Practical Test – Atmosphere

Meteorological observation is the basis of atmospheric science. Such observations are made for a variety of reasons. Observations made primarily for providing information for weather forecasts are termed 'synoptic'.
Synoptic observations are more frequent and more detailed, and are encoded for immediate transmission to forecasting centres.

1. Inspect all instruments inside and outside the meteorological screen marked by A,B,C,D,and E and put check mark (√) in the table below to match the instruments and meteorological parameters to measure. (20 points)

Parameters to measure	Instruments				
	A	B	C	D	E
Temperature					
Wind speed					
Wind direction					
Net Radiation					
Precipitation					
Relative Humidity					
Air pressure					

2. Observe at the Central Java map given below: (40 points)

The star marks are the locations of meteorological stations in central Java, and the table on the next page provides the sinoptic data at these stations.

station	area	synoptic code					
		IIiii	Nddff	VVwwW	PPPTT	$N_hC_LC_MC_H$	T_dT_d9RR
A	Tegal	96797	81115	/////	10130	/////	239//
B	Pekalongan		80910	/////	103//	/////	//9//
C	Semarang	96839	2////	/////	10728	/////	209//
D	Kudus		50510	/////	///27	/////	219//
E	Surakarta	96845	31205	/////	02326	/////	209//
F	Solo	96633	21305	/////	99023	/////	209//
G	Yogyakarta	96853	11310	/////	030//	/////	//9//
H	Borobudur		11110	/////	04527	/////	219//
I	Wadaslintang		41005	/////	99524	/////	199//
J	Cilacap	96805	0////	/////	11131	/////	259//

Draw the synoptic symbol on the map given in the next page. Give the synoptic symbols only for those stations which have the index numbers.

Explanation of the code:

IIiii = Five digit of Country code

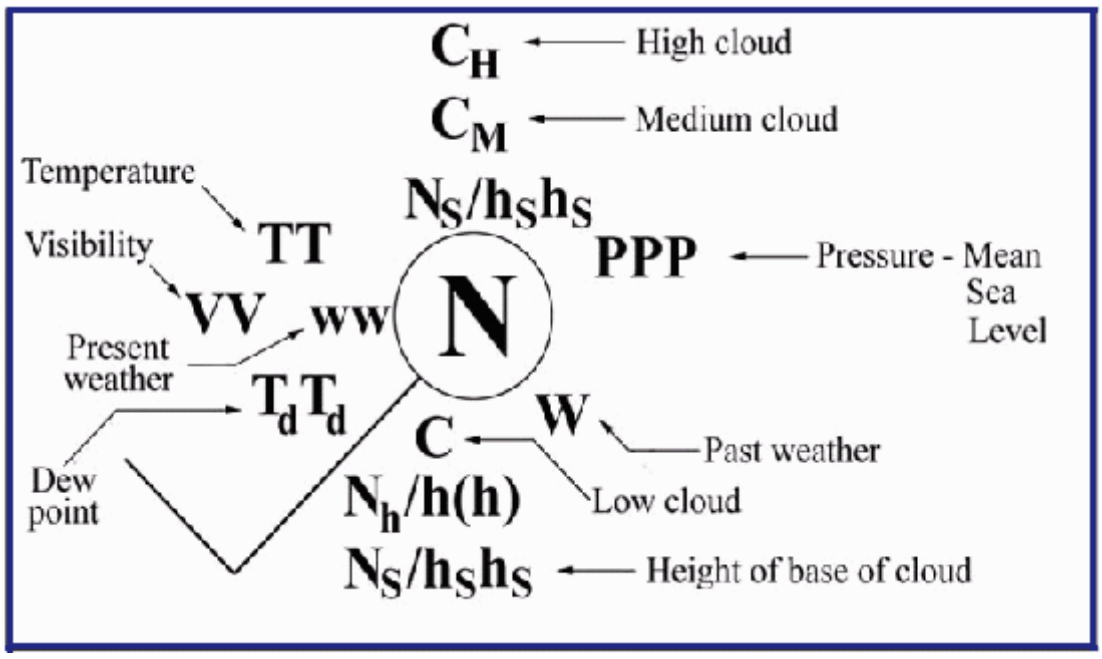
Nddff = Cloud Cover in octas, wind direction (x10 degree), wind speed (knots)
1 knots ~ 0.5 m/sec

