Physical Geology

Test 3

Summer 2003

Please enter your answer on a blue scantron. We will watch together the slides needed for the final questions.

1. What is discharge? (a) the amount of water flowing past a certain point in a given amount of time (b) the volume of a stream divided by it's cross-sectional area (c) the width of a stream times it's depth (d) a stream's cross-sectional area multiplied by its velocity (e) both a and d

2. Which of the following is **not** an effect of a dam? (a) creation of a local base level (b) deposition of sediment in the reservoir behind the dam (c) increase in velocity upstream from the dam (d) reduction of sediment load downstream of the dam

3. What is the downward limit of stream erosion? (a) head (b) base level (c) discharge (d) gradient (e) water table

4. As part of the hydrologic cycle, the water that soaks into the ground is called (a) evaporation (b) infiltration (c) precipitation (d) runoff

5. Which part of a stream's load is actually held in solution? (a) chemical load (b) suspended load (c) weathered load (d) dissolved load (e) bed load

6. Natural levees form because (a) Mother Nature likes to protect our cities. (b) the sediment load is greater than the stream can transport (c) water velocity decreases on the inside of a meander (d) water velocity decreases when flood waters top the banks of the stream

7. Urbanization contributes to flooding by all of the following **except** (a) decreasing the time until peak stage is reached (b) increasing the peak stage (c) increasing the total infiltration (d) increasing the total volume of runoff

8. Which of the following approaches to flood control is a non-structural approach? (a) artificial levees (b) channelization (c) dams (d) zoning regulations

9. Which of the following drainage patterns forms atop relatively homogeneous rocks and sediments? (a) dendritic (b) radial (c) rectangular (d) trellis

10. The competence of a stream is determined mainly by (a) amount of bed load (b) elevation above ultimate base level (c) water velocity (d) stage

11. When a stream meanders, the fastest velocity is (a) on the inside of the bend (b) in the center of the channel (c) on the outside of the bend (d) the same all across the channel

12. Which of these best describes a delta? (a) a triangular-shaped deposit (b) a deposit that forms where a river meets an ocean or lake (c) a cone or fan-shaped deposit formed in mountainous regions (d) a sweeping bend in a river (e) the part of a valley that is inundated during a flood

13. The height of a stream's surface is its (a) discharge (b) profile (c) stage (d) velocity

14. What is the leading cause worldwide of death of children under five years of age? (a) accidents (b) cancer (c) diarrhea (d) war

15. The upper limit of the zone of saturation is called the: (a) water table (b) capillary fringe (c) zone of aeration (d) groundwater (e) belt of soil moisture

16. According to the video on Louisiana's Well Head Protection Program, what is the difference between the policy for confined aquifers and unconfined aquifers? (a) A radius of one mile from the well defines the area to be protected for confined aquifers but of two miles for unconfined aquifers. (b) A radius of two miles from the well defines the area to be protected for confined aquifers but of one mile for unconfined aquifers. (c) A radius of one mile from the well defines the area to be protected for unconfined aquifers, but confined aquifers are protected naturally by aquitards atop them and need no further protection. (d) The two aquifer types are protected in the same way.

17. The two main factors controlling the direction groundwater move are (a) elevation and pressure (b) porosity and permeability (c) rainfall and infiltration (d) time and distance

18. Which of the following are **not** concerns with groundwater use in the South Louisiana area? (a) contamination (b) excessive fluoride (c) saltwater intrusion (d) subsidence

19. Porosity is: (a) the number of pores in a rock. (b) the amount of water stored in a rock. (c) the ability to transmit a fluid. (d) the ability of a rock to hold water. (e) the percentage of the total volume that consists of pore spaces.

20. The mathematical relationship that relates velocity, head, length of flow, and permeability is: (a) the law of groundwater flow. (b) Darcy's law. (c) hydraulic gradient. (d) groundwater coefficient. (e) downdraw.

21. As water is withdrawn from a well, the water table drops around the well, producing: (a) a cone of depression. (b) a dowser. (c) travertine deposits. (d) contamination. (e) an artesian well.

22. The area of a glacier in which new ice is forming is called the: (a) zone of wastage. (b) zone of ablation. (c) zone of calving. (d) snowline. (e) zone of accumulation.

23. The theory of variations in solar radiation developed by Milankovitch is used to explain (a) the location of plates near the poles, allowing the expansion of glaciers. (b) the periodic nature of glacial-interglacial periods during the last two million years. (c) the change in relative sea level. (d) how Alaska and Siberia were connected by a land bridge.

24. If ablation is equal to accumulation, then: (a) calving occurs. (b) the glacier stops flowing. (c) the glacial front stops moving. (d) surging occurs. (e) both a and d.

