

Science, Technology and Public Affairs 35
Society and the Sea, Fall 2008

Midterm 1. Thursday, October 23

(closed book, closed notes, answer all question, no penalty for guessing)

Use green scantron form

Multiple Choice

1. The Polynesians:

a) constructed elaborate double-hulled vessels, b) used the sun, stars, and cloud patterns for navigation, c) created stick charts for navigation, **d) all of the above**

2. Benjamin Franklin mapped the Gulf Stream:

a) for purely scientific purposes, b) to develop new trade routes for the colonies, **c) to speed mail ship transits**, d) to locate new fishing grounds

3. The Exclusive Economic Zone extends how many kilometers from land out to sea?

a) 370km or 200 nautical miles, b) 150km or 80 nautical miles, c) 300km or 160 nautical miles, d) 200km or 110 nautical miles

4. The approximate latitude, longitude of San Diego, California

a) 43N, 117E **b) 33N, 117W** c) 33S, 117E d) 43N, 93W

5. Continental crust rocks have a composition resembling:

a) granite, b) basalt, c) sandstone, d) limestone

6. Geologically, Hawaii is:

a) a coral reef, b) top of actively forming mountain chain at plate boundary, **c) built up by volcano over a hot spot in the middle of lithospheric plate**

7. Most of the earth's active volcanoes are located:

a) at plate margins, b) in high latitude areas, c) near major rivers, d) in central regions of continents

8. Earth's radius

a) 6370 km b) 5010 km c) 8460km d) 7100 km

9. Average depth of the entire world ocean:

a) 2800km **b) 3800 km** c) 4200 km d) 1000km

10. At what temperature does freshwater have a maximum density?

a) 0 C, b) 10 C, **c) 4 C**, d) 1 C

11. Which is the best definition for the density of an object?

a) the ratio of mass to volume of the object b) the amount of space the object occupies
c) the ratio of volume to the mass of the object d) the quantity of the matter in the object

12. Which of the following best describes the Pacific Ocean?
a) Mountain building dominates its margins b) shallowest ocean basin c) has very few islands d) receives discharges of the largest rivers
13. The unique structure of the water molecule causes it to behave as
a) a polar molecule b) an ion c) a conservative property d) an acid e) a magnet
14. The least amount of oil and gas is expected to come from:
a) shallow seas b) continental slopes c) continental rises d) Texas e) deep sea
15. According to Professor Gibson and New Cosmology, approximately how many earth-size planets orbit a star?
a) one million b) 10 c) 30 million d) 30 billion e) 3
16. Order of the major constituents of sea salts in the ocean from the greatest to least abundant in percent by weight:
a) chloride, sodium, sulfate, magnesium b) sodium, chloride, sulfate, magnesium c) sodium, sulfate, magnesium, chloride d) sodium, chloride, magnesium, sulfate e) chloride, magnesium, sodium, sulfate
17. Today, what is the most common scientific way to measure salinity:
a) taste it and you can determine the salinity b) measure the conductivity of the seawater c) dry the sample and weigh the left over salt d) compare the sea water to freshwater by weighing both
18. Which does NOT describe turbidity currents:
a) Sedimentation all jumbled up, so there are no graded beds, b) triggered by earthquakes or large discharge of riverborne sediment c) can transport sediment out onto the deep ocean floor d) can reach speeds up to 100km/hr
19. Where some of the oldest oceanic crust on Earth is found:
a) Eastern Pacific Ocean b) Western Pacific Ocean c) middle of the Atlantic Ocean d) just south of Australia
20. The pH of seawater is normally:
a) 7 b) 10 c) 8 d) 6 e) 1
21. The atmospheric structure starting from earth and proceeding upward is:
a) Troposphere, Stratosphere, Tropopause, Stratopause, Mesosphere b) Stratosphere, Stratopause, Troposphere, Tropopause, Mesosphere c) Tropopause, Troposphere, Mesosphere, Stratopause, Stratosphere d) Troposphere, Tropopause, Stratosphere, Stratopause, Mesosphere
- 22) What is the most effective at causing an ozone hole?
a) carbon dioxide b) methane c) global warming d) CFCs e) DDT
- 23) The sun primarily radiates:
a) infrared energy b) visible-light energy c) ultraviolet energy d) none of the above

