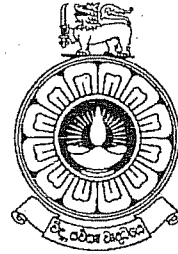


THE OPEN UNIVERSITY OF SRI LANKA
CENTRE FOR ENVIRONMENTAL STUDIES AND
SUSTAINABLE DEVELOPMENT



M.Sc. IN ENVIRONMENTAL SCIENCES- LEVEL 07 - 2016/17

NEP1211-Understanding the Environment

OPEN BOOK TEST - 01

DATE: 7th May 2017

DURATION: ONE HOUR

TIME: 1.00 pm – 2.00 pm

REGISTRATION NO:

This question paper consists of twelve (12) pages with fifty (50) Multiple Choice Questions.

IMPORTANT INSTRUCTIONS TO CANDIDATES

- Write your Registration Number in the space provided.
- Answer **ALL** questions.
- **Multiple Choice Questions (Part A):** Indicate answers in the answer sheet provided by placing a cross (X) in the relevant cage.
- Do not remove any page/part of this question paper from the examination hall.



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REGISTRATION NO:

ANSWER SHEET

Q. No.	(a)	(b)	(c)	(d)	Q. No.	(a)	(b)	(c)	(d)
1					26				
2					27				
3					28				
4					29				
5					30				
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24					49				
25					50				



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NEP1211–Understanding the Environment

OPEN BOOK TEST - 01

Multiple Choice Questions

(2 marks x 50 = 100 marks)

1. What are the two most abundant elements by mass found in Earth's crust?
 - a) aluminum and iron
 - b) oxygen and silicon
 - c) sodium and chlorine
 - d) calcium and carbon

2. Nowhere on earth is the oceanic crust more than about 200 million years old because:
 - a) sediment buries the oceanic crust
 - b) meteorites reverse the magnetism
 - c) geomagnetic reversals erase the age
 - d) oceanic crust is continually destroyed at subduction zones

3. The S-wave shadow zone is evidence that:
 - a). the outer core is liquid.
 - b). the inner core is liquid.
 - c). the inner core is solid.
 - d). the outer core is solid.

4. The geothermal gradient in the crust averages:
 - a). 25 degrees Celsius per kilometre
 - b). 1 degree Celsius per kilometre.
 - c). 10 degrees Celsius per kilometre.
 - d). 100 degrees Celsius per kilometre.



5. The outer part of the mantle is the:

- a) Asthenosphere
- b) Moho
- c) Lithosphere
- d) Crust

6. The boundary that separates the crust from the mantle is called:

- a). Crust- Mantle boundary
- b). The Mohorovicic discontinuity
- c). The Gutenberg discontinuity
- d). the lithosphere

7. Heat inside the Earth:

- a). is generated by radioactive decay.
- b). is uniform throughout the interior.
- c). decreases with increasing depth.
- d). none of above

8. The composition of the upper mantle is known because:

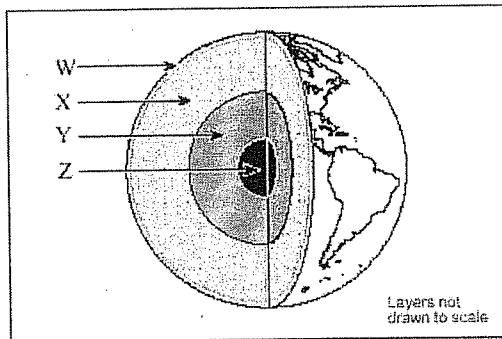
- a). samples of mantle rock have been analysed by scientists.
- b). meteorites are believed to be similar to the mantle.
- c). some caves on Earth extend into the mantle.
- d). none of these.

