

# Dynamic Planet (C) SSSS 2020 Answer Key

Trevor Boshnack

Name: \_\_\_\_\_

School: \_\_\_\_\_

Team #: \_\_\_\_\_

## Part I (8)

### Multiple Choice (1 point each - 8)

1. B
2. A
3. A
4. C
5. D
6. D
7. C
8. C

## Part II (6)

### Fill in Blank (1 point each - 6)

9. Sensible Heat Flux
10. Latent Heat Flux
11. Geothermal Heat
12. Longwave Radiation
13. Heat Transfer
14. Shortwave Radiation

## Part III (10)

### True or False (1 point each - 10)

15. False
16. True
17. False
18. False
19. True
20. False
21. False
22. True
23. False
24. True

## Part IV (15)

### Short Answer (2 points each - 8)

25. Accept Challenger Deep or Mariana Trench
26. 2 pts: Mid-Atlantic Ridge, 1 pt: Ridge
27. Accept 100-140 million years
28. The rock on marker 1 is younger than the rock on marker 3.

### Labeling (1 point each - 7)

29.
  1. Submarine Canyon
  2. Shoreline
  3. Coastal Plain
  4. Abyssal Plain
  5. Continental Rise
  6. Continental Slope
  7. Continental Shelf

## Part V (8)

### Multiple Choice (1 point each - 8)

30. B
31. D
32. B
33. B
34. C
35. B
36. D
37. D

# Dynamic Planet (C) SSSS 2020 Answer Key

Trevor Boshnack

## Part VI (14)

### Short Answer (2 points each - 14)

38. The flow velocity and volume of the estuary is much less than the tidal force. This causes intense turbulence which mixes the seawater and the estuary's water.
39. The Earth has continents and is therefore only partially covered by water. This theory would require all of Earth's surface to be water.
40. Once the reef eventually weighs down the volcanic island, it will continue to grow up in the same circular formation that it was on the island. This will cut off seawater and therefore create a lagoon.
41. Geostrophic balance cannot hold at the equator because the Coriolis Effect is not present.
42. The spinning motion brings nutrients from the deep ocean to the surface ocean. This helps the ecosystem of the surface ocean.
43. The water (or Ekman spiral) goes from maximum speed to dissipation as it goes down the Ekman layer while turning slightly right in the northern hemisphere and slightly left in the southern hemisphere.
44. Salt water freezes at the north pole but the salt does not freeze, creating an area of water that has a higher salinity and is therefore denser. This dense water sinks in a process called downwelling. The water that fills in where this water once was creates a global current.

## Part VII(14)

### Matching (1 point each - 8)

45. E
46. G
47. D
48. F
49. A
50. C
51. H
52. B

### Short Answer (3 points each - 6)

53. 7.5 m/s
54. 0.083 Hz

## Part VIII(8)

### Short Answer (2 points each - 8)

55. This is an El Niño event and it affects his job because there is a lower amount of squid.
56. The squid are pushed north from California because of the warm currents caused by El Niño.
57. The surface water becomes colder because of El Niño and forces the fish deeper, where they are very likely to die, or pushes them north.
58. There still won't be many fish after the event ends. Fish that went deeper were much likelier to die and much less likely to reproduce. Other fish are still farther north than that location. (1.5 pts for mentioning one of these. 3 pts for mentioning both.)

# Dynamic Planet (C) SSSS 2020 Answer Key

Trevor Boshnack

## Part IX(7)

### Definitions (1 points each - 5)

- 59. Measuring the salinity of water
- 60. Extracts cores from the seafloor
- 61. Extracts sediment from the seafloor
- 62. Reveals the direction of the current
- 63. Maps the seafloor

### Short Answer (2 points)

- 64. Active SONAR emits sound waves and receives them to map the seafloor. Passive SONAR only receives sound waves to examine organisms around it. 1 pt for correctly describing one. 2 pts for correctly describing both.

## Part X(10)

### Short Answer (3 points each - 6)

- 65. 59 psi
- 66. 309 psi

### Short Answer (1 points each - 4)

- 67. Turbidites
- 68. Lithogenous Sediments
- 69. Biogenous Sediments
- 70. Cosmogenous Sediments