

**AVIATION WEATHER OBSERVER  
EXAM #4**

1. In a METAR report, a dry-bulb temperature of 25.5 degrees Celsius below zero is reported as:
  - a. 76
  - b. 76
  - c. M25
  - d. M26
  
2. The altimeter setting is one of the most important elements in an observation. The observer estimates the altimeter as 29.926. What is the correct entry in Column 13 (Altimeter Setting)?
  - a. 29.93
  - b. 2992
  - c. 9926
  - d. omitted
  
3. When the wet bulb temperature is at or slightly below freezing, freezing may be induced by:
  - a. Touching the wet bulb with snow
  - b. Blowing on the wet bulb
  - c. Ventilating the wet bulb
  - d. Remoistening the wet bulb
  
4. The temperature at which a parcel of air would become saturated (with respect to water), if cooled at a constant pressure without the addition or removal of water vapor, is known as the:
  - a. Wet bulb temperature
  - b. Relative humidity
  - c. Dewpoint
  - d. Saturation temperature

5. A temperature is  $\frac{1}{2}$  degree Celsius below zero is coded as:
- a. M00
  - b. 00
  - c. M01
  - d. -01
6. Temperature is reported in column 11 (Temperature) to the nearest \_\_\_\_\_ degree \_\_\_\_\_.
- a. whole, Celsius
  - b. tenth, Fahrenheit
  - c. whole, Fahrenheit
  - d. tenth, Celsius
7. When using a psychrometer, when is the official dry-bulb temperature determined?
- a. after several wet-bulb readings
  - b. before the instrument is ventilated
  - c. at the time of the highest wet-bulb reading
  - d. at the time of the lowest wet bulb reading
8. The wet-bulb is covered with ice and reads the same as the dry-bulb. Fog is present.
- a. The dew-point is the same as the wet-bulb
  - b. The dew-point is lower than the wet-bulb
  - c. The dew-point is higher than the wet-bulb
  - d. The dew-point is missing
9. A temperature of 15.5 degrees Celsius and a dew-point of 15.5 degrees Celsius would be encoded:
- a. 15/15
  - b. 16/15
  - c. 15/16
  - d. 16/16
10. The temperature is 10.5 degrees Celsius but the dewpoint is missing. This is encoded:
- a. 10/
  - b. 11/
  - c. 10/--
  - d. 11/M

11. Which of the following does not meet SPECI criteria?

- a. visibility decreases from 3 to 2 miles
- b. hail changes intensity
- c. a cloud layer is observed at 800 feet and no clouds were observed below 1,000 feet in the previous observation
- d. a helicopter accident

12. In a SPECI report, the time of the date/time group will be:

- a. the time of the last METAR report
- b. the time the pressure was evaluated
- c. when the criteria for the SPECI is met or observed
- d. the time the last element was observed or evaluated

13. Which of the following requires a SPECI?

- a. a tornado is reported by the police to have occurred 3 hours ago
- b. visibility decreases to 3 miles
- c. volcanic eruption
- d. the altimeter setting rises at a rate of 0.02 inch per hour

14. A SPECI observation is required when you observe:

- a. wind gust
- b. wind shift
- c. variable wind condition
- d. peak wind of 50 knots or more

15. A SPECI observation will be required whenever:

- a. light rain showers changes to moderate rain
- b. heavy rain changes to light rain
- c. continuous snow changes to snow showers
- d. rain and ice pellets mixed changes to rain

16. Which of the following precipitation events require a SPECI?

- a. small hail ends
- b. ice pellets begin
- c. freezing rain changes intensity
- d. all of the above

17. Which of the following does not require the issuance of a SPECI?

- a. light snow begins
- b. light freezing drizzle ends
- c. small hail ends
- d. a squall is observed

18. The sky condition in the previous observation was SCT017. A SPECI is required when this condition changes to:

- a. BKN030
- b. FEW009
- c. SKC
- d. SCT010

19. A SPECI is not required when:

- a. a thunderstorm ends
- b. freezing drizzle changes intensity
- c. a tornado disappears from sight
- d. peak wind of 45 knots is observed

20. A SPECI is required when:

- a. A scattered layer of clouds at 500 feet dissipates
- b. BKN009 becomes OVC009
- c. BKN0290 decreases to OVC015
- d. BKN030 becomes BKN028

**AVIATION WEATHER OBSERVER  
EXAM #2**

1. \_\_\_\_\_ visibility is considered representative of visibility conditions at the station.
  - a. surface
  - b. prevailing
  - c. tower
  - d. sector
  
2. The visibility value at the usual point of observation is 4 ½ miles. What is the prevailing visibility?
  - a. 4
  - b. 4 ½V
  - c. 4 ½
  - d. 5
  
3. Prevailing visibility is considered variable when , during the period of observation, it rapidly increases and decreases by:
  - a. one or more reportable values and the prevailing visibility is less than 7 SM
  - b. one or more reportable values and the prevailing visibility is less than 3 SM
  - c. ½ mile or more and the prevailing visibility is less than 7 SM
  - d. ½ mile or more and the prevailing visibility is less than 3 SM
  
4. Visibility is reported to the nearest mile in the range of:
  - a. 1 to 3 SM
  - b. 3 to 15 SM
  - c. 3 to 25 SM
  - d. above 15 SM
  
5. The following visibility values were observed: N – 3, NE – 2 ½, E – 1, SE – ¾, S – 2, SW – 3 ½, W – 4, NW 2 ¾. What is the prevailing visibility?
  - a. 3 ½
  - b. 3
  - c. 2 ¾
  - d. 2 ½

6. When visibility rapidly increases and decreases by one or more reportable values, the reported prevailing visibility is:
- a. the average of the lowest observed values
  - b. the average of all observed values
  - c. the highest observed value
  - d. the lowest observed value
7. In determining the prevailing visibility, how many sectors may the horizon be divided into?
- a. 8
  - b. 6
  - c. 4
  - d. 2
8. What is the prevailing visibility if conditions are uniform and the visibility marker at 3 ½ miles can barely be seen and identified?
- a. 3 SM
  - b. 3 ¼ SM
  - c. 3 ½ SM
  - d. 4 SM
9. If the prevailing visibility is exactly halfway between reportable values, the observer shall select:
- a. the higher value only if the preceding digit is odd
  - b. the lower value
  - c. the higher value
  - d. the even numbered value
10. Visibility is defined as the \_\_\_\_\_ distance at which selected objects can be seen and identified.
- a. least
  - b. average
  - c. greatest
  - d. mean

**11. Sector visibility must be reported when it differs from the prevailing visibility and:**

- a. is less than the prevailing visibility**
- b. is more than the prevailing visibility**
- c. prevailing visibility is more than 3 SM**
- d. is less than 3 SM**

**12. Suitable nighttime visibility markers are:**

- a. airway beacons**
- b. high intensity focused lights**
- c. unfocused lights of moderate intensity**
- d. focused lights of moderate intensity**

**13. Which of the following is the correct definition of prevailing visibility?**

- a. The lowest distance equaled or exceeded throughout more than half of the horizon circle**
- b. The greatest distance exceeded throughout at least half of the horizon circle**
- c. The lowest visibility exceeded throughout at least half of the horizon circle**
- d. The greatest visibility equaled or exceeded throughout at least half of the horizon circle**

**14. Which of the following contains a visibility value that is not a reportable value?**

- a.  $1 \frac{3}{8}$ ,  $2 \frac{3}{4}$ ,  $\frac{5}{16}$ , 13**
- b.  $1 \frac{7}{8}$ ,  $2 \frac{1}{2}$ , 9, 17**
- c. 11, 25, 35, 55**
- d.  $\frac{1}{4}$ ,  $\frac{5}{8}$ ,  $1 \frac{5}{8}$ ,  $\frac{3}{16}$**

**15. The visibility marker at 28 miles can barely be seen and identified. The reported shall be:**

- a. 25**
- b. 28**
- c. 30**
- d. 20**



**AVIATION WEATHER OBSERVER  
EXAM #2 - VISIBILITY**

1. Visibility is reported to the nearest mile when it is observed to be in the range of \_\_\_\_\_ miles.
- a. 1 to 3
  - b. 3 to 15
  - c. 3 to 25
  - d. 15 to 25
2. Which of the following would not be entered as a visibility value on form MF1M-10C?
- a. 2 3/4
  - b. 0
  - c. 7/16
  - d. 1 7/8
3. If the following visibility values were observed: N-6, NE-2/12, E-1, SE-3/4, S-5, SW-3 1/2, W-4, NW 2 3/4, what would the prevailing visibility be?
- a. 3 1/2
  - b. 3
  - c. 2 3/4
  - d. 2 1/2
4. When the visibility rapidly increases and decreases by one or more reportable values, the reported prevailing visibility is the:
- a. average of all observed values
  - b. average of the lowest observed values
  - c. highest observed value
  - d. lowest observed value

**5. In determining the prevailing visibility, how many sectors can the horizon be divided into?**

**a. 8**

**c. 4**

**b. 6**

**d. 2**

**6. To report variable visibility, the average prevailing visibility must be less than 3 miles and fluctuating (increasing and decreasing) by at least:**

**a. ½ mile or more**

**b. 1 mile or more**

**c. one or more reportable values within the past 15 minutes**

**d. one or more reportable values within the past hour**

**7. Sector visibility must be reported in remarks when it differs from the prevailing visibility and:**

**a. the prevailing visibility is more than 3 miles**

**b. is more than the prevailing visibility**

**c. is less than the prevailing visibility**

**d. is less than 3 miles**

**8. What is the definition of prevailing visibility?**

**a. the lowest visibility value equaled or exceeded throughout half or more of the horizon circle which, need not be continuous**

**b. the greatest visibility value exceeded throughout at least half of the horizon circle which, need not be continuous**

**c. the lowest visibility value exceeded throughout half or more of the horizon circle which, need not be continuous**

**d. the greatest visibility value equaled or exceeded throughout at least half of the horizon circle, which need not be continuous**

9. Suitable nighttime visibility markers are:

- a. airway beacons
- b. high intensity focused lights
- c. unfocused lights of moderate intensity
- d. focused lights of moderate intensity

10. What is the prevailing visibility if conditions are uniform and the marker at  $3\frac{1}{2}$  miles can barely be seen and identified?

