DOCUMENT
GSM-AUS-CPL.024

DOCUMENT TITLE
METEOROLOGY FOR AUSTRALIA

CHAPTER 33 – PAPER 3

Version 3.0
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PAPER 3

Suggested Time: 2 Hours

Questions 1 to 4 relate to a flight from HAY to WAGGA (YSWG) for which Area Forecasts are provided. Estimates for departure and arrival relate only to Questions 1 to 4. Jepps.
ETD HAY is 0030 Z
ETA WG is 0130 Z

1. The forecast wind velocity for Area 22 at 10000 feet is:
   a. 270 degrees true at 45 knots
   b. 270 degrees magnetic at 45 knots
   c. 270 degrees true at 45 knots with intermittent reductions of 10 knots
   d. 270 degrees magnetic at 45 knots with intermittent reductions of 10 knots.

2. The Cumulonimbus cloud to the west of area 22 is forecast to occur:
   a. As overcast cloud over the whole area
   b. Well separated cells
   c. As individual cells
   d. Occasionally up to 28000 feet.

3. 3. The forecast visibility for your flight is:
   a. 4000 metres with SH/DZ/TS
   b. 10 kilometres or more
   c. 10 kilometres reducing to 4000 metres in SH/DZ/TS
   d. 4000 metres reducing in SH/DZ/TS.

4. Based only on the information contained in the ARFOR, where could airframe icing be expected to occur in Area 22?
   a. Only in Cumulonimbus cloud
   b. Anywhere above the freezing level
   c. In the Stratus cloud
   d. In the Cumulus cloud.

5. "Meteorological visibility" in the Australian region refers to (Jeppesen):
   a. Visibility along the runway
   b. Visibility for a landing approach
   c. The minimum visibility over half or more of the horizon
   d. The average visibility over the entire horizon.

Questions 6 to 10 relate to the YMMI TAF Jeppesen

6. At 0000 Z the forecast wind velocity at YMMI is:
   a. 34015g30kt
   b. 25025g45kt
   c. 30020g40kt
   d. 34015g30kt or 25025g45kt.

7. The forecast visibility at 0000Z at YMMI is:
   a. 10 kilometres or more with deteriorations to 3000 metres
   b. 10 kilometres or more with deteriorations to 2208 metres
   c. 10 kilometres or more
   d. 2200 metres.

8. The lowest possible cloud base forecast for YMMI at 0200Z is:
   a. 3000 feet
   b. 1500 feet
   c. 1000 feet
   d. 100 feet.

9. The thunderstorms forecast at YMMI are expected to last for periods of up to:
   a. 30 minutes
   b. 60 minutes
   c. 96 minutes
   d. 9 hours.

10. The significant forecast weather specified by the code TSGR in the YMMI TAF is:
    a. Growing or developing Thunderstorms
    b. Thunderstorms lasting up to 96 minutes
    c. Thunderstorms to ground level
    d. Thunderstorms with hail.

Questions 11 to 15 relate to the MSL Analysis Chart. ch.4

11. The line PR (SE of Darwin) on the chart indicates the position of:
    a. A squall line
    b. A tropical front
    c. An equatorial trough
    d. A low pressure trough.

12. The expected weather at point C is most likely to be:
    a. Clear skies and light winds
    b. Clear skies and strong northerly winds
    c. Isolated thunderstorms and turbulence
    d. South Westerly winds and dust storms.

13. The approximate direction of the gradient wind at Adelaide would be:
    a. South-easterly
    b. South-westerly
    c. North-easterly
    d. North-westerly.

14. The line MN (SW of Adelaide) indicates the position of:
    a. A ridge
    b. An occluded front
    c. A wave depression
    d. A convergence zone.

15. Consider the line JK near Perth. Which statement is true (ch.15,16)?
    a. The line JK indicates the position of a warm front.
    b. JK will move due north.
    c. Air to the east of JK is warmer than the air to the west of this line.
    d. The approximate wind direction to the East of this line will be south-easterly.

16. The term "strato" or "stratus" is used as a prefix or suffix, to describe clouds which (ch.12):
    a. Have relatively low bases
    b. Have relatively flat bases
    c. Is rain bearing
    d. Are layered.

