UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA

FIRST SEMESTER EXAMINATIONS, NOV. – DEC. 2018

COURSE NO: GL 123
COURSE NAME: PHYSICAL & STRUCTURAL GEOLOGY
CLASS: GD I **TIME:** 3 HOURS

Name: _____Index Number: _____

Fill in the blank spaces and answer all questions in this section. Each question carries one (1) mark

1. New seafloor is created at a _____? (a) deep-sea trench (b) mid-ocean ridge (c) subduction zone (d) transform fault

2. The descent of oceanic lithosphere into the mantle is the process of _____? (a) accretion (b) subduction (c) divergence zone (d) contraction fault

4. Which of the following features is not associated with a convergent plate boundary? (a) a mid-ocean ridge (b) earthquakes (c) a deep-sea trench zone (d) volcanic activity

5. Living organisms have been on Earth for _____ of Earth's history? (a) less than 1% (b) about 20% (c) about 50% (d) about 80%

6. The moon is? (a) older than the sun (b) older than most meteorites (c) older than the Earth (d) none of these.

7. The asthenosphere is _____. (a) cool and strong (b) cool and weak (c) hot and strong (c) hot and weak

8. Approximately how fast does an Earth lithospheric plate move? (a) several centimeters per year (b) several centimeters per day (c) several centimeters per hour (d) several centimeters per second

9. Which of the following is not a type of plate boundary? (a) convergent (b) divergent (d) transform fault (d) all of these are plate boundaries.

10. Volcanism is associated with which of the following types of plate boundaries? (a) convergent plate boundaries (b) divergent plate boundaries (c) transform fault plate boundaries (d) divergent and convergent plate boundaries.

11. The Andes Mountains of South America are a result of which type of plate boundary? (a) convergent (b) divergent (c) transform (d) they are not related to a plate boundary.

12. What is the name of the large supercontinent that existed 200 million years ago when all of the continents were together? (a) San Andreas (b) Andian (c) Indian (d) Pangaea

13. The inner core of the Earth is thought to be a.

14. The lithosphere of the Earth is divided into approximately…… plates which move relative to each other.

15. The Andes Mountains are being developed along what type of plate margin? ……

16. The vast expanse of time that marks the life of the Earth is known as……

17. The most widespread and costly type of mass wasting in terms of total material moved and monetary damage is (a) creep (b) debris flow (c) solifluction (d) slumping (e) mudflow

18. Down slope movement of a largely intact block along an essentially planar surface is (a) slump (b) landslide (c) rockfall (d) rock glide (e) earth flow

18. Which of the following conditions would favor a landslide? (a) regarding a cliff to a more gentle slope (b) unusually heavy and prolonged rainfall, (c) areas of horizontal rock layers (d) a stable natural drainage system

19. Shield volcanoes tend to erupt (a) rhyolite (b) basalt (c) andesite (d) gabbro (e) obsidian

20. The steep-walled structure formed by the collapse of the top of a volcanic mountain into an underlying magma chamber is called (a) a crater (b) a fissure (c) a caldera (d) a vent (e) none of these

22. When molten rock reaches the surface, it's called (a) lava (b) slag (c) magma (c) granite

23. According to Bowen's Series (a) quartz forms last (b) quartz and olivine form together (c) quartz forms before biotite (d) quartz forms first

24. A felsic magma (a) contains a high percentage of iron and magnesium (b) cools to form volcanic rocks such as basalt (c) contains more than 65% silica (d) is characterized as silica poor (e) contains mostly sodium and potassium.

25. The viscosity of magma is primarily controlled by (a) temperature (b) texture (c) silica content (d) elevation (e) pressure.

26. An igneous rock possessing mineral grains large enough to be seen without magnification is said to have a _____ texture (a) porphyritic (b) phaneritic (c) aphanitic (d) vesicular (e) fragmental.