24) On a non-rotating Earth, wind at the surface would flow:
a) from the equator to the poles b) east to west c) **from the poles to the equator** d) west to east e) there would be no wind

25) What is NOT characteristic of a low-pressure system:
a) rising air b) **convergence high up in the atmosphere** c) clouds d) convergence near the surface

26) Average seawater contains:
a) **3.5% salt** b) 35% salt c) 1% salt d) 60% salt

27) Which is NOT characteristic of an El Nino event:
a) Warmer than usual waters in the Eastern Pacific Ocean b) reduction in fish catches off Peru c) **a build up of the prevailing westerly winds (Trade Winds) on the eastern side of the Pacific Ocean** d) brings lots of rain to Southern California

28) What is the third most abundant gas in the atmosphere?
a) **Argon** b) methane c) CO₂ d) oxygen

29) Which property increases with ocean depth?
a) temperature b) **density** c) salinity d) **both salinity and density**

30) Mathew Fontaine Maury is best known for:
a) exploration of the Pacific and Antarctica, b) **contributions to the science of oceanography**, c) inventing the compass, d) early map of the Gulf Stream, e) development of the chronometer

31. X mass of Uranium can produce _____ times more energy than X mass of coal
a) one million b) **ten billion** c) ten d) 100 trillion

32. The Bering Sea is a marginal basin characterized as
a) a long, narrow marginal sea surrounded by a continent b) **a basin formed by island arcs** c) a basin lying between two continents d) it is not a marginal basin

33. Which path best characterizes shooting a cannon from L.A. to San Diego?
a) will be straight, no curve b) **will slightly curve right** c) will slightly curve left d) would hit Texas

34. The geology of the Andes Mountains in South America:
a) Continent-Continent Collision b) Divergence of two plates creating volcanism c) **Subduction of Oceanic plate under Continental plate** d) Hot spot in the middle of Continental Plate

35. Gaia Hypothesis:
a) Theory of lithospheric plate movement caused by mantle convection b) Theory that paleomagnetism and identical fossils and geological units help prove that plate tectonics is true c) **Theory that physical and chemical conditions on Earth's surface have been controlled by presence of life** d) Theory that evaporation makes seawater saltier and river influx makes seawater fresher.

True (a) / False (b)

36. The oldest oceanic crust in the Atlantic Ocean is found furthest away from land near the Mid-Ocean Ridge **F**
37. Nitrogen is the most abundant gas in the atmosphere and the *oceans* **T**
38. The stratosphere gets colder as elevation increases **F**
39. Normally, wind blows from the sea to land during the night and from the land to the sea during the day **F**
40. Heavy monsoon rains fall on India and Southeast Asia during the winter **F**
41. The Jet Stream makes flying from LA to New York faster and enables planes to use less fuel **T**
42. Pangea began to split apart ~250 million years ago, resulting in the formation of the Tethys Sea **T**
43. The ozone is located in the stratosphere **T**
44. Hurricanes have low pressure **T**
45. The thermocline is a zone in the ocean in which temperature changes very slowly with depth **F**
46. Manganese nodules are examples of hydrogenous sediment **T**
47. Condensation (water vapor turning into liquid water) gives off energy (exothermic) **T**
48. The dominant wavelength that Earth radiates is visible. **F**
49. Continental crust is magnesium and iron rich, while the oceanic crust is silica rich **F**
50. The Pacific Ocean margin is a passive margin **F**
51. Sodium has a much longer residence time in the ocean than aluminum **T**
52. Both foraminifera and diatoms are made up of calcium carbonate **F**

WRITE DOWN TITLE OF YOUR PAPER ON BACK OF SCANTRON (Part 2 Name)