

American University of Beirut
Geology Department
Geol. 205
Final Exam

February 1, 2000

Student Name: _____

Part I. Choose the best answer (60 pts.)

1. The formation of mineral resources in basalt and other relatively silica-poor rocks is one of . . . processes.

- a. subsurface igneous and metamorphic b. surface
c. shallow subsurface and diagenetic d. marine
-

2. Schist and gneiss, are the products of . . . metamorphism.

- a. surface b. high pressure-low temperature
c. regional d. contact
-

3. Rock salt (NaCl) and . . . (mineral resources) form by . . .

- a. bauxite . . . evaporation b. gypsum . . . evaporation
c. bauxite . . . weathering and erosion d. gypsum . . . weathering and erosion
-

4. As mineral resources, manganese nodules form by . . . processes.

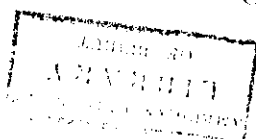
- a. marine b. shallow subsurface
c. diagenetic d. surface
-

5. Depending on the size, grade, . . . of the deposit a choice is made between surface and underground mining.

- a. latitude and shape c. shape & geographic location
b. latitude and depth d. shape and depth
-

6. Adit is a . . . feature in . . . mines.

- a. vertical . . . underground b. vertical . . . surface
c. horizontal . . . underground d. horizontal . . . surface
-



7. Some hydrocarbon compounds (resulting from fossil fuels) undergo reactions with oxidants in the atmosphere, in the presence of . . . , they produce . . .

- a. rain . . . photochemical smog
 - b. sunlight . . . photochemical smog
 - c. rain . . . fly ash
 - d. sunlight . . . fly ash
-

8. Fertilizers and . . . are . . . sources of pollution.

- a. factories . . . point
 - b. pesticides . . . point
 - c. factories . . . non-point
 - d. pesticides . . . non-point
-

9. After their completion, landfills could be used as parks and . . .

- a. residential sites
 - b. parking lots and pastureland
 - c. industrial areas
 - d. for public buildings
-

10. . . . involves heating solid wastes in the absence of air to 1650° so that they decompose to a range of chemical compounds

- a. Revulcanising
 - b. Pulping
 - c. Pyrolysis
 - d. Fermentation
-

11. With increasing burial coal forms in the following sequence: peat . . .

- a. lignite, bituminous and anthracite
 - b. lignite, anthracite and bituminous
 - c. bituminous, lignite and anthracite
 - d. bituminous, anthracite and lignite
-

12. In Middle Ages the source of energy was . . . , however with the Industrial Revolution there was a shift in Europe to . . .

- a. wood . . . petroleum
 - b. wood . . . coal
 - c. coal . . . petroleum
 - d. coal . . . oil shale
-

13. In the zone of . . . most of generated oil is transformed into thermogenic methane.

- a. biogenesis
 - b. diagenesis
 - c. catagenesis
 - d. metagenesis
-

14. Sticky bitumen was used by early Egyptians as a:

- a. glue for arrowheads
 - b. mortar for holding bricks
 - c. preservative for mummies
 - d. covering for roads
-

15. The first step in petroleum refining is:

- a. distillation
 - b. hydrogenation
 - c. thermal cracking
 - d. catalytic cracking
-

16. The first reported use of natural gas (piping through bamboo poles) was in:

- a. Arabia
 - b. Europe
 - c. Africa
 - d. China
-

17. The main characteristics of heavy oil and tar sand are: . . . in color; so viscous that they do not flow naturally; high in . . . content; and rich in asphaltines.

- a. dark . . . nitrogen
 - b. light . . . nitrogen
 - c. dark . . . sulfur
 - d. light . . . sulfur
-

18. Oil shale can be converted into . . . by . . .

- a. gas . . . heating
 - b. oil . . . heating
 - c. gas . . . crushing
 - d. oil . . . crushing
-

19. Energy reaches Earth's surface from 3 sources:

- a. solar, tidal and wind
 - b. solar, geothermal and wind
 - c. solar, tidal and hydroelectric
 - d. solar, geothermal and tidal
-

20. When bombarded by a neutron, Uranium-235 decays into . . . and three neutrons.

- a. Krypton and Barium
 - b. Calcium and Barium
 - c. Krypton and Potassium
 - d. Calcium and Potassium
-

21. . . . – facing windows in northern Hemisphere are the simplest type of solar collectors.