17. A hazardous flying conditions sometimes associated with virga would be (ch.21):
    a. A strong updraught
    b. A microburst
    c. Severe turbulence
    d. A dust storm.

18. Cloud types formed by the cooling of stable air are usually referred to as being (ch.7.12):
    a. Stratified
    b. Cumuliform
    c. Nimbo or nimbus
    d. Castellatus.

19. Flight beneath the base of a developing thunderstorm may be hazardous because of (ch.20):
    a. Severe turbulence
    b. The strong updraught
    c. The strong downdraught
    d. The possibility of microbursts.

20. Which of the following conditions is most likely to result in thunderstorms (ch.21)?
    a. High relative humidity at the surface, subsidence and a neutral atmosphere
    b. High relative humidity at the surface, a lifting mechanism and a stable atmosphere
    c. Low relative humidity at the surface, a lifting mechanism and instability
    d. High relative humidity at the surface, a lifting mechanism and conditional instability.

21. The life cycle of a typical thunderstorm has a duration of (ch.20):
    a. 30 minutes
    b. 60 minutes
    c. 2 hours
    d. 3 hours.

22. In which situation is a tornado most likely to occur (ch.26)?
    a. Strong solar heating over desert regions with clear skies
    b. Widespread and severe thunderstorm activity
    c. Under lenticular altocumulus associated with a marked mountain wave
    d. Over tropical oceans in summer.

23. In which temperature range is clear airframe ice likely to be most severe (ch.19)?
    a. +10°C to +5°C
    b. +5°C to 0°C
    c. 0°C to -15°C
    d. -15°C to -40°C.

24. One reason that clear ice is considered more hazardous to aircraft than rime ice is because (ch.19):
    a. It is more likely to obscure the windscreen.
    b. It causes a greater reduction in aerodynamic efficiency.
    c. It is more likely to block engine air intakes.
    d. It is more difficult to dislodge.

25. Hoar frost should always be removed from aircraft flying surface prior to take-off because (ch.19, ady):

    a. It may melt and freeze again as clear ice.

    b. The changed shape off the aerofoil section will cause loss of lift.

    c. Propeller imbalance will result in dangerous vibration.

    d. The increase in drag will increase the take-off distance required.

26. Thunderstorms sometimes occur after the passage of a cold front where (ch.20):

    a. The surface airstream is convergent resulting in force vertical lifting of the atmosphere.

    b. Radiational cooling occurs from the top of a pre-existing cumulus cloud.

    c. A warm air mass passes over a relatively cold moist surface.

    d. A cold air mass passes over a relatively warm moist surface.

27. An approaching cold front may sometimes be recognised by the accompanying (ch.15,16):

    a. Overcast Nimbostratus cloud and heavy rain

    b. Low Stratus cloud and widespread drizzle

    c. Broken Cumulus cloud and rainshowers

    d. Widespread fog.

28. The onset of a light wind during the formation of a radiation inversion will cause the inversion to (ch.14):

    a. Decrease in depth

    b. Increase in depth

    c. Dissipate

    d. Become stronger.

29. Whilst climbing through the top of a surface inversion you may expect to experience a sudden (ch.2):

    a. Increase in wind speed

    b. Decrease in wind speed

    c. Increase in air temperature

    d. Decrease in air density.

30. The pressure system with which subsidence inversions are associated is (ch.2):

    a. Col

    b. Anticyclone

    c. Cyclone

    d. Trough.

31. The presence of mountain waves may be indicated by (ch.18):

    a. Fast moving lenticular clouds across a mountain range

    b. Rotor clouds on the windward slopes and lenticular clouds on the lee side of the range

    c. Stationary lenticular clouds on the lee side of the range

    d. Stationary mist and fog at the peaks of mountains.

32. In which of the following situations would you expect to encounter dangerous downdraughts during flight (ch.18)?

    a. Under developing cumulus cloud

    b. Below an inversion layer

    c. On the leeside of mountains

    d. On the windward side of mountains.