- a. 3
- b.  $3\frac{1}{4}$
- c.  $3\frac{1}{2}$
- d. 4

11. The farthest visibility marker is  $5\frac{1}{2}$  miles but from the clarity of the atmosphere, you estimate that the visibility is 25 miles. The reported prevailing visibility is:

- a. 25
- b. 5
- c. 6
- d.  $5\frac{1}{2}$

12. Which of the following groups contain a visibility value that is not a reportable value?

- a.  $2\frac{3}{4}$ , 11, 30,  $\frac{5}{16}$
- b. 13,  $\frac{5}{16}$ , 9,  $1\frac{1}{8}$
- c. 0,  $1\frac{7}{8}$ , 14, 35
- d. 25, 18,  $\frac{1}{4}$ ,  $2\frac{1}{4}$

13. Visibility is reported in increments of  $\frac{1}{8}$  up to:

- a. 1
- b. 2
- c. 15
- d. 3

14. The following visibility values were observed: N-2, E- $1\frac{7}{8}$ , S- $2\frac{1}{8}$ , W- $3\frac{1}{2}$ . What is the prevailing visibility?

- a.  $1\frac{7}{8}$
- b. 2
- c. 3
- d.  $2\frac{1}{8}$

**15. Visibility is defined as:**

- a. the greatest distance at which selected objects can be seen and identified**
- b. the lowest distance that selected objects can be seen and identified**
- c. the average distance at which selected objects can be seen and identified**
- d. the average of all visibility markers observed**

**AVIATION WEATHER OBSERVER  
EXAM #5**

1. **Blowing dust becomes a dust storm when:**
  - a. **the visibility is reduced to 5/8 SM**
  - b. **the visibility is reduced to less than 5/8 SM**
  - c. **the visibility is reduced to less than 7 SM**
  - d. **the visibility is reduced to less than 3 SM**
  
2. **FRQLTG indicates that \_\_\_\_\_ lightning strikes per minute were observed.**
  - a. **less than 1**
  - b. **more than 6**
  - c. **1 - 6**
  - d. **2 - 6**
  
3. **Any form of precipitation that reaches the ground in solid form is considered:**
  - a. **Hail**
  - b. **Freezing precipitation**
  - c. **Ice pellets**
  - d. **Frozen precipitation**
  
4. **Which elements on a surface aviation weather observation may not be estimated?**
  - a. **Temperature, dewpoint, and visibility**
  - b. **Cloud height, temperature, and dewpoint**
  - c. **Temperature, dewpoint, and altimeter setting**
  - d. **Altimeter setting, visibility, and wind direction**
  
5. **Which of the following will appear first in column 14 (Remarks)?**
  - a. **TS**
  - b. **Lightning**
  - c. **Virga**
  - d. **Cumulonimbus clouds**

**6. Light snow and blowing snow are occurring at the same time. Due to reduced visibility, the observer can no longer discern whether the light snow is still present. The observer shall:**

- a. continue reporting light snow and blowing snow**
- b. discontinue reporting light snow and just record blowing snow**
- c. discontinue reporting blowing snow and just record light snow**
- d. report the condition as a snow storm**

**7. The visibility is 2 ½ SM. A SPECI shall be recorded when the visibility increases to:**

- a. 3**
- b. 2 ¾**
- c. 7**
- d. 4**

**8. Which types of precipitation may not be considered as “showery”?**

- a. Hail and ice crystals**
- b. Drizzle and ice crystals**
- c. Drizzle and hail**
- d. Hail and ice pellets**

**9. VCSH is recorded in column 9 (Present Weather). Which of the following is a correct entry in column 14 (Remarks)?**

- a. RA NW**
- b. SHRA NW**
- c. VCSH NW**
- d. NW VCSH**

**10. A ceiling height of 1170 feet shall be recorded:**

- a. 012**
- b. 1170**
- c. 011**
- d. 010**

11. A SPECI is not required when:

- a. A layer of clouds covering  $\frac{3}{8}$  of the sky forms at 800 ft when no layer was previously reported below 1,000 ft.
- b. OVC009 becomes OVC010
- c. BKN002 becomes BKN006
- d. SCT008 becomes SKC

12. A layer of smoke covering less than  $\frac{1}{8}$  of the sky is present at 900 feet. The correct entries for columns 10 (Sky Condition) and column 14 (Remarks) are:

- a. SKC with no remark
- b. FEW009 with the remark: FU FEW009
- c. FEW009 with no remark
- d. SKC with the remark: FU NW

13. When more than one obscuration is present enter the elements observed in order of:

- a. intensity
- b. only one element may be reported
- c. increasing dominance
- d. decreasing dominance

14. A single element SPECI is *not* authorized for:

- a. Volcanic eruptions
- b. Funnel clouds
- c. Tornadoes
- d. Dust storms/Sand storms

15. Which of the following is a correct remark for peak wind?

- a. PKWND 35025/15
- b. PKWND 35028/15
- c. PEAKWND 35030/15
- d. PKWIND 35025/15

**AVIATION WEATHER OBSERVER  
EXAM # 4 – CEILING/SKY CONDITION**

1. When a cloud layer is below station elevation, record it as:
  - a. ///
  - b. this condition is not recorded
  - c. <
  - d. >
  
2. If an observing station is so located that an unobstructed view of the sky cannot be obtained because of manmade structures, then for purposes of determining layer amount, the whole sky will be considered as:
  - a. the whole sky including the obstructed portion
  - b. the portion of the sky visible to the observer
  - c. a mean area considered the percentage of sky hidden
  - d. a mean area considered the percentage of the sky visible to the observer
  
3. When a ceiling height is variable, the height in column 10 (Sky Condition) is the \_\_\_\_\_ of all observed values.
  - a. minimum
  - b. maximum
  - c. average
  - d. sum
  
4. When the base of the clouds is 5,000 feet or less above station elevation, the heights are reported in increments of \_\_\_\_\_ foot/feet.
  - a. 500
  - b. 50
  - c. 100
  - d. 1,000
  
5. Which of the following is a correct entry in column 14 (Remarks)?
  - a. FG OVC000
  - b. FU VV005
  - c. TCU N MOV E
  - d. ACC DSNT NW



6. What is the maximum number of cloud layers that can be reported?
- a. 3
  - b. 4
  - c. 5
  - d. 6
7. Sky cover is determined to the nearest:
- a. 1/10
  - b. 1/8
  - c. 1/6
  - d. 1/4
8. The height of an overcast layer of clouds cannot be determined with a:
- a. pilot report
  - b. convective cloud height diagram
  - c. ceilometer
  - d. balloon
9. When using a balloon to determine the height of a cloud layer, use the elapsed time between the release of the balloon and the time the balloon:
- a. begins to fade
  - b. completely disappears
  - c. is midway between the time it begins to fade and completely disappears
  - d. none of the above
10. When using a balloon to determine the vertical visibility into an obscure sky, use the elapsed time between the release of the balloon and the time the balloon:
- a. begins to fade
  - b. completely disappears
  - c. is midway between the time it begins to fade and the time it completely disappears
  - d. balloons are not used to measure indefinite ceilings

11. At an estimated 800 feet, smoke covers 8/8 of the sky but hides none of it, and north of the station 1/8 of cumulus is present at an estimated 1,200 feet. This is coded:

- a. OVC008 OVC012
- b. OVC008 and in remarks, FU OVC008
- c. OVC008 and in remarks, CU N
- d. SKC and in remarks, CU N

12. Which of the following is a correct entry in column 10 (Sky Condition)?

- a. SKC FEW001
- b. FEW001CU SCT070ACC
- c. FEW001 VV002
- d. BKN030CB BKN060

13. To be encoded as sky cover, smoke aloft must be present in any amount from \_\_\_\_\_ to 8/8.

- a. a trace
- b. 1/10
- c. 1/16
- d. 1/8

14. The sky condition "scattered" represents a summation amount of:

- a. 1/8 to 2/8
- b. 2/8 to 3/8
- c. 1/8 to 4/8
- d. 3/8 to 4/8

15. If, due to broken equipment at the time of observation, the ceiling cannot be measured, the entry in column 10 (Sky Condition) is:

- a. omitted
- b. ///
- c. estimated
- d. reported missing

16. A ceiling is measured at 1,600 feet broken, but is variable between 1,300 and 1,900 feet. This is reported as:

- a. BKN016 and in remarks, CIG 013V019
- b. BKN016
- c. BKN016 and in remarks, CIG VRB 013-019
- d. BKN016V

17. Which of the following is not a ceiling?

- a. a layer of clouds above a layer of fog that hides more than half of the sky
- b. the vertical visibility into fog that hides the entire sky
- c. a layer of mist that hides 6/8 of the sky
- d. broken layer of clouds

18. The vertical visibility into fog that hides the entire sky is measured at 600 feet. This is encoded:

- a. OVC006FT
- b. VV006
- c. VV006FT
- d. 006OVC

19. Above a layer of mist that hides 4/8 of the sky, a trace, less than 1/8, of altocumulus castellanus is present at 15,000 feet northwest of the station. How this condition be coded?