27. Which of the following pairs of igneous rocks have the same mineral composition? (a) granite-tuff (b) basalt-gabbro (c) andesite-rhyolite (d) peridotite-andesite (e) pumice-diorite

28. The magma generated beneath spreading ridges is mostly (a) mafic (b) intermediate (c) felsic (e) mafic and intermediate (d) all of these

29. What type of volcanism is most rarely associated with rifting of continents (a) basalt (b) rhyolite (c) andesite

30. The largest intrusions in area and volume are: stocks (a) batholiths (b) laccoliths (c) lopoliths.

31. Which of the following magmas is most likely to be associated with violent eruptions? (a) rhyolite (b) basalt (c) andesite (d) diorite

32. To prevent long-term pollution of ground water, it is most important to protect (a) The recharge Zone (b) The area around the well (c) Streams and lakes (d) Springs and seeps

33. Most of the earth's water is (a) Lakes and rivers (b) ground water (c) Ocean water (d) Glacial ice

34. One of the factors in the eruption of a geyser (a) The boiling point of water increases with pressure (b) Hot water contains more minerals than cold water (c) Geyser water is full of high-pressure gases (e) Geyser water is unusually pure

35. The capacity of a material to transmit fluids is (a) porosity (b) aeration quotient (c) permeability, (e) saturation (d) solubility

36. Groundwater which is trapped by an impervious layer below is called (a) perched water table (b) artesian well (c) spring (d) pressurized

37. What makes rainwater able to dissolve carbonate rocks? (a) Carbon dioxide in solution makes the water slightly acid (b) Pollutants in the rainwater makes it alkaline (c) It becomes alkaline in percolating through the soil (d) Dissolved nitrogen forms diluted nitric acid

38. Most of the liquid fresh water on Earth is in ……

39. A well which flows naturally because the water is under pressure (a) aquifer (b) artesian (c) alkaline (d) mineralized

40. Excessive pumping of well water can suck salt water into coastal wells (a) cause subsidence (b) lower the water table (c) all the above

41. A landscape which forms as a result of solution of limestone by groundwater (a) karst landscape (b) basin-and-range topography (c) stoss-lee topography

42. Sinkholes and solution collapse features commonly form in any of the following rock types except (a) chert (b) gypsum (c) limestone (d) dolomite (e) rock salt or halite

43. The primary force which is responsible for the downward migration of groundwater is (a) surface tension (b) air pressure (c) gravity (d) precipitation (e) none of these

44. The following earth material has the greatest porosity (a) sandstone (b) granite (c) recently deposited sand (d) recently deposited mud (e) limestone

45. Icebergs are formed by (a) freezing of sea water (b) river ice which is carried out to sea (c) pieces of glacial ice breaking off the glacier (d) water freezing on the sea floor and floating to the surface.

46. The boundary between the saturated zone and the unsaturated zone is called the_____ (a) water table (b) aquifer (c) aquiclude (d) porosity.

47. What is the term for a relatively impermeable geologic unit? (a) an artesian (b) an aquiclude (c) an aquifer (d) none of these.

48. Stalactites and stalagmites in caves are composed of _____ (a) quartz (b) alkali feldspar (c) halite (d) calcite

49. Hard water contains large amounts of _____ (a) lead (b) sodium (c) calcium (d) silicon

50. Which one of the following features is a sure sign of karst? (a) sinkholes (b) artesian wells (c) cones of depression (d) speleothems

54. Groundwater represents how much of the world's fresh water supply? (a) about 1% (b) about 5% (c) about 20% (d) about 50%

55. Which of the following rocks has the highest permeability? (a) an unfractured shale (b) a cemented sandstones (c) an uncemented sandstone (d) all of these rocks have approximately the same permeability

56. Which of the following materials has the lowest porosity? (a) shale (b) gravel (c) granite (d) sandstone

57. Water that is good enough to drink is called _____ (a) potable water (b) groundwater (c) surface water (d) artesian water

58. Which of the following can contaminate an aquifer? (a) landfills (b) agricultural regions (c) gas stations (d) all of the above

59. Which of these is till? (a) fine flacial lake clay, (b) well-sorted outwash sand, (c)a polished rock outcrop, (d) unsorted sand, (e) gravel and clay in a moraine

60. The most recent ice age occurred during the: (a) Archean Eon, (b) Cambrian Period, (c) Pleistocene Epoch, (d) Tertiary Period, (e)Mesozoic Era

61. The earth's natural Greenhouse Effect is mostly due to Carbon dioxide, Methane, Sulfur dioxide, Water vapor

62. Seismic waves arrive in the following order: (a) P, S, surface, (b) P, surface, S, (c) S, surface, P, (d) S, P, surface, (e) surface, S, P

63. The instrument used to record earthquakes waves is called: (a) quakeometer, (b) strainometer, (c) seismogram, (d) seismograph, (d) none of these.

