

Meteorology B/C Key

Science Olympiad North Regional Tournament at the
University of Florida



Answer Key (101 points)

Red colored question indicates tiebreaker

Question	Answer	Points
1	B	2
2	C	2
3	A	2
4	a) Troposphere b) Stratosphere c) Mesosphere d) Thermosphere	2
5	Troposphere	2
6	H ₂ O or water	2
7	C	2
8	shortwave, longwave	2
9	Albedo = 79/341 (1.5 for showing work) Albedo = 0.23 ± 0.01 (1.5 for answer within this range)	3
10	Increase in greenhouse gases (2) Radiative forcing (2)	4
11	Cumulonimbus	2
12	D	2
13	A	3
14	Cold temperatures indicate tall clouds. Warm temps indicate low clouds.	2
15	Intensity is increasing (1.5) Taller (colder or red/orange colored) clouds indicate the release of more energy into the hurricane compared to low (warm) clouds that allows more evaporation/convection (2.5)	4
16	A large high-pressure system (over the south-central US, like New Mexico) stopped Harvey's circulation, which forced it move south & offshore before landing in Louisiana	3
17	C	2
18	True	2
19	D	2
20	A	2
21	Horse latitudes (30°N latitude) / Subtropical High (2) High pressure is sinking air & doesn't allow rain clouds to form (2)	4
22	Temperature & salinity	4
23	C	2
24	1. Cold (1) 2. Indicates southward direction of current (2)	5

	3. Cause: southward ocean current causes deep, cold water to come up to the surface, reducing ocean temps (2) Note: If they included Ekman transport & upwelling, give them 2 points for Cause	
25	Fewer tropical cyclones (1.5) Upwelling causes low sea surface temps (< 26°C) (1.5) Note: need to mention upwelling somewhere in the answer	3
26	B	2
27	D	2
28	June, August	2
29	B	2
30	A	2
31	A	2
32	Continents	2
33	continental, polar or cP (either works) (1) warmer/warm (1)	2
34	El Nino	2
35	2 points for each correct answer <ul style="list-style-type: none"> • Increased precipitation/rainfall in west coast of South America • Increased tropical storm activity in East Pacific • Fewer hurricanes in Atlantic/Increased vertical wind shear • Drier conditions in Southeast Asia or Caribbean Basin • More rainy summer/drier winter in western US 	4
36	C	2
37	It was a geologic period where: <ol style="list-style-type: none"> 1. Earth warmed by 8 °C... (1.5) 2. due to a large release of CO₂ (over 20,000 yrs) (1.5) 	3
38	B	2
39	Earth had liquid water early in its history... (1.5) but , Sun's solar output was only ~70% as intense as today (1.5)	3
40	Radiative forcing; adding more energy to the atmosphere	2
41	B	2