- a. SCT000 SCT150 and in remarks, BR SCT000 ACC NW
- b. SCT000 BKN150 and in remarks, BR BKN150 ACC W-N
- c. FEW000 SCT150 and in remarks, BR FEW000 ACCAS W-N
- d. SCT000 SCT150 and in remarks, ACC NW BR SCT000

**20. The six significant cloud types that must be reported when observed are:**

- a. Cumulonimbus mammatus, altocumulus, cumulonimbus, rotor clouds, towering cumulus, standing lenticular**
- b. Tornados, cumulonimbus mammatus, cumulonimbus, standing lenticular, towering cumulus, altocumulus castellanus**
- c. Cumulonimbus, cumulonimbus mammatus, standing lenticular, towering cumulus, rotor clouds, altocumulus castellanus**
- d. Cumulonimbus, cumulonimbus mammatus, standing lenticular, rotor clouds, towering cumulus, funnel clouds**

**AVIATION WEATHER OBSERVER  
EXAM #3 – PRESENT WEATHER**

1. **Horizontal visibility would not be restricted by:**
  - a. **BLSN**
  - b. **BLDU**
  - c. **FZFG**
  - d. **DRSN**
  
2. **Sand raised by the wind to less than 6 feet is encoded:**
  - a. **BLSA**
  - b. **MISA**
  - c. **SHSA**
  - d. **DRSA**
  
3. **Squalls are reported in column 9 (Present Weather) only if they have been observed in the past \_\_\_\_\_ minutes.**
  - a. **10**
  - b. **15**
  - c. **20**
  - d. **60**
  
4. **With which of the following is a minus sign (-) used to indicate light intensity?**
  - a. **IC**
  - b. **TS**
  - c. **SN**
  - d. **GR**
  
5. **The intensity of rainfall is determined by:**
  - a. **rate of fall**
  - b. **size of the droplets**
  - c. **total accumulation of water**
  - d. **degree to which it effects visibility**
  
6. **Which of the following may be classified as having a heavy intensity?**
  - a. **large hail**
  - b. **blowing spray**
  - c. **thunderstorm**
  - d. **duststorm**

7. Two or more obscurations are reported in order of:
- a. decreasing dominance
  - b. increasing dominance
  - c. time of beginning
  - d. expected duration
8. Volcanic ash is reported:
- a. only during daylight hours
  - b. whenever it occurs
  - c. only if accompanied by fog or mist
  - d. when the visibility is less than 7 miles
9. The observer reports IC in column 9 . Given this report, which of the following is correct?
- a. the visibility is less than 7 miles
  - b. the sky may be clear
  - c. the air is unstable with rapidly changing weather conditions
  - d. the observer has made an error in column 9
10. Blowing snow (BLSN) is reported when the wind raises the snow particles from the ground and:
- a. reduces the prevailing visibility to 6 miles or less
  - b. raises the snow to less than 20 feet
  - c. reduces the prevailing visibility to less than 10 miles
  - d. raises the snow to less than 10 feet
11. Fog covers a substantial part of the station. Which of the following is a correct entry in column 9?
- a. BR
  - b. PRFG
  - c. MIFG
  - d. BCFG

12. Proximity qualifier(s) is/are:

- a. light, moderate, heavy
- b. vicinity
- c. weak, strong, violent
- d. light, moderate, strong

13. By definition, "in the vicinity" of the station is how far from the observation site for precipitation?

- a. within 5 statute miles
- b. within 3 statute miles
- c. within 10 statute miles
- d. within any distance that precipitation can be seen that is not occurring at the station

14. Thunder is heard 5 minutes after the hour, again at 23 minutes after the hour and again at 34 minutes past the hour. How many SPECI observations are required?

- a. 1
- b. 6
- c. 3
- d. 4

15. The intensity modifiers for snow and drizzle are:

- a. light (-), moderate (), severe (+)
- b. light (-), moderate (), heavy (+)
- c. light (-), medium (), severe (+)
- d. light (-), medium (), heavy (+)

16. The essential difference between gusts and squalls is:

- a. the duration of the increased wind speed
- b. the difference between peaks and lulls
- c. the maximum instantaneous speed reached during the observation period
- d. squalls are always associated with a wind shift

17. Which of the following is a correct entry in column 9?

a. PRFG

c. PRBR

b. MIBR

d. PCBR

18. When moderate snow is occurring along with fog, which of the following visibility values cannot be entered in column 7 (Visibility)?

a.  $\frac{1}{2}$

c.  $\frac{3}{4}$

b.  $\frac{1}{4}$

d. 0

19. Which of the following cannot be reported with a thunderstorm?

a. IC

c. PL

b. GR

d. +RA

20. A severe duststorm is reported when the visibility reaches:

a.  $\frac{5}{8}$

c.  $\frac{5}{16}$

b. less than  $\frac{5}{16}$

d. less than  $\frac{5}{8}$

21. The visibility decreased from 1 mile to  $\frac{1}{2}$  mile in fog. At the same time, the temperature decreased from 1.5 degree Celsius to 0.0. What is the correct entry for this condition in column 9?

a. FZFG

c. FG

b. BR

d. FZBR

22. The visibility at the station reduces from 12 miles to 7 miles with mist, light snow and smoke. What is the minimum entry that should be made in column 9?

a. -SN

c. BR

b. -SN BR FU

d. BR -SN FU

23. A complex weather situation, represented by light rain showers (dominant), snow and a thunderstorm is present. Entries are made in the following order:

a. TS -RA -SN

c. -TSRASN

b. -TSSNRA

d. -TSSHRASN



24. Which of the following phenomena may be classified as heavy intensity?

- a. hail
- b. thunderstorm
- c. funnel cloud
- d. sandstorm

25. Moderate snow (SN) is reported when snow is occurring alone and the visibility is less than:

- a.  $\frac{5}{8}$  of a mile, but not less than  $\frac{5}{16}$  of a mile
- b.  $\frac{3}{4}$  of a mile, but not less than  $\frac{5}{16}$  of a mile
- c.  $\frac{5}{8}$  of a mile, but not less than  $\frac{1}{8}$  of a mile
- d. 1 mile, but not less than  $\frac{1}{2}$  mile

26. The descriptor showers (SH) is never used with:

- a. thunderstorms
- b. ice pellets
- c. hail
- d. snow pellets

27. The intensity of snow occurring alone is determined according to:

- a. the degree that it effects visibility
- b. the rate of accumulation
- c. whether it is showery or intermittent
- d. the dewpoint temperature

28. When more than one type of weather are occurring at the same time, present weather shall be reported in the following order:

- a. tornadic activity, obscurations, precipitation
- b. tornadic activity, thunderstorms, precipitation, obscurations, other weather
- c. thunderstorms, precipitation, other weather, obscurations
- d. tornadic activity, precipitation, thunderstorms, other weather

29. A large area of fog is observed 6 miles NE-S of the station. What is reported in column 9?

- a. nothing
- b. VCFG
- c. PRFG
- d. BCFG

30. The qualifier vicinity (VC) is not used with:

- a. HZ
- b. FG
- c. BLSA
- d. PO

31. Heavy rain (+RA) is reported when the rate of fall is:

- a. more than 0.01 inch to 0.03 inch per 6 minutes
- b. more than .11 inch to 0.30 inch per hour
- c. more than 0.30 inch per hour
- d. more than 0.20 inch per hour

32. When reporting lightning in remarks, which of the following is not required?

- a. Frequency
- b. Type
- c. Location
- d. Beginning/ending times

33. When drizzle is occurring along with mist, the intensity of the drizzle is determined by:

- a. rate of fall
- b. measurement
- c. rate of fall and visibility
- d. visibility

34. Patches of fog randomly cover the station, but the visibility is 7 miles. This condition is reported as:

- a. nothing
- b. BCFG
- c. BR
- d. VCFG

35. By definition, "in the vicinity" indicates that other phenomena (not precipitation) is \_\_\_\_\_ miles from the observation site.

- a. within 5
- b. between 5 and 10
- c. within 10
- d. between 3 and 10

36. Which of the following would be entered first in column 9 (Present Weather)?

- a. TS
- b. SQ
- c. +FC
- d. GR

37. Which of the following does not require a remark in column 14 (Remarks)?

- a. FC
- b. GS
- c. GR
- d. TS

38. Which of the following is a correct entry when a thunderstorm is occurring along with heavy rain showers, large hail and fog?

