G 3267 (Pages : 7)

ENTRANCE TEST FOR Ph.D. PROGRAMME, 2023

GEOLOGY

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*
Each question carries 1 *mark.*

Choose the correct answer from the choices given :

1. Water of magmatic or cosmic origin that was not the part of hydrosphere previously :
   (a) Connate water. (c) Juvenile water.
   (b) Meteoric water. (d) Rain water.
2. Discontinuity which separates sial and sima :
   (a) Moho. (c) Guttenberg.
   (b) Conrad. (d) Lehman.
3. A radioactive placer mineral found in Kerala :
   (a) Ilmenite. (c) Kaolinite.
   (b) Monazite. (d) Beryl.
4. Wind polished pebbles are known as :
   (a) Pebbles. (c) Dunes.
   (b) Barchans. (d) Ventifacts.
5. Unwanted materials associated with the ore :
   (a) Minerals. (c) Gangue.
   (b) Flux. (d) Slag.
6. What is the wave length region of visible spectrum ?
   (a) > 1 mm. (c) 400-700 nm.
   (b) 0.01 – 0.000 1 nm. (d) 0.1 – 10 nm.

7. The definite periods of geological time the mineral deposits are formed :

(a) Metallogenic epoch. (c) Diastem.

(b) Cambrian. (d) Paleozoic.

8. Minimum number of satellites required for a GPS receiver to fix it's position precisely :

(a) 6. (c) 4

(b) 3. (d) 2.

9. Geophysical method employed for the U and Th exploration :

(a) Well logging. (c) Caliper logging.

(b) Gravity prospecting. (d) Radiometric prospecting.

10. An optical property related to birefringence :

(a) Refractive index. (c) Double refraction.

(b) Relief. (d) Reflection.

11. Diapiric masses of salt associated with oil traps :

(a) Strike Faults. (c) Salt domes.

(b) Rock salt. (d) Plunge fold.

12. A pyroelectric mineral :

(a) Quartz. (c) Beryl.

(b) Tourmaline. (d) Garnet.

13. Elements which are having affinity towards sulfur :

(a) Lithophile. (c) Atmophile.

(b) Siderophile. (d) Chalcophile.

14. A group of minerals which are deficient in silica :

(a) Olivine. (c) Amphibole.

(b) Mica. (d) Feldspathoids.

15. A phosphatic deposit formed by the leaching of bird excreta :

(a) Guano. (c) Gossan.

(b) Phosphorite. (d) Oolite.

16. An example for a sorosilicate mineral :

(a) Mica. (c) Quartz.

(b) Feldspars. (d) Epidote.

17. Chief ore of aluminium :

(a) Hematite. (c) Bauxite.

(b) Magnetite. (d) Sphalerite.

18. The geomorphic cycle was introduced by :

(a) William M Davis. (c) James Hutton.

(b) William Smith. (d) Charles Lyell.

19. A Lead-Zinc ore mine in India :

(a) Hutti. (c) Byrapur.

(b) Zawar. (d) Kolar.

20. The maximum slope angle, measured in degrees from the horizontal, at which the loose solid material will remain in place without sliding :

(a) Critical angle. (c) Interfacial angle.

(b) Angle of repose. (d) Obtuse angle.

21. Age of Warkalli beds :

(a) Mio-Pliocene. (c) Eocene.

(d) Pleistocene. (d) Holocene.

22. The angle between magnetic north and geographic north :

(a) Declination. (c) Anomaly.

(b) Inclination. (d) Reversal.

23. Minerals which can withstand temperature of about 1500°C :

(a) Silicates. (c) Non silicates.

(b) Refractory minerals. (d) Oxides.

24. Largest backwaters in India :

(a) Chilka Lake. (c) Vembanad lake.

(b) Sasthamkotta lake. (d) Mandovi estuary.

25. Type of deposit in which ore minerals are scattered throughout the rock :

(a) Magmatic. (c) Placer.

(b) Supergene sulfide enrichment. (d) Disseminated.

26. Negative gravity anomalies are found in :

(a) Mountains. (c) Dunes.

(b) Trenches. (d) Rocks.

27. Highest grade coal :

(a) Lignite. (c) Anthracite.

(b) Bituminous. (d) Anorthosite.

28. Lines connecting points of equal intensity earthquakes. :

(a) Isoseismal. (c) Isoclinal.

