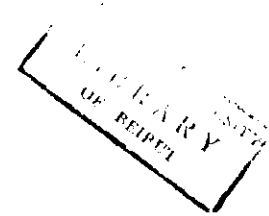




American University of Beirut
Geology Department
Geol. 205
Final Exam

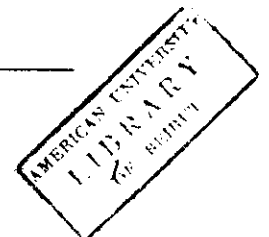


Feb. 7, 1998

Student Name: _____

Part I. Choose the best answer (40 pts.).

1. Ground subsidence is mainly caused by . . . mining.
- | | |
|-----------------------------|--------------------------|
| a. open-pit and strip | b. fluid and strip |
| c. open-pit and underground | d. fluid and underground |
-
2. Some hydrocarbon compounds and more complex substances resulting from burning fossil fuel undergo reactions with the atmosphere, as in the oxidants produced by hydrocarbons and nitrogen oxides reacting in the presence of sunlight. These pollutants produce:
- | | |
|---------|-----------------------|
| a. soot | b. photochemical smog |
| c. ash | d. dust |
-
3. . . . is a process by which rubber must be shredded and broken down chemically and then reacted with sulphur compounds.
- | | |
|------------------|---------------|
| a. Melting | b. Pulping |
| c. Revulcanizing | d. Composting |
-
4. Nuclear fission inside the earth contributes to the . . . source of energy.
- | | |
|----------------|---------------|
| a. fossil-fuel | b. geothermal |
| c. tidal | d. wave-power |
-
5. . . . as a method used in the search for uranium deposits, is capable of determining the strength of near surface radiation.
- | | |
|---------------------------|-------------------------|
| a. Gamma-ray spectrometry | b. Gross count survey |
| c. Radon measurement | d. Magnetometric survey |
-
6. Building dams across rivers with . . . sediment transport is economically . . . beneficial.
- | | |
|-------------------|------------------------|
| a. low . . . not | b. moderate . . . very |
| c. low . . . very | d. high . . . very |
-



7. Solder is a metallic alloy made up of . . . and has . . . melting temperature.
- a. Copper and Tin . . . high
c. Copper and Tin . . . low
- b. Lead and Tin . . . high
d. Lead and Tin . . . low
-
8. Aluminium is the . . . most abundant metal after
- a. second . . . Silicon
b. second . . . Iron
- b. third . . . Silicon and Iron
d. third . . . Iron and Copper
-
9. The earliest fertilisers were manures, and the best manures are those of:
- a. horses
c. birds
- b. goats
d. cows
-
10. The main use of sulphur is in the production of:
- a. H_2SO_4
c. rubber
- b. soaps
d. plastics
-
11. The last salt that precipitates upon the evaporation of sea water is:
- a. halite
c. gypsum
- b. sylvite and carnallite
d. anhydrite
-
12. . . . is the largest, in volume, mineral commodity used in the United States of America and many other countries.
- a. Building stone
c. Sand and gravel
- b. Crushed rock
d. Dimension stone
-
13. Mortar is a mixture of cement with:
- a. sand
c. sand and bricks
- b. sand and gravel
d. gravel and rip-rap
-
14. For the formation of diamond pressures at depth of . . . km are required, and it is mostly used (in volume)
- a. 150 . . . as gemstone
c. 150 . . . in industry
- b. 15 . . . as gemstone
d. 15 . . . in industry
-

15. The total annual precipitation in Lebanon is about . . . million m³, with a discharge by rivers of . . . million m³.

- a. 3700 . . . 960
b. 9600 . . . 5200
c. 3700 . . . 800
d. 9600 . . . 3700
-

16. The . . . of water ownership, applied in the . . . USA gives the right to use the water of a lake or stream to the properties bordering them.

- a. riparian rights . . . Western
b. prior appropriation . . . Western
c. riparian rights . . . Eastern
d. prior appropriation . . . Eastern
-

17. . . ., is the desalinisation method that uses semi-permeable membranes.

- a. Distillation
b. Electrodialysis
c. Reverse osmosis
d. Freezing
-

18. Cone of depression forms upon . . . water wells.

- a. injection into
b. pumping from
c. drilling
d. digging
-

19. Laterites and bauxites form most of the soil of . . . climate.

- a. humid mid-latitude
b. hot arid
c. humid tropical
d. cold
-

20. Crossing N. America from Central parts to SW the thickness of the soil profile . . . , and from NE to its central part it

- a. increases . . . decreases
b. decreases . . . decreases
c. increases . . . increases
d. decreases . . . increases
-

Part II. Fill in the blanks (24 pts.)

1. Recycling often conserves not just material sources, but _____ and the materials recycled by melting are _____.

2. The indirect types of solar energy other than biomass and fossil fuels are: _____, _____, _____ and _____.

3. The abundant metals are: 1) _____, 2) _____, 3) _____, 4) _____, 5) _____ and 6) _____.
-
4. Major accumulations of phosphates developed only where _____ phosphate-saturated sea water moved across _____.
-
5. _____ or _____ is used for high quality porcelain, whereas _____ are mostly used as refractories (furnaces).
-
6. Ocean waters constitute _____% of the total amount of water, whereas ice caps and groundwater constitute _____% and _____%, respectively.
-
7. The amount of surface runoff is a function of rainfall, _____, the length of the drainage basin, _____ and _____.
-
8. The major factors of soil formation are: 1) parent material, 2) _____, 3) _____ and 4) _____.
-

Part III. Circle T = true or F= false, and explain why if it false (16 pts.)