- a. +TSRAGR FG
- b. TS +SHRAGR FG
- c. +TSSHRA FG
- d. TSGR +SHRA FG

39. Which of the following may be used with the qualifier "VC"?

- a. HZ
- b. SN
- c. BR
- d. SH

40. Which of the following is not a correct lightning type?

- a. FRQ LTGIA
- b. FRQ LTGCCG
- c. FRQ LTGIC
- d. FRQ LTGCA

41. Which of the following is not a correct remark?

- a. GR ¾
- b. VCFG W
- c. TS NE MOV SE
- d. OCNL LTGCCCCG NE/1453

42. Precipitation which starts and stops at least one time within the hour is classified as:

- a. showery
- b. continuous
- c. frequent
- d. intermittent

43. Which of the following is the designator for blowing spray?

- a. BLPY
- b. DRSP
- c. BLSP
- d. BLBR

44. What are the three types of precipitation which have no intensity symbol?

- a. BLSN, GR, GS
- b. BR, FG, IC
- c. GR, GS, IC
- d. BR, GR, GS

45. Which of the following is the designator for shallow fog?

- a. MIFG
- b. PRFG
- c. SHFG
- d. BCFG

46. Fog is reported when the visibility decreases to:

- a. less than 5/8 SM
- b. less than ½ SM
- c. less than 5/16 SM
- d. 5/8 SM or less

47. What is the maximum number of groups that may be reported in column 9 (Present Weather)?

- a. 3
- b. 5
- c. 6
- d. 4

48. Light freezing drizzle is occurring along with mist. How is this condition recorded in column 9 (Present Weather)?

a. -FZDZBR

c. -FZDZ BR

b. -FRDZ BR

d. -FZDR BR

49. The visibility requirement for light ice pellets showers is:

a. less than 3 SM

c. 7 SM or less

b. more than 7 SM

d. 7 SM or more

50. The descriptor "SH" may be used with:

a. TS

c. DZ

b. GR

d. IC

**AVIATION WEATHER OBSERVER  
EXAM #1**

1. Wind shifts are normally associated with all of the following except:
  - a. wind gusts exceeding 25 knots
  - b. rapid drop in temperature
  - c. rapid drop in dewpoint
  - d. rapid rise in pressure
  
2. How would you report that an average wind speed of 25 knots was varying rapidly between 20 and 30 knots?
  - a. 25
  - b. 25G30
  - c. 25 and in remarks: WND 20V30
  - d. 20G30
  
3. The wind is from 360 degrees at 125 knots. What would be the correct entry in column 4 (Speed) of form MF1M-10C?
  - a. 25
  - b. 125
  - c. 36025
  - d. 36125
  
4. Wind direction and speed are averaged over a \_\_\_\_\_ minute period.
  - a. 1
  - b. 2
  - c. 5
  - d. 10
  
5. A variable wind direction and speed of 4 knots would be coded:
  - a. 00004KT
  - b. VRB04KT
  - c. 99904KT
  - d. /04KT

6. The wind at the station is out of the west at 12 knots. This is encoded for transmission as:

a. 09012KT

c. 27012KT

b. 9012KT

d. 2712KT

7. Surface wind direction is reported in column 3 in reference to:

a. true north and the nearest whole degree

b. true north and the nearest 10 degrees

c. magnetic north and the nearest 10 degrees

d. magnetic north and the nearest whole degree

8. Which of the following *does not* satisfy the criteria for a wind shift?

a. a change in wind direction of 45 degrees or more

b. the change occurs in less than 15 minutes

c. the wind speed is 10 knots or more throughout the shift

d. a change in the wind direction of 25 degrees or more

9. Gusts that are reported in column 5, must have been observed within \_\_\_\_\_ minutes of the actual time of the observation.

a. 10

c. 30

b. 15

d. 60

10. Calm wind is encoded in the body of the report as:

a. 00000KT

c. 0000KT

b. VRB00KT

d. no entry is made

11. The wind direction is from 240 degrees at 9 knots and the direction is varying from 210 to 260. How would this be formatted for transmission?

- a. 24009KT
- b. 24009 KT 210V260
- c. 24009KT 210V260KT
- d. VRB09KT

12. Which of the following can be used to estimate low level wind velocity?

- a. PIREP's
- b. cloud movement
- c. a non-moving weather vane
- d. none of the above

13. There is a wind shift at 30 minutes past the hour, accompanied by a cold front. Which of the following is a correct entry in column 14 (Remarks)?

- a. FROPA 30
- b. WSHFT 30
- c. WSHFT 30 FROPA
- d. COLD FRO 30

14. Carbon copies of form MF1M-10C are required to be kept on record for a period of:

- a. 30 days
- b. 45 days
- c. 90 days
- d. 60 days

15. The time of the observation, which is entered in column 2 is:

- a. UTC
- b. LST
- c. LTD
- d. GMT

16. In a SPECI report, the date/time group will be:

- a. the time of the last METAR report
- b. the time that the pressure was evaluated
- c. the time that the criteria for the SPECI was observed or evaluated
- d. the time that the last element was observed or evaluated



17. A wind shift is indicated by a change in \_\_\_\_\_.

- a. wind direction of 60 degrees or more that takes place in less than 15 minutes with sustained winds of 6 knots or more throughout the shift
- b. wind direction of 45 degrees or more that takes place in less than 10 minutes with sustained winds of 10 knots or more throughout the shift
- c. wind direction of 45 degrees or more in less than 15 minutes with sustained winds of 10 knots or more throughout the shift
- d. wind direction of 60 degrees or more that takes place in less than 15 minutes with sustained winds of 6 knots or more throughout the shift

18. In a METAR report, the date/time group will be:

- a. The time that the last element was observed or evaluated
- b. The time that the first element was observed or evaluated
- c. The time that the last outdoor element is evaluated
- d. The time that the temperature/dewpoint are evaluated

19. Elements on an observation shall have been observed:

- a. within 10 minutes on the actual time of the observation with the exception of gusts and squalls
- b. within 15 minutes of the actual time of the observation with the exception of gusts and squalls
- c. within 30 minutes of the actual time of the observation with the exception of gusts and squalls
- d. within 15 minutes of the actual time of the observation with the exception of the altimeter setting

**20. When conditions are relatively unchanging, the last element to be evaluated is:**

- a. the altimeter setting**
- b. the outdoor element that has the greatest rate of change**
- c. the wind direction and speed**
- d. the indoor element that has the greatest rate of change**

Weather Exam #2

1. Wind shifts are normally associated with some or all of the following phenomena except:
  - a. wind gusts exceeding 25 knots
  - b. rapid drop in dewpoint
  - c. rapid drop in temperature
  - d. rapid rise in pressure
  
2. A remark of FRQ LTGCGCC NW in column 14 would indicate that \_\_\_\_\_ flashes per minute were observed.
  - a. more than 10
  - b. 6 - 10
  - c. 1 -10
  - d. 1 -6
  
3. If the following visibility values were observed; N 3, NE 2 1/2, E 1, SE 3/4, S2, SW 3 1/2, W 4, NW 2 3/4, what would the prevailing visibility be?
  - a. 3 1/2
  - b. 3
  - c. 2 3/4
  - d. 2 1/2
  
4. Which of the following is not a critical visibility value?
  - a. 3 miles
  - b. 2 1/2 miles
  - c. 2 miles
  - d. 1 mile

5. Sector visibility must be reported whenever it differs from the prevailing visibility and:

- a. the prevailing visibility is more than 3 miles
- b. is more than the prevailing visibility
- c. is less than the prevailing visibility
- d. is less than 3 miles

6. In determining the prevailing visibility, how many sectors is the horizon divided into?

- a. 8
- b. 6
- c. 4
- d. 2

7. Which of the following is a correct entry in column 10 (Sky Condition)?

- a. SKC FEW001
- b. FEW001CU SCT070ACC
- c. FEW001 VV002
- d. BKN030CB BKN060

8. Which of the following is the correct definition of prevailing visibility?

- a. The least visibility equaled or exceeded throughout more than half of the horizon circle
- b. The greatest visibility exceeded throughout at least half of the horizon circle
- c. The least visibility exceeded throughout at least half or more of the horizon circle
- d. The greatest visibility equaled or exceeded throughout at least half of the horizon circle

9. Ice formed on exposed surfaces by freezing rain or freezing drizzle is known as:

- a. Glaze
- b. Frost
- c. Rime
- d. Ice Pellets

10. Which of the following is not a valid type of lightning entry in column 14 (Remarks)?

- a. LTGIA
- b. LTGIC
- c. LTGCC
- d. LTGCA

11. Which of the following is a correct entry in column 14 (Remarks)?

- a. FG OVC000
- b. FU VV005
- c. GS 1/2
- d. ACC DSNT NW

12. How would you report that an average wind speed of 25 knots was varying rapidly between 20 and 30 knots?

- a. 25
- b. 25 and the remark, WND 20V30
- c. 25G30
- d. 20G30

13. A light intensity symbol (-) is never used to report:

- a. Ice Crystals
- b. Ice Pellets
- c. Snow Showers
- d. Freezing Drizzle

14. The stations visibility is 1/2 mile. Which of the following would be a correct entry in column 10 (Sky Condition)?

- a. +SN
- b. +SN FG
- c. SN
- d. -SN

15. The prevailing visibility is reported as variable when it rapidly increases and decreases by 1/2 mile or more during the period of observation, and the prevailing visibility is less than 3 miles. The period of the observation is:

- a. since the last METAR
- b. during the past 10 minutes
- c. during the past 15 minutes
- d. during the past 30 minutes

16. The time of the observation, which is entered in column 2, is in:

- a. UTC
- b. LST
- c. LDT
- d. GMT

17. Gusts that are reported in column 5, were observed within \_\_\_\_\_ minutes of the actual time of the observation.

- a. 10
- b. 15
- c. 30
- d. 60

18. Precipitation is entered in column 9 (Present Weather), in which order?

- a. determined by the time the weather began
- b. determined by the rate of fall
- c. determined by dominance
- d. determined by the effect on visibility

19. A layer of clouds covers  $\frac{3}{8}$  of the sky and its base is estimated at 2,000 feet. This is coded as:

- a. FEW020
- b. SCT20
- c. SCT020
- d. 020SCT

20. Volcanic ash is reported:

- a. only during daylight hours
- b. whenever it occurs
- c. only if it is accompanied by fog or mist
- d. whenever visibilities are less than 7 miles

21. When is lightning reported in column 9 (Present Weather)?

- a. lightning is overhead
- b. lightning is observed and the wind gust exceeds 50 knots
- c. hailstone size exceeds 3/4 inch
- d. lightning is never reported in column 9

22. Suitable nighttime visibility markers are:

- a. airway beacons
- b. high intensity focused lights
- c. unfocused lights of moderate intensity
- d. focused lights of moderate intensity

23. When the ceiling height is variable, the height in column 10 (Sky Condition), is the \_\_\_\_\_ of all observed heights.