9. Why was paleomagnetism so important in discovering plate tectonics?

- a). It illustrated the location of the North Pole
- b). It illustrated sea floor spreading
- c). It allowed measurement of mountain building rates
- d). It allowed the depth of the oceans to be measured



10. The layer that will absorb S-waves is



- a) W
- b) X
- c) Y
- d) Z

11. Plates which slide past each other have boundaries known as

- a). Transform faults
- b). Divergent boundaries
- c). Convergent boundaries
- d). Mid ocean ridge

12. What is the name for the Supercontinent to which all of the land mass on Earth was joined approximately 600 million years ago?

- a). Pangaea
- b). Gondwanaland
- c). Laurasia
- d). Gaia

13. The same rocks and fossils can be found on the coasts of Africa, North America, and South America, despite the fact that these continents are separated by vast oceans. This was some of the first compelling evidenced for _____

- a) Earth's magnetic field
- b) Isostatic rebound
- c) Subduction zones
- d) Continental drift

14. The Himalayas represent an orogeny along a

- a) continental-continental plate boundary
- b) oceanic-oceanic plate boundary
- c) oceanic-continental plate boundary
- d) intra-continental rift



15. In geological studies, all of the following are TRUE of P waves except that they:
- a) are body waves
 - b) travel like sound waves
 - c) can pass through liquids
 - d) are slower than S waves
16. How thick is the oceanic crust in average?
- a) about 8km
 - b) about 200 km
 - c) about 80 km
 - d) about 20km
17. Iceland has a great deal of volcanic activity. The reason for this is:
- (a) it was formed above a mid-ocean rift.
 - (b) it is part of the "Ring of Fire".
 - (c) two tectonic plates are rubbing against each other under Iceland
 - (d) the American plate is diving under the European plate in this region.
18. An unconformity is a surface within a sedimentary sequence where
- a). there was possibly a period of non-deposition and/or extensive erosion.
 - b). erosion definitely did not occur.
 - c). there are fossils.
 - d). all of these choices
19. The cross-cutting rule states that
- a). the strata of rocks are deposited from youngest to oldest
 - b). an event that disturbs a rock is younger than the rock layer itself
 - c). the crosscutting rule does not apply to igneous rocks
 - d). eroded surfaces occur following the deposition of rocks



20. The appearance or quality of light reflected from the surface of a mineral is called _____.

- a) streak b) lustre c) hardness d) fracture

21. In Mohs' scale of hardness, how many minerals are of silicate composition?

- a) 2 b) 3 c) 4 d) 5

22. Which of the following is MOST likely to be an example of a mineral?

- a) a pearl from pearl oyster
b) a piece of granite
c) a piece of ice in a glacier
d) a diamond made in a laboratory.

23. Which of the following is not an example of an oxide?

- a) spinel c) galena
b) magnetite d) corundum

24. Which of the following is MOST likely to be an example of metallic oxide of a mineral?

- a) corundum c) rutile
b) spinel d) quartz

25. From the following choices, pick the one that is LEAST likely to have cleavage.

- a) double-chain silicates like amphibole
b) isolated-tetrahedron silicates like olivine
c) sheet silicates like biotite
d) single-chain silicates like pyroxene



26. Which of the following mica mineral contains appreciable amount of Li content

- a) biotite
- b) muscovite
- c) phlogopite
- d) lepidolite

27. Which one of the following chemical composition denotes the amphibole group of minerals?

- a) XYZ_2O_5
- b) $(XY)_{7-8} Z_4O_{11} (OH)_2$
- c) $X_2Y_3(ZO_4)_3$
- d) XO_2

28. Thorium extracted from monazite belongs to which one of the following groups?

- a) oxide
- b) silicate
- c) phosphate
- d) carbonate

29. Which two minerals have cleavage planes with right angles (perpendicular to each other)?

- a) phlogopite and biotite
- b) amphibole and sulphur
- c) quartz and calcite
- d) halite and pyroxene

30. What is the main difference of breccia and conglomerate?

- a) conglomerates are coarse-grained than breccia
- b) conglomerates have more rounded grains, whereas breccia have angular grains
- c) conglomerates are finer than breccias
- d) conglomerates have more angular grains whereas breccia have rounded grains