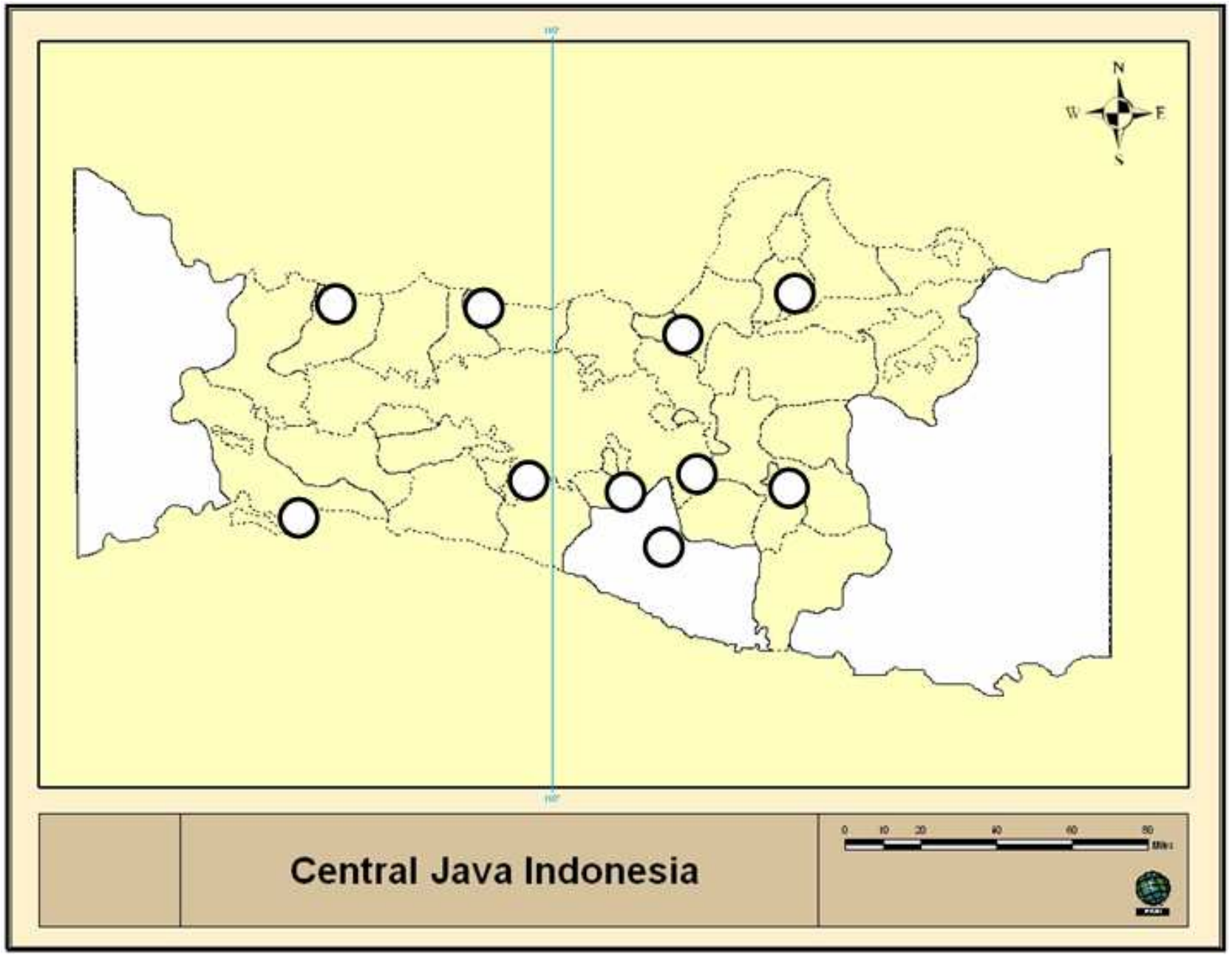
VVwwW = Visibility, current weather, past weather

PPPTT = Air Pressure, Surface Temperature (degree Celsius)

NhCLCMCH = Cloud Height from the ground

TdTd9RR = Dew point, No significant number, Rainfall




N
W
E
S
0 10 20 40 60 80
Miles
Central Java Indonesia

3. Tables 1 and 2 below provide on wind observations (wind direction and wind velocity) for Lapangan Pancasila observation station. Using these data, calculate the frequency distribution and draw on rose diagram for the site using 5 knots (1 knots ~ 0.5 m/sec) velocity intervals (40 points).

Table 2

DEGREE	DIRECTION
337.6 – 22.5	N
22.6 – 67.5	NE
67.6 – 112.5	E
112.6 – 157.5	SE
157.6 – 202.5	S
202.6 – 247.5	SW
247.6 – 292.5	W
292.6 – 337.5	NW

Table 1

no.	direction (degree)	velocity (knots)
1	250	13
2	200	8
3	-	0
4	290	2
5	249	18
6	123	9
7	284	7
8	266	3
9	135	13
10	-	0
11	-	0
12	-	0
13	271	14
14	137	12
15	141	9
16	189	3
17	277	7
18	253	4
19	289	3
20	255	17
21	283	9
22	154	8
23	193	7
24	-	0
25	263	12
26	259	2
27	-	0
28	275	1
29	120	13
30	280	19

Frequency count

	Directions / Wind Classes (knots)	1 - 5	6 - 10	11 - 15	16 - 20	Total
1	337.6 - 22.5					
2	22.6 – 67.5					
3	67.6 – 112.5					
4	112.6 – 157.5					
5	157.6 – 202.5					
6	202.6 – 247.5					
7	247.6 – 292.5					
8	292.6 – 337.5					
	Sub-Total					
	Calms					
	Total					

Frequency distribution in percents (%)

	Directions / Wind Classes (knots)	1 - 5	6 - 10	11 - 15	16 - 20	Total
1	337.6 - 22.5					
2	22.6 – 67.5					
3	67.6 – 112.5					
4	112.6 – 157.5					
5	157.6 – 202.5					
6	202.6 – 247.5					
7	247.6 – 292.5					
8	292.6 – 337.5					
	Sub-Total					
	Calms					
	Total					