- a. lowest
- b. highest
- c. average
- d. sum

24. Precipitation is reported in column 9 (Present Weather) whenever:

- a. precipitation has ended in the past 15 minutes
- b. precipitation is occurring at the station at the time of the observation
- c. precipitation has occurred any time in the previous hour
- d. occasional precipitation is reported in column 14 (Remarks)

25. Report thunderstorms occurring at your station when \_\_\_\_\_ is/are observed within the past 15 minutes.

- a. very dark CB overhead and lightning in all quadrants
- b. heavy rain showers and 55 knot winds
- c. heavy rain showers and 1/2 inch rain
- d. 3/4 inch hail 20 minutes earlier, but not at the time of the observation

26. Proximity qualifier(s) is (are):

- a. light, moderate, heavy
- b. vicinity
- c. weak, strong, violent
- d. light, moderate, strong

27. Sand raised by the wind to less than 6 feet is coded as:

- a. BLSA
- b. MISA
- c. SHSA
- d. DRSA

28. Temperatures are entered in column 7, to the nearest \_\_\_\_\_ degree \_\_\_\_\_

- a. whole, Celsius
- b. tenth, Fahrenheit
- c. whole, Fahrenheit
- d. tenth, Celsius

29. Corrected (COR) reports are not transmitted if they:

- a. are more than 15 minutes old
- b. are superseded by a later report
- c. are recorded locally
- d. have only minor corrections

30. What remark is appended to the report to indicate the observation was not transmitted long line?

- a. SPECI
- b. LAST
- c. FIBI
- d. NOSPECI



31. Regardless of the delay, an observation containing which of the following shall be disseminated long-line, by any means possible?

- a. volcanic eruption
- b. tornado
- c. thunderstorm
- d. severe thunderstorm

32. Which of the following does not meet SPECI criteria?

- a. visibility decreases from 3 miles to 2 miles
- b. hail changes intensity
- c. a cloud layer is observed at 800 feet and no clouds were observed below 1,000 feet in the previous observation
- d. helicopter accident

33. Which of the following does not satisfy the criteria of a wind shift?

- a. a change in wind direction of 45 degrees or more
- b. the change occurs in less than 15 minutes
- c. wind speeds during the change are at least 10 knots
- d. a change in wind direction of 60 degrees or more

34. In a SPECI report, the time of the Date/Time group will be:

- a. the time of the last METAR report
- b. the time the pressure was evaluated
- c. when the criteria for the SPECI is met or observed
- d. the time the last element is evaluated

35. Which of the following wind parameters is not included in the body of the METAR/SPECI wind element?

- a. direction
- b. speed
- c. squalls
- d. variable

36. What is the reported prevailing visibility if conditions are uniform and the visibility marker at 3 1/2 miles can barely be seen and identified?

- a. 3 SM
- b. 3 1/4 SM
- c. 3 1/2 SM
- d. 4 SM

37. Fog that covers a substantial part of the station and the prevailing visibility is 7 miles would be coded in the present weather as:

- a. BR
- b. PRFG
- c. MIFG
- d. BCFG

38. The intensity of drizzle is determined according to the:

- a. temperature/dewpoint spread
- b. degree that it affects visibility
- c. rate of accumulation
- d. size of the drops

39. The altimeter setting is one of the most important elements of an observation. The observer estimates the altimeter as 29.999. What is the correct entry in column 13 (Altimeter Setting)?

- a. omitted
- b. 2999
- c. 3000
- d. 9999

40. The qualifier vicinity (VC) is not used with:

- a. HZ
- b. FG
- c. BLSA
- d. PO

41. Which of the following is not a reportable value of sky cover height?

- a. 1,100
- b. 4900
- c. 11,000
- d. all are reportable values

42. Using direct reading dials, wind speed and direction are averaged over a period of:

- a. 1/2 minute
- b. 1 minute
- c. 2 minutes
- d. 5 minutes

43. If due to broken equipment at the time of the observation, the ceiling cannot be measured, the entry in column 10 (Sky Condition), is:

- a. omitted
- b. ///
- c. estimated
- d. reported missing

44. When using a balloon to determine the vertical in an obscured sky, use the elapsed time between the release of the balloon, and the time the balloon:

- a. begins to fade
- b. completely disappears
- c. is midway between the time it begins to fade and the time it completely disappears
- d. balloons are not used in an indefinite ceiling

45. The time transmitted in an observation is the:

- a. Local Standard Time
- b. Coordinated Universal Time
- c. Daylight Savings Time
- d. Daylight Standard Time

46. By definition, "in the vicinity" of the station for precipitation means how far from the observation site?

- a. Within 5 statute miles
- b. Within 3 statute miles
- c. Within 10 statute miles
- d. Within any distance a weather element can be observed

47. Calm wind is coded in the body of the report as:

- a. 0000KT
- b. VRB00KT
- c. 0000KT
- d. blank (no entry for wind)

48. A temperature of 1/2 degree Celsius below zero would be coded in the body of the report as:

a. M00

c. M01

b. 00

d. -01

49. Fog is solely responsible for lowering the visibility to 5/8 of a statute mile. The present weather would be coded as:

a. FG

c. BCFG

b. MIFG

d. BR

50. Blowing dust is reducing the prevailing visibility to 5/8 of a statute mile. What would be recorded in column 9 (Present Weather)?

a. BLDU

c. DS

b. DU

d. +DS

**AVIATION WEATHER OBSERVER  
EXAM #7**

1. A SPECI observation is required when:
  - a. Freezing rain changes to light freezing rain
  - b. A scattered layer of clouds at 700 ft dissipates
  - c. Snow begins
  - d. Light drizzle begins
  
2. A SPECI is *not* required when the visibility changes from 1 to:
  - a. 2
  - b.  $\frac{3}{4}$
  - c.  $1\frac{1}{2}$
  - d. 0
  
3. The critical visibility values are:
  - a. 3, 2, 1, 0
  - b. 3, 2, 1,  $\frac{1}{2}$
  - c. 3, 2,  $1\frac{1}{2}$
  - d. 10, 3, 1,  $1\frac{1}{2}$
  
4. The critical ceiling values are:
  - a. 3,000, 1,500, 1,000, 500, 200
  - b. 3,000, 2,000, 1,000, 500, 200
  - c. 5,000, 3,000, 1,000, 500, 100
  - d. 3,000, 2,000, 1,000, 500, 200
  
5. A SPECI is *not* required for:
  - a. A helicopter accident
  - b. Ice pellet showers begin
  - c. freezing drizzle begins
  - d. Light drizzle begins
  
6. A single element SPECI is authorized for:
  - a. Heavy freezing rain
  - b. Well developed dust swirls
  - c. Tornadic activity
  - d. Frontal passage

7. A SPECI is *not* required for:

a. Wind shifts

c. Squalls

b. Thunderstorms

d. Peak winds of 50 knots

8. A SPECI is not required when:

a. GR begins

c. GR changes intensity

b. PL changes intensity

d. FZDZ ends

**AVIATION WEATHER OBSERVER  
EXAM #2**

Encode the following in the proper sequence:

1. Light snow showers, heavy rain \_\_\_\_\_
2. Fog and light freezing drizzle \_\_\_\_\_
3. Heavy rain showers and thunderstorm \_\_\_\_\_
4. Thunderstorm, light rain showers, tornado \_\_\_\_\_
5. Smoke, haze, mist, light drizzle \_\_\_\_\_
6. Fog, snow showers \_\_\_\_\_
7. Fog in vicinity, ice pellet showers \_\_\_\_\_
8. Haze, shallow fog \_\_\_\_\_
9. Funnel cloud, fog, heavy rain \_\_\_\_\_
10. Ice pellet showers, mist, light drizzle \_\_\_\_\_

11. Which types of precipitation have no intensity symbols?

- |               |               |
|---------------|---------------|
| a. PL, GR, DZ | c. GR, GS, PL |
| b. GR, GS, IC | d. GR, PE, IC |

12. Rain occurring 4 miles from the station, but not at the station shall be recorded:

- |         |           |
|---------|-----------|
| a. SHRA | c. VCSHRA |
| b. VCSH | d. RASH   |

13. Weather phenomena (other than precipitation) not occurring at the station, shall be recorded as "in the vicinity" when it occurs:
- a. between 5 – 10 statute miles from the station
  - b. within 10 statute miles of the station
  - c. between 10 – 20 statute miles from the station
  - d. between 5 – 10 nautical miles from the station
14. Which of the following is true of ice crystals?
- a. They may fall from a clear sky
  - b. They are normally associated with a thunderstorm
  - c. They are always accompanied with cumulonimbus clouds
  - d. They are always accompanied by nimbostratus type clouds
15. Blowing dust becomes a dust storm when the visibility decreases to:
- a. 5/16
  - b. less than 5/8
  - c. 5/8
  - d. 1/4
16. An obstruction to vision is required in col. 9 (Present Weather) when the visibility is:
- a. less than 7 SM
  - b. 6 SM or more
  - c. less than 5 SM
  - d. less than 3 SM
17. The visibility has decreased from 1 SM to  $\frac{1}{2}$  SM while the temperature has decreased from 1 degree Celsius to 0. The correct entry in col. 9 (Present Weather) is:
- a. FZFG
  - b. BR
  - c. FZBR
  - d. FG



18. Fairly uniform precipitation that is composed of fine drops with diameters of less than 0.02 inch that are very close together when they fall to the ground is the definition of:

- a. Fog
- b. Mist
- c. Drizzle
- d. Ice crystals

19. A squall is the sudden onset of strong winds increasing by \_\_\_\_\_ knots, sustained at \_\_\_\_\_ knots or more for at least \_\_\_\_\_ minutes.