(b) Isohyets. (d) Isograd.

29. The most common soil of tropical areas :

(a) Cotton. (c) Loamy soil

(b) Red soil. (d) Lateritic soil.

30. Landforms which are known as kidneys of earth :

(a) Wetlands. (c) Mudbanks.

(b) Lakes. (d) Deserts.

31. Example for a hydrogenous marine sediment :

(a) Oozes. (c) Gas hydrates.

(b) Manganese nodules. (d) Limestone.

32. The level which controls the depth of stream erosion :

(a) Base level of erosion. (c) High tide level.

(b) Low tide level. (d) Ground level.

33. Lines connecting points of equal intensity rainfall :

(a) Isobars. (c) Isohyets.

(b) Isobath. (d) Isograd.

34. Fossilised faecal pellets are called :

(a) Coprolites. (c) Oozes.

(b) Guano. (d) Gastroliths.

35. Breaks in stratigraphic succession either due to erosion or non-deposition.

(a) Joints. (c) Faults.

(b) Unconformity. (d) Hiatus.

36. The term which is used to represent the rate of increasing temperature with depth :

(a) Geothermal gradient. (c) Geothermal energy.

(b) Geobotanical indicators. (d) P-T-t paths.

37. A drainage pattern characterised by parallel main streams intersected at or nearly right angles by their tributaries :

(a) Dendritic. (c) Trellis.

(b) Radial. (d) Parallel.

38. Small rounded particles embedded in most stony meteorites having approximately one millimeter size :

(a) Oolites. (c) Pisolites.

(b) Chondrules. (d) Clays.

39. A set of metamorphic mineral assemblages which are formed under same temperature and pressure conditions.

(a) Metamorphic facies. (c) Index mineral.

(b) Paired metamorphic belts. (d) Equilibrium mineral assemblage.

40. Type mineral of the hexagonal system rhombohedral division :

(a) Beryl. (c) Barite.

(b) Calcite. (d) Garnet.

41. An instrument which is used to measure the interfacial angle :

(a) Goniometer. (c) Mass spectrometer.

(b) Petrological Microscope. (d) Spectrophotometer.

42. A metamorphic rock consists of omphacite and pyrope rich garnet :

(a) Khondalite. (c) Eclogite.

(b) Charnockite. (d) Granite.

43. Assemblages of electrodes used in well logging are known as :

(a) Current electrodes. (c) Potential electrodes.

(b) Sonde. (d) Cathode.

44. The process of pumping water from the ground to the atmosphere through plants :

(a) Precipitation. (c) Condensation.

(b) Percolation. (d) Transpiration.

45. Low permeability rocks which cover reservoir rocks and are capable of preventing hydro carbons from migration are called :

(a) Oil traps. (c) Reservoir rocks.

(b) Aquifer. (d) Aquiclude.

46. Ferruginous and porous looking residue that forms a superficial cover above orebodies :

(a) Guano. (c) Glauconite.

(b) Negative centre. (d) Gossan.

47. Fossils which have wide geographic distribution and short geological range :

(a) Guide fossils. (c) Range fossils.

(b) Index fossils. (d) Leaked fossils.

48. Unconformities in which the older rocks are plutonic or crystalline :

(a) Paraconformity. (c) Nonconformity.

(b) Disconformity. (d) Angular unconformity.

49. Cavity filling deposits found in anticlinal structures :

(a) Ladder veins. (c) Placer.

(b) Magmatic. (d) Saddle reefs.

50. Pelecypods having adductor muscle impressions of equal of size :

(a) Anisomyarians. (c) Isomyarians.

(b) Opisthoparian. (d) Monomyarians.

(50 × 1 = 50 marks)

Part B

Answer any **ten** *questions.*
Each question carries 5 *marks.*

51. Laboratory methods for geological research.

52. Give a brief account of textures of igneous rocks.

53. K-T boundary.

54. Water quality analysis.

55. Representative sampling of geological studies.

56. Gas hydrates.

57. Applications of stable isotopes in paleoclimatic studies.

58. Types of data and variables in geological research.

59. Types of remote sensing.

60. Geological characteristics and genesis of skarn hosted ore deposits.

61. Uses of microfossils.

62. Essentials of a scientific report.

63. Rb-Sr dating.

64. Importance of field work in geological research.

(10 × 5 = 50 marks)