64. The outer core of the earth is probably liquid because: (a) it does not transmit S waves, (b) it must float on top of the inner core, (c) it does not transmit P and S waves, (d) it has high rigidity, (e) none of these

65. Another name for a seismic sea wave is: (a) tidal wave, (b) tsunami, (c) elastic sea wave, (d) bonsai, (e) none of these

66. The core of the earth is composed primarily of (a) iron and sulfur, (b) iron and nickel, (c) nickel and cobalt, (d), silicon and oxygen (e) none of these

67. The scale for measuring earthquake intensity is: (a) Mercalli, (b) Richter, Moh's, (c) Wentworth's

68. The asthenosphere: lies beneath the lithosphere, is composed primarily of peridotite, (a) behaves plastically and flows slowly, (b) is the zone over which plates move, (e) all of these

69. An epicenter is: the location where rupture begins, (a) the point on the Earth's surface vertically above the focus, (b) the same as the hypocenter, (c) the location where energy is released, (d) none of these

70. A major seismic discontinuity at a depth of 2,900 km is the: (a) core-mantle boundary, oceanic crust-continental crust boundary, (b) Moho, (c) inner core-outer core boundary, (d) lithosphere-asthenosphere boundary

81. Continental crust an overall composition corresponding closely to that of a) basalt, (b) iron-nickel alloy, (b) sandstone, (c) gabbro, (d) granodiorite

82. The west coast of South America is an example of a(n) _____ plate (a) boundary divergent oceanic-continental, (b) continental-continental, (c) transform, (d) oceanic-oceanic

83. An excellent example of a present-day mountain system forming as a result of a continent-continent collision is the: (a) Andes, (b) Alps, (c) Rocky Mountains , (d) Appalachians, (e) Himalayas

84. The actual process that makes plates move is (a) probably ridge push, (b) mantle flow driven by convection, (c) slab pull at subduction zones, (d) all of these

85. In drilling an oil well, you drill through a horizontal red rock layer. Then you hit a zone of sheared and broken rock. Then later on you hit the red rock again. You have encountered an (a) anticline, (b) a homocline, (c) a syncline, (d) a thrust fault

86. An elongate fold in which all the strata dip in toward the center is a(n):dome, syncline, monocline, anticline, basin

87. An oval to circular fold with all strata dipping outward from a central point is a(n):plunging anticline, recumbent syncline, dome, basin, overturned syncline

88. The intersection of an inclined plane with a horizontal plane is the definition of: horizontal strata, strike, dip-slip movement, joint, folded strata

89. Superposition means (a) that later events leave their impressions on things that formed earlier, (b) is a means of assigning relative ages, (c) is how we know a dike is younger than the rocks it intrudes, (d) is the reason younger rocks usually overlie older ones ,(d) all of the above

90. A buried erosional surface is called: (a) a paraconformity, (b) an unconformity, (c) a peneplain, (d) a conformity, (d) none of these

91. An absolute age date for a dike intruding a sedimentary rock reveals the (a) youngest possible age of the sedimentary rock, (b) oldest possible age of the sedimentary rock, (c) age of the next overlying sedimentary stratum, (d) absolute age of the sedimentary rock

92. Which fundamental geological principle states that the oldest layer is on the bottom of a vertical succession of sedimentary rocks and the youngest is on top? (a) lateral continuity, superposition, (b) fossil succession, (c) cross-cutting relationships, (d) original horizontality.

93. The era younger than the Mesozoic is the: (a) Proterozoic, (b) Phanerozoic, (c) Archean, (d) Cenozoic, (e) Paleozoic

94. The separation of detrital materials according to grain size is called (a) sorting, (b) graduating, (c) dessication, (d) collimating, (e) none of these

95. The primary process by which bed load is transported is: (a) suspension, (b) precipitation, (c) abrasion, (d) saltation

98. The bowl-shaped depression at the upper end of a glacial trough is a(an):(a) inselberg, (b) drumlin, (c) cirque, (d) till, (e) lateral moraine

99. Rocks abraded by glaciers may develop a smooth surface that shines in reflected light. Such a surface is called glacial: (a) grooves, (b) striations, (c) polish, (d) till, (e) flour

100. The most recent ice age occurred during the: (a) Archean Eon, (b) Cambrian Period, (c) Pleistocene Epoch, (d) Tertiary Period, (e)Mesozoic Era

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