- a. 10, 45, 15
- b. 16, 22, 2
- c. 15, 20, 1
- d. 16, 22, 1

20. The four types of lightning that may be reported are:

- a. CC, IC, CA, CG
- b. CG, IC, AC, CC
- c. CC, CA, GC, IC
- d. CG, CC, CA, GA

21. When more than one type of present weather are occurring at the same time, report the phenomena in the following order:

- a. Thunderstorms, tornadic activity, precipitation, obscurations to vision
- b. Tornadic activity, thunderstorms, obstructions ot vision, present weather
- c. Tornadic activity, thunderstorms, lightning, precipitation, obstructions to vision
- d. Tornadic activity, thunderstorms, precipitation, obstructions to vision

22. Phenomena not occurring at the station and beyond 10 SM from the station shall be reported as:

- a. Distant from the station
- b. It shall not be reported
- c. In the vicinity
- d. Outside of the vicinity

23. Snow is occurring along with fog. Which of the following visibility values may not be reported?

- a. 0.
- b.  $\frac{1}{2}$ .
- c.  $\frac{5}{8}$ .
- d.  $\frac{1}{4}$ .

24. Precipitation that changes intensity or starts and stops abruptly, is the definition of:

- a. Continuous
- b. Showery
- c. Intermittent
- d. Broken

25. The descriptor "DR" may be used with:

- a. RA
- b. SG
- c. FG
- d. SN

26. Which of the following may be used with a thunderstorm?

- a. DZ
- b. SG
- c. IC
- d. PL

27. Which of the following may be classified as heavy?

- a. Hail
- b. Funnel clouds
- c. Thunderstorms
- d. Sand storms

28. Which of the following cannot be assigned an intensity qualifier?

- a. BLSN
- b. PL
- c. DZ
- d. RA

29. A tornado with blowing dust and a thunderstorm with heavy rain are occurring at the station. Which of the following is a correct entry in column 9 (Present Weather) of form MF1M-10C?

- a. +FC +TSRA BLDU
- b. +FC +BLDU +TSRA
- c. TORNADO +TSRA BLDU
- d. TORNADO

30. Particles of sand sometimes accompanied by small litter, raised from the ground in the form of a whirling column of varying height with a small diameter and an approximate axis defines:

- a. SQ
- b. +FC
- c. PO
- d. SS

## AVIATION WEATHER OBSERVATIONS – FINAL EXAM

1. The actual time of a SPECI observation is when:
  - a. the last element is observed
  - b. the first element is evaluated
  - c. the event is observed to occur
  - d. the pressure is evaluated
  
2. Regardless of the delay, an observation containing which of the following shall be disseminated long-line, by any means possible?
  - a. volcanic eruption
  - b. tornado
  - c. thunderstorm
  - d. severe thunderstorm
  
3. Entries on form MF1M-10C may be erased:
  - a. at any time
  - b. within one hour after filing time
  - c. before the report is filed
  - d. never
  
4. SPECI observations at designated stations are not required to include:
  - a. thunderstorm location
  - b. virga
  - c. lightning type and location
  - d. beginning/ending times of precipitation

5. A SPECI observation will be required whenever:
- a. light rain showers changes to moderate rain
  - b. heavy rain showers changes to light rain
  - c. continuous snow changes to snow showers
  - d. rain and ice pellets mixed changes to rain
6. Surface wind direction is reported in column 3 in reference to:
- a. true north and the nearest whole degree
  - b. true north and the nearest 10 degrees
  - c. magnetic north and the nearest 10 degrees
  - d. magnetic north and the nearest whole degree
7. Wind shifts are normally associated with one or more of the following except:
- a. wind gusts exceeding 25 knots
  - b. rapid drop in dewpoint
  - c. rapid drop in temperature
  - d. rapid rise in pressure
8. Which of the following does not satisfy wind shift criteria?
- a. a change in wind direction of 45 degrees or more
  - b. the change occurs in less than 15 minutes
  - c. wind speeds during the change are at least 10 knots
  - d. a change in the wind direction of 25 degrees or more

9. Gusts that are reported in column 5 were observed within \_\_\_\_\_ minutes of the actual time of the observation.

a. 10

c. 30

b. 15

d. 60

10. A strong wind suddenly increases from 270 degrees at 15 knots to 32 knots with Gusts to 44 knots and persists for 3 minutes before subsiding. This is reported as:

a. 27032G44 KT

b. 27044 KT SQ (in present weather)

c. 27015G44 KT SQ (in present weather)

d. 27032G44 KT SQ (in present weather)

11. Calm wind is encoded in the body of the report as:

a. 00000 KT

c. 0000 KT

b. VRB000 KT

d. Blank (no entry for the wind)

12. The wind is from 240 degrees at 9 knots and the direction is varying from 210 to 260. How would this be formatted for transmission?

a. 24009 KT

c. 24009 KT 210 V 260 KT

b. 24009 KT 210 V 260

d. VRB09 KT

13. If due to broken equipment at the time of observation, the wind direction and speed cannot be measured, the entries in columns 3 and 4 are:

a. omitted

c. left blank

b. reported missing

d. estimated

14. Visibility is reported to the nearest mile when it is observed in the range of \_\_\_\_\_ miles.

a. 1 to 3

c. 3 to 25

b. 3 to 15

d. 15 to 25

15. Horizontal visibility would not be restricted by:
- a. BLSN
  - b. BLDU
  - c. FZFG
  - d. DRSN
16. Which of the following would not be entered as a visibility value?
- a. 2 3/4
  - b. 3/4
  - c. 1 7/8
  - d. 7/16
17. What is the prevailing visibility if the following values were observed in equal sectors: N 3, NE 2 1/2, E 3/4, SE 3/4, S 2, SW 3 1/2, W 4, NW 2 3/4.
- a. 3 1/2
  - b. 3
  - c. 2 3/4
  - d. 2 1/2
18. When visibility rapidly increases and decreases by one or more reportable values, the reported prevailing visibility is the:
- a. average of all observed values
  - b. average of the lowest observed values
  - c. highest observed value
  - d. the lowest observed value
19. In determining the prevailing visibility, how many sectors can the horizon be divided into?
- a. 8
  - b. 6
  - c. 4
  - d. 2
20. To report variable visibility, the average prevailing visibility must be less than 3 miles and fluctuating (increasing and decreasing) by at least:
- a. 1/2 mile or more
  - b. 1 mile or more
  - c. one or more reportable values in the past 15 minutes
  - d. one or more reportable values in the past hour

21. What is the reported visibility if conditions are uniform and the visibility marker at 3 ½ miles can barely be seen and identified?
- a. 3 SM  
b. 3 ½ SM  
c. 3 ¼ SM  
d. 4 SM
22. Sand raised by the wind to less than 6 feet is coded as:
- a. BLSA  
b. MISA  
c. SHSA  
d. DRSA
23. Squalls are reported in column 9 (Present Weather) only if they have been observed in the past \_\_\_\_\_ minutes.
- a. 10  
b. 15  
c. 20  
d. 60
24. When drizzle is occurring along with mist, the intensity of the drizzle will be determined by:
- a. rate of fall  
b. measurement  
c. rate of fall and visibility  
d. visibility
25. With which of the following is a minus sign (-) used to show light intensity?
- a. IC  
b. TS  
c. SN  
d. GR
26. The intensity of rainfall is determined by the:
- a. rate of accumulation of fall  
b. size of the droplets  
c. total accumulation of water  
d. degree to which the rainfall affects visibility

27. Which of the following phenomena may be classified as having a heavy intensity?
- a. Large hail
  - b. Spray
  - c. Thunderstorm
  - d. Duststorm
28. Two or more obscurations are reported in order of:
- a. decreasing dominance
  - b. increasing dominance
  - c. time of beginning
  - d. expected duration
29. Volcanic ash is reported:
- a. only during daylight hours
  - b. whenever it occurs
  - c. only if accompanied by fog or mist
  - d. when the visibility is less than 7 miles
30. The observer reports IC in column 9 (Present Weather). Given this report, which of the following is correct?
- a. the visibility is less than 1 mile
  - b. the sky may be clear
  - c. the air is unstable with rapidly changing weather conditions
  - d. the observer has made an error in column 9
31. Blowing snow (BLSN) as reported in column 9 (Present Weather) raises the snow particles from the ground and:
- a. reduces the prevailing visibility to 6 miles or less
  - b. the sky may be clear
  - c. reduces the prevailing visibility to less than 10 miles
  - d. the snow raised to less than 10 feet