31. What is meant when referring to the **texture** of an igneous rock?

- a) the types of minerals present
- b) the colour of the rock
- c) the size, shape and arrangement of mineral grains
- d) whether the rock is volcanic or plutonic

32. The majority of the rocks that occur at the surface of the Earth are

- a) intrusive igneous rocks
- b) extrusive igneous rocks
- c) metamorphic rocks
- d) sedimentary rocks

33. Basaltic bedrock of the oceanic crust is classified as

- a) felsic, with density of 2.7 gcm^{-3}
- b) felsic, with density of 3.0 gcm^{-3}
- c) mafic, with density of 2.7 gcm^{-3}
- d) mafic, with density of 3.0 gcm^{-3}

34. Choose the correct pair of plutonic rock and its volcanic equivalent.

- a) gabbro–granite
- b) diorite–andesite
- c) granite–basalt
- d) andesite–gabbro

35. During metamorphism some minerals in a rock form parallel and tend to align themselves _____ to the direction of pressure.

- a) as larger crystals
- b) as smaller crystals
- c) perpendicular
- d) parallel



36. Data Table below shows the specific gravity of four mineral samples.

Mineral	Specific Gravity
corundum	4.0
galena	7.6
quartz	2.7
hematite	5.3

A student accurately measured the mass of a sample of one of the four minerals to be 294.4 g/cm³ and its volume to be 73.6 cm³. Which mineral sample did the student measure?

- a) corundum
- b) galena
- c) quartz
- d) hematite

37. Natural volcanic glass is known as:

- a) citrine
- b) natural glass
- c) obsidian
- d) granite

38. The best sequence of metamorphic rocks formed during prograde metamorphism is:

- a) slate, phyllite, schist, gneiss
- b) phyllite, slate, schist, gneiss
- c) slate, gneiss, schist, phyllite
- d) gneiss, schist, phyllite, slate

39. _____ is an ore mineral of aluminum.

- a) bauxite
- b) pyrite
- c) chalcocite
- d) laterite



40. What class of rock is formed by the solid-state transformation of minerals in a pre-existing rock under the influence of elevated temperature, pressure, and hot fluids.

- (a) sedimentary rock
- (b) igneous rock
- (c) metamorphic rock
- (d) metasomatic rock

41. Geologists classify rocks into a three-category classification scheme based on what?

- a) where rocks are formed
- b) rock forming processes
- c) by visible features
- d) Its chemistry

42. The chemical weathering of _____ minerals produces clay minerals.

- a). quartz
- b). feldspar
- c). carbonate
- d). oxide

43. Which one of the following minerals undergoes chemical weathering most readily?

- a) olivine
- b) quartz
- c) muscovite
- d) K-feldspar

44. In which part of the groundwater system are the pore spaces not filled with water?

- a) water table
- b) zone of saturation
- c) zone of aeration
- d) aquifer

45. What holds up a perched water table?

- a) a sinkhole
- b) an aquiclude
- c) the cone of depression
- d) an aquifer



46. The percentage of a rock's total volume that is taken up by pore space is called the _____

- a) permeability
- b) recharge
- c) aquifer
- d) porosity

47. What is the term for a relatively impermeable geologic unit?

- (a) an artesian
- (b) an aquifer
- (c) an aquiclude
- (d) none of these

48. Which one of the following features is a sure sign of karst aquifer?

- (a) Sinkholes
- (a) artesian wells
- (b) cones of depression
- (c) speleothems

49. Groundwater in the crystalline rocks are found most probably in

- (a) pore spaces between mineral grains
- (b) permeable layers
- (c) rock fractures
- (d) springs

50. Approximately how long ago did the Big Bang take place?

- a) 10-15 thousand years ago
- b) 10-15 million years ago
- c) 100-150 million years ago
- d) 10-15 billion years ago

.....END.....

