lower outside temperature.
29. The value of QNH and QFF for a particular aerodrome is always the same.
30. The value of wind direction and speed reported in METAR and MET REPORT at the same time is different.
31. There may be a difference between the visibility reported by the Tower Met Officer and the visibility encountered by the pilot.
32. Value of wind direction and speed reported in METAR and MET REPORT at same time may
33. Value of wind direction and speed reported in METAR and MET REPORT at same time may be different.
34. What is full form of ICAO? ICAO is responsible for civil aviation regulations.

Q 3. Answer the <u>question on TAF</u> and <u>any one</u> from remaining of the following :

i) What is a TAFOR? Rewrite abbreviated form of following TAFOR as per the template after correcting its mistakes wherever necessary:

TAFOR VIDP 252100Z 2600/2609 24010KT 0100 FU SCT100 BCMG 2604/2606 1500 SCT020 BRN090 TEMPO 2606/2609 2000 +TSRA SCT020CB 0VCO80 =

Q.4 Write short note on the following

1. What is SIGMET? Write list of weather Parameters for which SIGMET is required to be issued.
2. Describe the procedure to be followed in case of accident of aircraft.
3. Write the criteria for issuing Special Report.
4. One Okta Cumulonimbus (CB) Cloud
5. Write note on Sigmet.
6. What is Trend forecast?
7. What is importance of weather elements on aircraft operation?
8. What are duties of Tower met officer?
9. What are the weather aviation hazards and its impact on aircraft?
10. Write note on On line briefing service.
11. How many type of SIGMETs are issued by MWO?
12. What is TAF and what is its validity for domestic and international flights
13. Explain Importance of Aerodrome warning
14. What are duties of Tower met officer?
15. What is Met briefing? What information is supplied in Met briefing to operator?
16. Write the criteria for issuing ADDITIONAL REPORTS on visibility and Cloud and criteria for CAVOK.
17. Aerodrome warning.
18. Aircraft flying in the area of the Jetstream can become hazardous due to meteorological phenomena. What is the phenomenon called and explain the reason.
19. Aircrafts accidents and incidents reporting procedure.
20. An outside air temperature of -45°C is measured while cruising at height 30000 feet. What is the temperature deviation from the ISA at this level? What appropriate hPa level correspond with this height?
21. Aviation hazards affecting flying safety.
22. Write the criteria for issuing trend forecast for Wind, visibility and weather.
23. Base of the Cloud 3000 feet, Top 36000 feet

24. Briefing and documentation procedure. List the briefing material to be provided for a flight on route Delhi – London at 390FL, expected time of departure 2055UTC / 7 March 2016 with an endurance of 14 hrs.
25. Briefing and Documentation.
26. Briefly describe the meteorological elements for which Take-Off forecast is issued.
27. Briefly explain the time of issue and validity period of Local/Area forecasts issued by an AMO with ATC watch hours from 0230 UTC to 1500 UTC.
28. Can it be possible for an airport the pressure values of QFE, QNH and QFF are same. If yes (or no) give the reason.
29. Criteria related to wind and visibility for including change group in TAF.
30. Describe ICAO international standard atmosphere.
31. Describe the different tools utilised for issuance of TAF.
32. Discuss on all criteria for issuing Special Report.
33. Discuss role of wind and temperature in the aircraft operation.
34. Discuss the contents of Local/Area Forecast.
35. Effect of Cumulonimbus (CB) cloud and its associated weather phenomena on Aviation.
36. Effect of meteorological parameters on aircraft operation.
37. Encode the following information in ROFOR code.
38. 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?
39. Flight documentation for flight operating at FL340 from VABB to VECC
40. Freezing level 13000 feet.
41. Define CAVOK and NSC conditions for reporting in METAR.
42. ICAO standard atmosphere and types of altimeter settings
43. What are the different formats of route forecast? Write the general rules for preparation of T-3 form.
44. Discuss briefly the meaning of trend forecast appended in METAR with suitable example.
45. Name 3 weather elements for which additional METAR/SPECIAL is issued.

46. In SIGWX chart, ISOL term is used to describe the Cumulonimbus cloud. What does it mean?
47. International standard atmosphere.
48. Local/Area Forecast & Take-off forecast.
49. Mountain wave hazard.
50. Online aviation Met. Briefing system.
51. Organizational set up for Aviation Meteorological Services in India.
52. Procedure for use of change group in Trend Forecast.
53. Refer to the following TAF extract: BECMG DD18/DD21 2000 BR BKN004 BECMG DD21/DD24 0500 FG. Explain the term BECMG and what is the visibility forecast for 2400 UTC?"
54. ROBEX scheme
55. TAF: Purpose, Schedule and Filing Time.
56. TAF: Types and purpose, Schedule and Filing Time.
57. Take-off forecast.
58. Turbulence in the atmosphere
59. Utility of NWP model Meteogram in Aviation forecast
60. VOLMET Broadcast
61. Weather elements for aerodrome warning.
62. What is prevailing visibility?
63. What is Trend forecast?
64. World Area Forecast Centre.
65. World Area Forecast Centres and the products
66. World Area Forecast System.
67. Write an essay on domestic and international SIGWX charts highlighting their contents, source data, preparation and utility.
68. Write the criteria for issuing ADDITIONAL REPORTS on visibility and Cloud and criteria for CAVOK.
69. Write the criteria for issuing Special Report.
70. Write the criteria used for wind, visibility and weather for the inclusion of change groups in TAF.