32. A substantial part of the station is cover by fog. Which of the following is a correct entry in column 9 (Present Weather)?
- a. BR
  - b. PRFG
  - c. MIFG
  - d. BCFG
33. Patches of fog randomly cover the station, but the prevailing visibility 7 miles. What is reported in column 9 (Present Weather)?
- a. nothing
  - b. BCFG
  - c. BR
  - d. VCFG
34. The sky is totally obscured by snow showers with an indefinite ceiling of 200 feet and  $\frac{1}{4}$  visibility. Thunder is heard. The proper entries in columns 9 (Present Weather) and column 10 (Sky Condition) are:
- a. TS +SN OVC002CB
  - b. +TSSN VV002
  - c. +TSSN VV002CB
  - d. TSSN OVC002
35. Proximity qualifier/s is/are:
- a. light, moderate, heavy
  - b. vicinity
  - c. weak, strong, violent
  - d. light, moderate, heavy
36. By definition, "in the vicinity" of the station indicates that precipitation is how far from the observation site?
- a. within 5 statute miles
  - b. within 3 statute miles
  - c. within 10 statute miles
  - d. within any distance that precipitation can be seen that is not occurring at the station

37. Sky cover is determined to the nearest:

- a. 1/10
- b. 1/8
- c. 1/6
- d. 1/4

38. The height of an overcast layer of stratus clouds cannot be determined with:

- a. a pilot report
- b. a convective cloud height diagram
- c. ceilometer
- d. a balloon

39. When using a balloon to determine the height of a cloud layer, use the elapsed time between the release of the balloon and the time the balloon:

- a. begins to fade
- b. completely disappears
- c. is midway between the time that it begins to fade and the time that it disappears
- d. none of the above applies

40. Which of the following is not considered a ceiling?

- a. a broken layer of clouds
- b. a layer of mist hiding a 6/8 of the sky
- c. the vertical visibility into fog that hides the entire sky
- d. a layer of clouds above a layer of mist that hides more than half the sky

41. If due to broken equipment at the time of the observation the ceiling cannot be measured, the entry in column 10 (Sky Condition) is:

- a. omitted
- b. ///
- c. estimated
- d. reported missing

42. A ceiling is measured at 1,600 feet broken, but is variable between 1,300 and 1,900 feet. This is coded:

a. BKN016 and in remarks, CIG VRB013 V 019

b. BKN016

c. BKN016 and in remarks, CIG 013 V 019

d. BKN016V

43. How would you code a vertical visibility of 600 feet into fog that hides the entire sky?

a. OVC006

c. VV006

b. 006VV

d. 006OVC

44. What is the maximum number of cloud layers that can be reported?

a. 3

c. 5

b. 4

d. 6

45. At an estimated 800 feet, smoke covers 8/8, but hides none of the sky. North of the station, 1/8 of cumulus is present at 1,200 feet. This is coded:

a. OVC008 OVC012

c. OVC008 and in remarks, CU N

b. OVC008 and in remarks, FU OVC008

d. SKC and in remarks, CU N

46. Which of the following is a correct entry in column 10 (Sky Condition)?

a. SKC FEW001

c. FEW001 VV002

b. FEW020CU SCT070ACC

d. BKN030CB BKN060

47. The temperature at which the air becomes saturated (with respect to water) if cooled at a constant pressure and without the addition of water vapor, is known as:
- a. wet-bulb temperature
  - b. relative humidity
  - c. dewpoint
  - d. saturation temperature
48. When the wet bulb temperature is at or below freezing, freezing may be induced by:
- a. touching the wet bulb with snow
  - b. blowing on the wet bulb
  - c. ventilating the wet bulb
  - d. remoistening the wet bulb
49. In a METAR observation, a dry bulb temperature of 25.5 degrees Celsius below zero is reported as:
- a. M25
  - b. 25
  - c. M26
  - d. 26
50. The altimeter setting is one of the most important elements in an observation. The observer estimates the altimeter at 29.926. What is the correct entry in column 13 (Altimeter Setting)?
- a. 29.93
  - b. 2992
  - c. 9926
  - d. omitted
51. Which of the following can be used to estimate low level wind velocity?
- a. PIREP's
  - b. cloud movement
  - c. non-moving weather vanes
  - d. none of the above
52. There is a wind shift at 30 minutes past the hour, accompanied by the passage of a cold front. Which of the following is the correct entry in column 14 (Remarks)?
- a. FROPA 30
  - b. WSHFT 30
  - c. WSHFT 30 FROPA
  - d. COLD FRO 30

53. Which of the following would be the first entry in column 14 (Remarks)?

a. GR ½

c. FRQ LTGCCCCG NW

b. VIRGA NW

d. WSHFT 05 FROPA

54. Thunder is heard at 5 minutes past the hour, again at 23 minutes past the hour, and again at 34 minutes past the hour. How many SPECI observations are required?

a. 1

c. 3

b. 6

d. 4

55. In which column of form MF1M-10C is the contraction "COR" recorded on a corrected report?

a. 1

c. 3

c. 2

d. 4

56. The intensity modifiers for snow and drizzle are:

a. light (-), moderate ( ), severe (+)

b. light (-), moderate ( ), heavy (+)

c. light (-), medium ( ), severe (+)

d. light (-), medium ( ), heavy (+)

57. The essential difference between gusts and squalls is:

a. the duration of the increased wind speed

b. the difference between peaks and lulls

c. squalls must have occurred within the past 2 minutes, gusts 10 minutes

d. gusts must have occurred within the past 10 minutes, squalls 2 minutes

58. Which of the following is not a significant visibility value concerning SPECI observations?

- a. 3
- b. 2
- c. 1 ½
- d. 1

59. Which of the following is a correct entry for column 9 (Present Weather)?

- a. PRFG
- b. MIBR
- c. PRBR
- d. BCBR

60. When moderate snow is occurring along with fog, which of the following visibility values cannot be entered in column 7 (Visibility)?

- a. ½
- b. ¼
- c. ¾
- d. 0

61. By definition, prevailing visibility is:

- a. the greatest distance equaled over one half of the horizon, which need not be continuous
- b. the greatest distance exceeded throughout at least half the horizon, which need not be continuous
- c. the greatest distance equaled or exceeded throughout at least half the horizon, which need not be continuous
- d. the greatest distance at which selected objects can be seen and identified

62. When conditions are relatively stable, the first element to be evaluated is:

- a. the altimeter setting
- b. elements evaluated indoors
- c. elements evaluated outdoors
- d. the temperature/dewpoint

63. Which of the following cannot be reported with a thunderstorm?

- a. IC
- b. GR
- c. PL
- d. +RA

64. With which of the following is a remark always required?

- a. BKN000
- b. GR
- c. VCSH
- d. GS

65. A severe duststorm is reported when the visibility is:

- a. 5/8
- b. less than 5/16
- c. 5/16
- d. less than 5/8

66. Station pressure is measured in:

- a. inches of mercury
- b. degrees Fahrenheit
- c. degrees Celsius
- d. Hecto Pascals

67. It is necessary to ventilate the wet-bulb:

- a. every observation when using a sling psychrometer
- b. only when fog is present
- c. only when the temperature is above freezing
- d. only when fog is not present

68. The remark "FIBI" in column 14 indicates:

- a. the observation was filed, but not practical to transmit
- b. the observation must be transmitted long-line, by any means possible
- c. an aircraft mishap has occurred
- d. the observation was transmitted but is no longer valid

69. Three precipitation type which have no intensity qualifiers are:

- a. GR, GS, PL
- b. GR, FG, BR
- c. GR, GS, IC
- d. GR, GS, VIRGA

70. Unless otherwise directed by NWS headquarters, carbon copies of form MF1M-10C must be retained for \_\_\_\_\_.

- a. one year
- b. 90 days
- c. 30 days
- d. 60 days

71. When using a sling psychrometer, when is the official dry-bulb temperature determined?

- a. before the instrument is ventilated
- b. at the time of the highest wet-bulb reading
- c. at the time of the lowest wet-bulb reading
- d. when the average of the wet-bulb readings is determined

72. When the wet-bulb is covered with ice and fog is present:

- a. the dewpoint is the same as the dry-bulb
- b. the dewpoint is lower than the wet-bulb
- c. the dewpoint is higher than the wet-bulb
- e. the dewpoint is missing

73. In remarks, time entries will use hours and minutes if the time reported occurs:

- a. during the same hour that the observation
- b. anytime within two hours of observation time
- c. during an hour that is different from the observation hour
- d. anytime in the observer's opinion that it is necessary

74. When reporting lightning in remarks, which of the following items is unnecessary?

- a. Frequency
- b. Type
- c. Location
- d. beginning/ending times



75. The remark FRQ LTGCCCCG NW in column 14 indicates that \_\_\_\_\_ lightning flashes per minute were observed.

- a. more than 10
- b. 1 – 10
- c. 6 – 10
- d. 1 - 6

76. The six significant cloud types are:

- a. Funnel cloud, altocumulus castellanus, cumulonimbus, cumulonimbus mammatus, rotor clouds, towering cumulus
- b. Towering cumulus, cumulonimbus, cumulonimbus mammatus, standing lenticular, altocumulus castellanus, rotor clouds
- c. Cumulus, Cumulonimbus mammatus, altoeumulus castellanus, Cumulonimbus, rotor clouds, towering cumulus
- d. Altocumulus castellanus, funnel clouds, towering cumulus, cumulonimbus mammatus, standing lenticular, cumulonimbus

77. Ice formed on exposed surfaces by freezing rain or freezing drizzle is known as:

- a. Glaze
- b. Frost
- c. Rime
- d. Ice Pellets

78. Lightning is reported in column 9 (Present Weather) when:

- a. lightning is observed overhead
- b. lightning is observed and the wind gusts exceed 50 knots
- c. whenever a thunderstorm is reported
- d. lightning is never reported in column 9