25. The outermost limit of a glacial advance is marked by a (a) lateral moraine. (b) recessional moraine. (c) medial moraine. (d) ground moraine. (e) terminal moraine.

26. How old is Oetzi, the mummified Ice Man found near the Austrian-Italian border? (a) 5.3 years (b) 5,300 years (c) 5,300,000 years (d) 5,300,000,000 years

27. When we discuss global climate change, which of the following is **not** generally agreed upon. (a) The composition of the atmosphere has varied greatly during geologic time. (b) The Earth has been warmer during previous geologic time. (c) Humans have greatly affected the rate of global warming. (d) We are presently in an interglacial period, considerable warmer than 20,000 years ago.

28. Mountain ranges may block precipitation from reaching certain areas, creating: (a) alluvial fans. (b) rainshadows. (c) playas. (d) inselbergs. (e) subtropical highs.

29. The desert along the western coast of South America is best explained by (a) cold ocean currents (b) distance from a source of moisture (c) Hadley cells (d) rain shadows

30. Which of the following processes have the biggest impact in arid climates? (a) chemical weathering (b) movement of water (c) vegetation (d) wind

31. Streams that are usually dry are called: (a) epithermal. (b) effluent. (c) alluvial. (d) playas. (e) ephemeral.

32. A water molecule in an open-ocean wave illustrates what type of motion? (a) horizontal movement perpendicular to the direction of wave motion (b) individual molecules do not move (c) movement in a circle (d) movement in a straight line, parallel to the direction of wave motion (e) vertical movement perpendicular to the direction of wave motion

33. The beach management project in Pensacola focuses primarily on (a) increasing vegetation as ground cover (b) protecting the beach from hurricane surge (c) pumping sand onto the beach (d) reducing human impacts

34. In proximity to shorelines, water waves transform into what type of waves? (a) s-waves (b) waves of oscillation (c) Rayleigh waves (d) Love waves (e) waves of translation

35. Waves that reach the shore at an angle produce what features? (a) beach drift (b) fetch (c) longshore drift (d) all of the above (e) both a and c

36. Estuaries are associated with submergent coastlines, formed when: (a) the land is uplifted. (b) an ice age is beginning. (c) river mouths are eroded, thus growing wider. (d) sea level drops. (e) sea level rises.

37. The coastline of California is dominated by the effects of (a) active plate margins (b) glaciation (c) growth of organic material (d) rising sea level

38. Estuaries, such as Lake Pontchartrain are particularly rich biologically because of all of the following **except** (a) Predators are not present. (b) Sources of nutrition are abundant. (c) They provide a place protected from the open ocean for life to reproduce and grow. (d) Wastes are flushed to the open ocean.

39. Which of the following has the biggest impact on tides? (a) earthquakes (b) moon (c) sun (d) wind

From the slides:

40. The feature I will point to in the slide is (a) an alluvial fan (b) a kettle lake (c) the Old River Control Structure (d) an oxbow lake

41. The rocks shown are on the bank of the Mississippi River near the Moonwalk. They were placed there to (a) prevent erosion of the cutbank (b) prevent the river from changing course and going down the Atchafalaya River (c) provide a pleasant spot for fishermen (d) reduce the amount of sediment choking our wetlands

42. The purpose of the concrete structure in the slide includes all of the following **except** (a) capturing spring water (b) improving health in the surrounding community (c) reducing contact between water and its users, such a humans and livestock (d) reducing erosion of the steep hillsides

43. Which of the following does **not** describe Old Faithful? (a) boiling water (b) a geyser (c) located near a fault that brings hot water from great depth (d) overlying a continental hotspot

44. In the figure shown, the area contains all of the following **except** (a) ground water (b) karst topography (c) limestone (d) sinkholes (e) volcanic activity

45. The mountain shown is the most famous example of (a) an arrete (b) a horn (c) a sea stack (d) a teton

46. At upper part of the hanging valley shown is a (a) cirque (b) horn (c) playa lake (d) salt flat

47. Which of the following deserts is best explained by the Hadley cells shown in the slide? (a) Atacama (western coast of South America) (b) Gobi (c) Great Basin (d) Sahara

48. The depression I will point to, behind the marker to the Overland Trail, is caused by (a) a collapsed caldera (b) excavation for a land fill (c) glaciers (d) wind

49. When a wave approaches the shore, which of the following does **not** happen? (a) Its base drags on the ocean bottom. (b) It steepens and breaks. (c) Wave height increases. (d) The wave is refracted. (e) Wave velocity increase.

50. The pipe shown is part of (a) a beach nourishment program (b) homeland defense initiative (c) a new emblem for the Corps of Engineers. (d) a wetland restoration project