- T F 1. Communion is the first stage in the processing of ores, it consists of crushing and grinding (milling).
-
- T F 2. Domestic or municipal refuse constitutes most of the solid-wastes bulk and contains many valuable raw materials and potential pollutants.
-
- T F 3. The advantage of fuel enrichment (nuclear power) is that, many of the problems of reactor design are overcome, such as the moderator is used so efficiently that the maximum operating temperature can be increased.
-
- T F 4. Solar energy can be converted directly into electricity by photovoltaic cells (commonly made of silicon); here, the light interacts directly with the electrons of a semiconductor to produce an electric current.
-
- T F 5. After World War II, Japan and European countries could make their own steel more efficiently than USA because their plants were new.

T F 6. Ammonia could be used directly to make fertilisers or it could be oxidised to make explosives.

T F 7. The only extractable occurrences of Potassium are those of K-feldspars such as orthoclase.

T F 8. To lower the melting temperature of silica (in glass) to about 1000 °C soda (Na_2O) is added, but this mixture has low chemical durability, so CaO and Al_2O_3 are added as stabilising agents to improve chemical resistance.

T F 9. Gems are thought to have been worn before cloths. They are the most valuable earth resources per unit size or unit weight.

T F 10. The highest precipitation zone is the equatorial belt, followed by the surrounding zones (25° - 30° of latitudes) with a rainfall rate of less than 1000mm.

T F 11. One of the soil conservation practices is the crop rotation, which involves planting a succession of different crops on the same piece of land.

Part IV. Answer only two of the following three questions (20 pts.)

1. Draw schematic diagrams showing the sequence of steps involved in strip mining, including one with a plan view; and discuss in short the environmental impacts of mining and quarrying comparing generally between different mining methods.
2. Describe (in one page) the Aral Sea case, emphasising on the causes and consequences; and give, in your opinion, some suggestions of possible reclamation measures.

3. Discuss the ocean power and fill in the loops shown on the ocean thermal energy conversion (OTEC) diagram (Fig. 1).

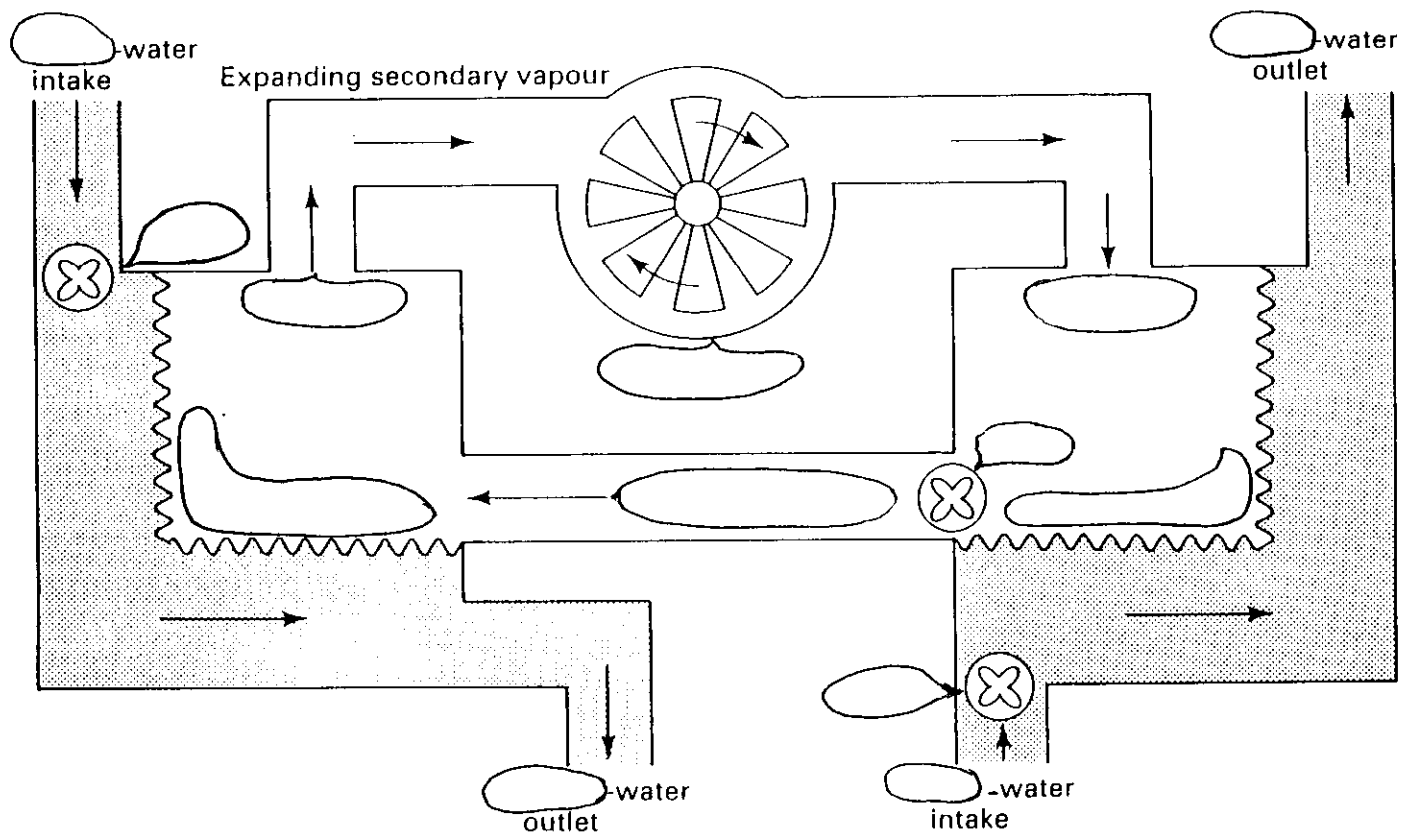


Figure 1

GOOD LUCK