



UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA
FIRST SEMESTER EXAMINATIONS, NOV. – DEC. 2018

COURSE NO: GM 477
COURSE NAME: Mining Geology
CLASS: GM IV **TIME:** 2 hours

Name: _____ Index Number: _____

*Please answer all questions from both sections. Read every question carefully and circle/ underline the correct answer or supply the correct answer to the spaces provided. Note that a **false guess** in the True/False section will attract a negative half (-1/2) from your accrued marks.*

Section A

Question 1. Use the table to answer question 1 in section A. [20 marks]

The table below gives the parameters in an open pit mine and as mine geologist, your task is to determine the economic mineable blocks given the cut-off grade to be 1.5 g/t, bench height 3 m, Ounces factor 32.15074 and a fresh rock type of specific gravity 2.1. Compute the following (in four decimal places):

- a. The total dry tonnage
- b. The Total ounces
- c. Average grade
- d. Weighted grade
- e. What will be cost of the gold produced assuming the gold price is \$1100 per ounce?

Block	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14
Area (m ²)	20	15	18	25	21	32	29	26	32	40	46	45	38	39
Grade (ppb)	2200	1250	1600	2500	4100	1950	2100	800	1520	1800	3500	2400	1200	900
Recovery (%)	70	75	72	72	83	80	75	69	89	78	80	73	75	82

Section B

- The purpose of a detailed mapping is to outline mineralized ground, as closely as possible, and may involve trenching, drilling, or opening an underground shaft and usually precedes survey.
- The..... gold belt is the most outstanding and prosperous gold belt system in Ghana
- is a naturally occurring material with a high concentration of economically valuable minerals that can be mined for a profit.

4. The life cycle of a mine involves exploration, through development and finally.....
5. The Tarkwaian-hosted gold deposit consist of and
6. They represent large sectors of the earth's crust with known deposits. Examples include shield deposits, folded geo-synclinal belt deposits etc.
7. An occurrence of particular minerals or metals in sufficiently high concentration to be profitable to mine and process using current technology and under current economic conditions,
8. A change in the mineralogy of the country rock as a result of a chemical reaction with hydrothermal solutions is known as
9. Laterites are formed from oxidation and leaching of whereas gossans are formed from
10. The mine surveyor is responsible for the following except;
 - A. marking out ore blocks, B. control of pit floors, C. photogrammetry mapping D. stockpile volumes and E. blast mark-ups
11. If you are exploring for a bauxite ore deposit, which of the following is most likely to be associated with it?
 - a. laterite b. sulphides c. porphyritic rock d. sandstone e. ultramafic rock
12. The Deposit of the Tarkwaian conglomerate is an example of a
 - A. Mineral district B. Mineral province C. Mineral region D. Mineral centre
13. The recrystallized or altered area is generally more susceptible to fluids than the unaltered rock, suggesting that the ores owe their localization to increased
 - A. Porosity B. hydrothermal C. permeability D. saturation
14. Bibiani, anyamfuri and Kenyasi type-locality or deposit is related to
 - A. Minor intermediate/felsic intrusive B. Birimian-hosted C. mafic intrusive D. Oxide and laterites
15. The mine geologist is responsible for following except; grade sampling,
 - A. ore block B. interpretation, C. supervision of plant processing, D. pit mapping, E. mineral reserve reconciliation

16. Which of these sampling methods is best suited for ore-waste boundary or contacts?
 A. Reverse circulation B. rip lines C. diamond drilling D. auger E. blast holes
17. Which of these is typically used to trace outcrops of an ore body or orientation of structures?
 A. auger B. pitting C. diamond drilling D. Reverse circulation E. trench
18. Example of syngenetic and epigenetic deposits are vein and banded iron formation respectively
 [T/F]
19. Veins that lacks much quartz, particularly veins with carbonate gangue would give rise to conspicuous outcrops. [T / F]
20. Structural deformations such as foliation, folding and faulting is related to Birimian-hosted deposits only. [T / F]
21. To get the weighted grade of an ore block, a mine geologist divides the average metal content by the total tonnage. [T / F]
22. Surface mining requires large capital investment but generally results in high output rate of ore. [T / F]
23. At the early stage of exploration, the economic characteristics of the project are not accurately estimated therefore economic cut-off cannot be confidently chosen. [T / F]
24. In constructing the level plan, the face mapping can be complemented by pit floor lithological mapping using a variety of techniques. [T / F]
25. Stripping ratio is defined as the ratio of the ounces of ore in the pit to ounces of the waste. [T / F]
26. Assay procedures uses accurate representation of the mass of the sample being analyzed than in geochemical analytical techniques. Mention three assay techniques
 i.
 ii.
 iii.
27. The life cycle of a mine involves seven basic stages, what are these?
 A. b.
 c. d.
 e. f.
 g.
28. In an open pit mine the main objectives of a mine geologist or grade control geologist are
 A.

B.

C.

29. Classifications of ore are based on two broad schemes, what are these?

D.

E.

F. Majeed / G. M Tetteh