- a. East
 - b. West
 - c. North
 - d. South
-

22. In harnessing high-quality solar energy, sun rays are reflected up to the receiver by a group of mirrors called:

- a. thermostats
 - b. heliostats
 - c. reflecting cells
 - d. solar cells
-

23. Photosynthesis is the best example of . . . reactions by sunlight, which breaks down . . .

- a. photochemical . . . H₂O
 - b. photovoltaic . . . H₂O
 - c. photochemical . . . CO₂
 - d. photovoltaic . . . CO₂
-

24. Nuclear . . . is the energy that is emitted by the sun and . . .

- a. fusion . . . stars
 - b. fission . . . stars
 - c. fission . . . planets
 - d. fusion . . . planets
-

25. Saltpeter (fertilizer) is an important source of:

- a. sulfur
 - b. potash
 - c. phosphate
 - d. nitrogen
-

26. . . . is indispensable for all forms of life because it is found in deoxyribonucleic acid (DNA).

- a. Potassium
 - b. Nitrogen
 - c. Phosphorus
 - d. Sulfur
-

27. Oxygen . . . constitute 98% of the living plants.

- a. carbon and iron
 - b. hydrogen and carbon
 - c. carbon and magnesium
 - d. hydrogen and sulfur
-

28. In 1894, the . . . process was introduced for mining subsurface native sulfur deposits from salt domes.

- a. frash
 - b. pumping
 - c. melting
 - d. fracturing
-

29. . . . belongs to treated rock products.

- | | |
|--------------------|--------------|
| a. Dimension stone | b. Ashlar |
| c. Brick | d. Cut stone |
-

30. . . . is added to lower the melting temperature of glass, whereas . . . is added to improve chemical resistance.

- | | |
|-----------------------|-----------------------|
| a. Lime . . . soda | b. Soda . . . alumina |
| c. Lime . . . alumina | d. Soda . . . lime |
-

Part II. Circle T = true or F = false and explain why if it is false (20 pts.)

T F 1. Stopping process occurs where magmas gradually melt their way upwards incorporating other rocks.

T F 2. Some processes occur at very rapid rates; others such as glacier advance, volcanic eruptions and continental drift are very slow.

T F 3. Blowouts are hazards occurring when high-pressure oil or gas accumulation is unexpectedly encountered and the column of heavy drilling fluid fails to contain the erupting gas or oil.

T F 4. Radon is naturally occurring odorless, colorless chemically toxic gas produced by the decay of uranium and thorium.

T F 5. Open dumping is the cheapest and safest method of solid waste disposal.

T F 6. The main three types of work (energy forms) are mechanical thermal and chemical.

T F 7. Middle East basin (the Gulf countries) contain about 2/3 of the World's proven oil reserves.

T F 8. The two principal production methods of oil shale are 1) surface mining and processing; and 2) in situ retorting.

T F 9. The nuclear reactor must be operated under conditions that can maintain a fission chain and a constant power output known as stability.

T F 10. In harnessing hydroelectric power, dams are mainly constructed to store water from wet season to dry season and to provide constant flow of water.

T F 11. The best manures (natural fertilizers) are those of birds.

T F 12. The main sources (worldwide) of gravel are; quarried bed rocks, river flood plains and alluvial fans.

T F 13. Plaster is made of calcite (CaCO_3) and $\frac{1}{2} \text{H}_2\text{O}$.

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

1. Indicate and discuss the main three methods of mining and compare between their environmental impacts, draw schemes.
2. Discuss the hydroelectric and wind power.
3. Discuss halite and explain how it forms upon the evaporation of sea water.

GOOD LUCK