33. You would expect calm conditions at an aerodrome in the morning to persist for a longer period if (ch.7,18):

    a. The synoptic situation indicates the approach of a cold front.

    b. Skies are clear and forecast air temperatures are high.

    c. There are signs of a build-up of fair weather cumulus.

    d. Skies are overcast with stratus cloud.

34. The most likely cause of turbulence occurring at low levels over inland Australia on a hot, calm day is (ch.18):

    a. Mechanical friction

    b. Orographic effects

    c. Thermal activity

    d. A strong temperature inversion.

35. Squall lines are most often associated with (ch15,16, 20):

    a. Heavy continuous rain

    b. Mountain waves

    c. Thunderstorms

    d. Sea breezes.

36. The reduction in visibility associated with dust storms (ch.14):

    a. Is rarely less than 1000 metres

    b. Can be widespread to relatively high levels

    c. Normally dissipates completely overnight

    d. Is generally a short lived local phenomena.

37. In summer over tropical inland regions, at what time of day can thunderstorm activity normally be expected to commence (ch.20):

    a. Just after dawn

    b. About midday

    c. In the afternoon

    d. During the night.

38. A tropical cyclone is most likely to form over (ch.17):

    a. A continent near 15°S

    b. An ocean near 15°S

    c. A continent near 25°S

    d. An ocean near 25°S.

39. The type of weather associated with monsoonal airflow in summer in Northern Australia would be (ch.17,27, 28, 30):

    a. Hot, dry and dusty

    b. Widespread low cloud and drizzle

    c. Widespread thunderstorm activity and heavy rain

    d. Warm, with light winds and clear skies.

40. One effect of surface friction upon airflow near the earth's surface is to (ch.9):

    a. Increase cross-isobar wind flow

    b. Make the wind flow parallel to isobars

    c. Increase the gradient wind speed

    d. Increase the geostrophic wind speed.

AREA FORECAST 112300 TO 121100 AREAS 22/23

OVERVIEW:
THUNDERSTORMS WITH HAIL (SMALL) DEVELOPING IN W AREA 22
EXTENDING E
SCATTERED SHOWERS/DRIZZLE MAINLY AREA 22
WIDESPREAD LOW CLOUD, BECOMING SCATTERED NW AREA 23
ISOLATED SEVERE TURBULENCE BELOW 8000 AREA 22, MODERATE REST
REFER SIGMET FOR LATEST DETAILS OF SEVERE ICING

WIND:

2000	5000	7000	10000		14000		18500	
270/40	270/35	260/40	270/45	MS10	270/50	MS18	260/60	MS28

CLOUD:
ONCL CB 2500/28000 W AREA 22 EXTENDING E
BKN ST 800/3000 BECOMING SCT NW AREA 23
BKN CU 2500/15000

WEATHER:
TS(HAIL) AREA 22, SH/DZ MAINLY AREA 22

VISIBILITY:
4000M SH/DZ/TS

FREEZING LEVEL:
4000S/5000N

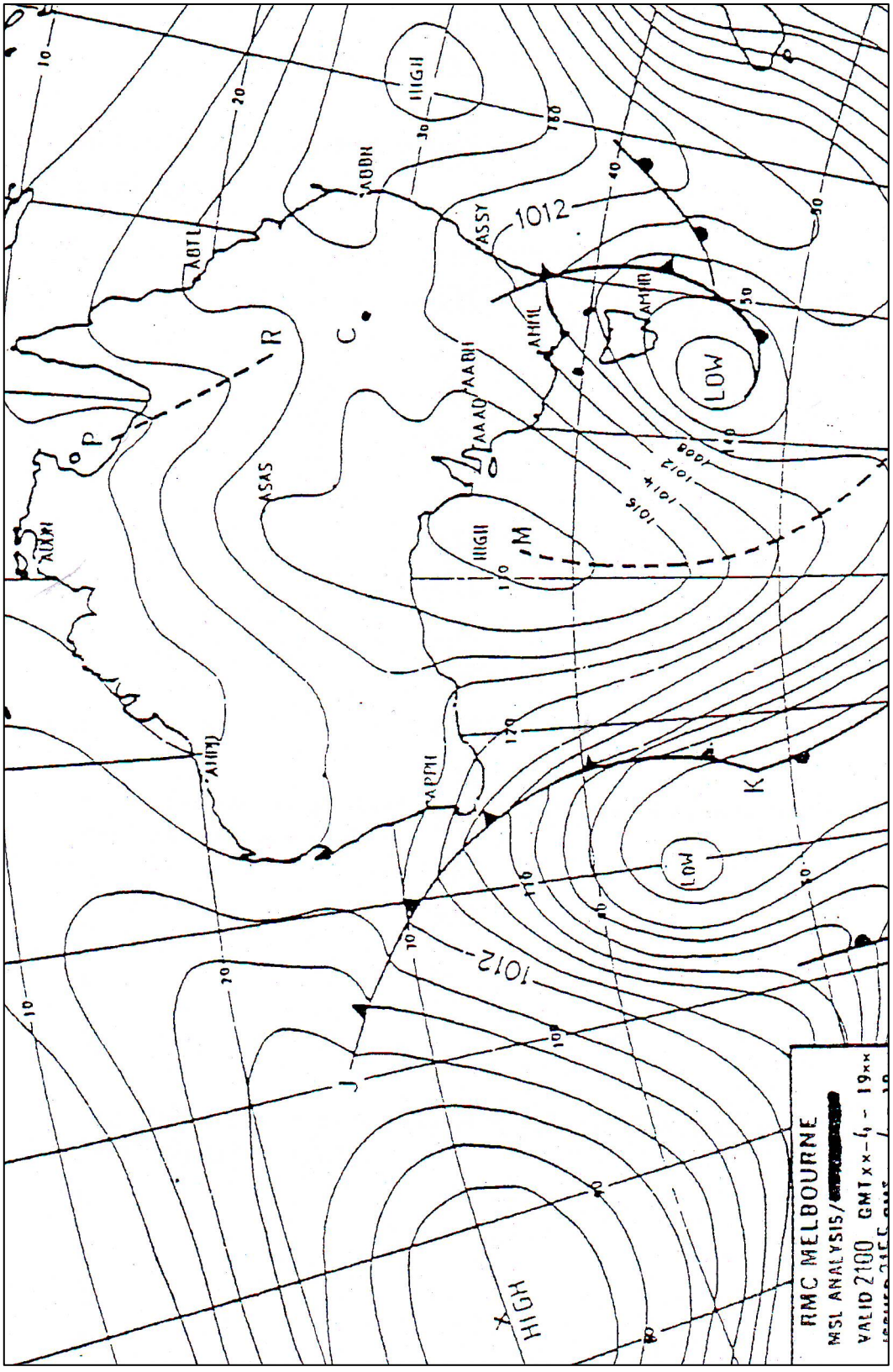
ICING:
REFER SIGMET

TURBULENCE:
ISOL SEV BELOW 8000 AREA 22, MOD REST

AERODROME FORECAST

YMMI TAF AMD YMMI 2008 34015G30KT 9999 RASH BKN030
FM22 25025G45KT FEW015 BKN030
INTER 2208 3000 TSGR SH BKN010 SCT030CB
07 08 10 10 1002 1000 1002 1004

SIGMET 3 YMML ISSUED YMML 112130Z VALID 112200 TO 121400
SIGMET AREAS 50/51/22/23 SEV ICING IN CU/CB ABV FZL INST NC


HIGH
1012
LOW
LOW
HIGH
HIGH
1012
1012
RMC MELBOURNE
MSL ANALYSIS/
VALID 2100 GMT xx-4 - 19xx

ANSWERS

1.	a	11.	d	21.	b	31.	c
2.	b	12.	a	22.	b	32.	c
3.	c	13.	a	23.	c	33.	d
4.	d	14.	a	24.	d	34.	c
5.	c	15.	c	25.	b	35.	c
6.	b	16.	d	26.	d	36.	b
7.	a	17.	b	27.	c	37.	c
8.	c	18.	a	28.	b	38.	b
9.	a	19.	b	29.	a	39.	c
10.	d	20.	d	30.	b	40.	a