79. Precipitation is reported in column 9 (Present Weather) whenever:
- a. it has occurred within the past 15 minutes
  - b. precipitation is occurring at the station at the time of the observation
  - c. precipitation has occurred any time within the previous hour
  - d. occasional precipitation is reported in column 14 (Remarks)
80. What remark is appended to the observation to indicate the observation was not transmitted long-line?
- a. SPECI
  - b. LAST
  - c. FIBI
  - d. NOSPECI
81. Which of the following wind parameters is not included in the body of the METAR/SPECI wind element?
- a. direction
  - b. speed
  - c. squalls
  - d. variable wind direction
82. The qualifier vicinity (VC) is not used with:
- a. HZ
  - b. FG
  - c. BLSA
  - d. PO
83. Using direct reading dials, wind speed and direction are averaged over a period of:
- a. ½ minute
  - b. 1 minute
  - c. 2 minutes
  - d. 5 minutes
84. Which of the following is a correct entry in column 10 (Sky Condition)?
- a. BKN 012 BKN 100ACC
  - b. BKN/// SCT012
  - c. OVC012 OVC 030
  - d. SCT035 TCU BKN058CB

85. A temperature of  $\frac{1}{2}$  degree Celsius below zero would be coded in the body of the report as:

- a. M00
- b. 00
- c. M01
- d. -01

86. When conditions that would normally require a SPECI are met during the time that a METAR observation is being taken, it shall be recorded as:

- a. METAR
- b. SPECI/METAR
- c. SPECI
- d. FIBI

87. Which of the following is a correct entry in column 9 (Present Weather)?

- a. -SHFZRA
- b. SHGR
- c. SHDZ
- d. VCHZ

88. The useable variance between two aneroid altimeter setting indicators at a non-precision approach location is:

- a. .02
- b. .5
- c. .04
- d. .05

89. When a layer of clouds consists of both cumulonimbus and towering cumulus the observer shall report \_\_\_\_\_ in column 10 (Sky Condition).

- a. CB
- b. CB/TCU
- c. TCU
- d. TCU/CB

90. The maximum number of groupings that may be reported in column 9 (Present Weather) is:

- a. 4
- b. there is no maximum
- c. 6
- d. 3

**91. The acronym UTC, when decoded, means:**

- a. Universal Coordinated Time**
- b. Universal Temps Coordinated**
- c. Coordinated Universal Time**
- d. Universal Time Coordinated**

**92. A SPECI observation is required when:**

- a. SN begins**
- b. VIRGA is observed**
- c. IC begins**
- d. a scattered layer of clouds forms below 1,000 feet when no layer was reported below 1,000 feet on the previous observation**

**93. VRB may be used in column 3 (Wind Direction) when:**

- a. the wind direction is varying by 60 degrees or more and the wind speed is 7 knots less**
- b. the wind direction is varying by 45 degrees or more and the wind speed is 6 knots or greater than knots**
- c. the wind direction varies by 60 degrees or more and the wind speed is greater than 7 knots**
- d. the wind speed is 6 knots or less**

**94. Tower visibility shall be incorporated into the observation when:**

- a. either the tower or the surface visibility is less than 4 miles**
- b. either the tower or the surface visibility is 4 miles or less**
- c. either the tower or the surface visibility is 3 miles or less**
- d. either the tower or the surface visibility is less than 3 miles**

95. A tornado is observed to the northwest of the station and is moving east. The correct entry in column 14 (Remarks) is:

- a. TOR NW MOV E
- b. FC NW MOV E
- c. +FC NW MOV E
- d. TORNADO NW MOV E

96. What are the two cloud types that must be appended to the cloud layer that they are associated with in column 10 (Sky Condition)?

- a. TCU and ACC
- b. CB and TCU
- c. CB and CU
- d. CBMAM and TCU

97. Two cloud types require a remark on the position and movement in column 14 (Remarks). They are:

- a. CB and CBMAM
- b. TCU and FC
- c. TCU and CB
- d. CBMAM and rotor clouds

98. When there are no instrument approach minimums published for an airport, what are the critical ceiling values concerning SPECI observations?

- a. 3,000, 1,500, 1,000, 500, 200
- b. 2,500, 1,500, 1,000, 500, 200
- c. 3,000, 2,000, 1,000, 500, 200
- d. 3,000, 1,500, 1,000, 500, 100

99. The visibility has gone from 1 mile to  $\frac{1}{2}$  mile with fog. At the same time, the temperature went 1.5 degree Celsius to 0.0 degree Celsius, what is the correct entry for column 9 (Present Weather)?

- a. FZFG
- b. BR
- c. FG
- d. FZBR

100. If the observing station is so located that an unobstructed view of the sky cannot be obtained because of man-made structures, then for purposes of determining layer amount, the whole sky will be considered as:
- a. the whole sky including the obstructed portion
  - b. the portion of the sky visible to the observer
  - c. a mean area considered the percentage of the sky hidden
  - d. a mean area considered the percentage of the sky visible to the observer
101. A value of ceiling value of 1,170 feet is reported:
- a. 1,100
  - b. 1,150
  - c. 1,200
  - d. 1,170
102. A complex weather situation, represented by light rain showers (dominant), snow and a thunderstorm is present. Entries are made in the following order:
- a. TS -RA -SN
  - b. -TSSNRA
  - c. -TSRASN
  - d. -TSSHRASN
103. Temperatures of 16.5, 3, -4.5 are recorded:
- a. 17, 03, M04
  - b. 16, 03, M04
  - c. 16, 03, M5
  - d. 17, 3, M4
104. A wind condition of 300 degrees at 6 knots is encoded:
- a. 3006 KT
  - b. 30006 KT
  - c. 30006 KTS
  - d. VRB06 KTS
105. Precipitation containing very small, white, opaque grains of ice is, which is the solid equivalent of drizzle is definition of:
- a. Snow Grains
  - b. Large Hail
  - c. Ice Crystals
  - d. Small Hail

**Aviation Weather Observer Practice Tests**

Exam # 4	Exam # 2	Exam # 2 Visibility	Exam # 5	Exam # 4 Ceiling Sky Condition	Exam # 3	Exam # 1	Weather Exam # 2
1 C	1 B	1 B	1 A	1 A	1 D	1 A	1 A
2 D	2 A	2 C	2 C	2 A	2 D	2 B	2 D
3 A	3 D	3 B	3 D	3 C	3 A	3 B	3 D
4 C	4 B	4 A	4 C	4 C	4 C	4 B	4 B
5 A	5 C	5 A	5 B	5 D	5 A	5 B	5 D
6 A	6 B	6 A	6 A	6 D	6 D	6 C	6 A
7 D	7 A	7 D	7 A	7 B	7 A	7 B	7 D
8 A	8 A	8 D	8 B	8 B	8 B	8 D	8 D
9 D	9 B	9 C	9 B	9 C	9 B	9 A	9 A
10 B	10 C	10 A	10 A	10 B	10 A	10 A	10 A
11 B	11 D	11 A	11 D	11 B	11 B	11 A	11 D
12 C	12 C	12 D	12 B	12 D	12 B	12 D	12 C
13 C	13 D	13 B	13 D	13 A	13 C	13 C	13 A
14 B	14 B	14 B	14 D	14 D	14 C	14 C	14 C
15 D	15 C	15 A	15 B	15 C	15 B	15 A	15 C
16 D			16 A	16 A	16 A	16 C	16 A
17 A			17 C	17 C	17 A	17 C	17 A
18 B			18 B	18 B	18 C	18 A	18 C
19 D			19 D	19 D	19 A	19 B	19 C
20 D			20 C	20 C	20 B	20 A	20 B
			21 C	21 C	21 C		21 D
			22 A	22 A	22 A		22 C
			23 C	23 C	23 C		23 C
			24 D	24 D	24 D		24 B
			25 A	25 A	25 A		25 A
			26 A	26 A	26 A		26 B
			27 A	27 A	27 A		27 D
			28 B	28 B	28 B		28 A
			29 B	29 B	29 B		29 B
			30 A	30 A	30 A		30 C
			31 C	31 C	31 C		31 A
			32 D	32 D	32 D		32 C
			33 D	33 D	33 D		33 D
			34 B	34 B	34 B		34 C

Exam # 7	Exam # 2	Final Exam
1 A	11 B	1 C
2 C	12 B	2 A
3 B	13 A	3 D
4 A	14 A	4 D
5 D	15 C	5 D
6 C	16 A	6 B
7 D	17 D	7 A
8 C	18 C	8 D
	19 D	9 A
	20 A	10 D
	21 D	11 A
	22 A	12 A
	23 C	13 D
	24 B	14 B
	25 D	15 D
	26 Omit	16 D
	27 D	17 C
	28 A	18 A
	29 A	19 A
	30 C	20 A
		21 A
		22 D
		23 A
		24 D
		25 C
		26 A
		27 D
		28 A
		29 B
		30 B
		31 A
		32 B
		33 B
		34 B
		35 B
		36 C
		37 B
		38 B
		39 C
		40 B
		41 C
		42 C
		43 C
		44 D
		45 B
		46 D
		47 C
		48 A
		49 A
		50 D
		51 D
		52 C
		53 D
		54 C
		55 C
		56 B
		57 A
		58 C
		59 A
		60 C
		61 C
		62 C
		63 A
		64 B
		65 B
		66 D
		67 A
		68 A
		69 C
		70 B
		71 C
		72 A
		73 C
		74 D
		75 D
		76 B
		77 A
		78 D
		79 B
		80 C
		81 C
		82 A
		83 C
		84 B
		85 A
		86 A
		87 B
		88 D
		89 A
		90 D
		91 C
		92 D
		93 D
		94 A
		95 D
		96 B
		97 A
		98 A
		99 C
		100 A
		101 C
		102 C
		103 A
		104 B
		105 A