

**P.G. ENTRANCE EXAMINATION, APRIL 2022****APPLIED GEOLOGY**

Time : Two Hours

Maximum : 400 Marks

*Each question carries 4 marks.**1 mark will be deducted for each wrong answer.*

1. Who is known as the father of Modern Geology ?
  - (a) Abraham Gottlob Werner.
  - (b) James Hutton.
  - (c) Florence Bascom.
  - (d) William Smith.
2. The scientific study of landforms, their processes, form and sediments at the surface of the Earth is known as :
  - (a) Geomorphology.
  - (b) Geophysics.
  - (c) Geomythology.
  - (d) Glaciology
3. Ozone layer is situated in which part of the atmosphere :
  - (a) Stratosphere.
  - (b) Ionosphere.
  - (c) Troposphere.
  - (d) Mesosphere.
4. Biggest lake in the world :
  - (a) Superior.
  - (b) Baikel.
  - (c) Victoria.
  - (d) Caspian Sea.
5. Mauno Lao, an active volcano, is situated in :
  - (a) Italy.
  - (b) Japan.
  - (c) Hawaii.
  - (d) Iceland.
6. Mark the option which is not a morphometric parameter associated to streams :
  - (a) Stream Number.
  - (b) Stream Order.
  - (c) Stream Length.
  - (d) Stream Frequency.
7. When the river follows the general direction of the slope it is called :
  - (a) Consequent Rivers.
  - (b) Influent Rivers.
  - (c) Braided Rivers.
  - (d) Effluent Rivers.

**Turn over**

8. Most violent type of volcanic eruption is :
- (a) Strombolian. (b) Plinian.  
(c) Vesuvian. (d) Hawaiian.
9. In the Gondwanaland reconstruction, major part of the present day West Coast of India is joined with which landmass :
- (a) South America. (b) Africa.  
(c) Antarctica. (d) Madagascar.
10. Magnitude of earthquake is measured using :
- (a) Mercalli Scale. (b) Modified Mercalli Scale.  
(c) Rossi-Forrel Scale. (d) Richter Scale.
11. The largest lithospheric plate is :
- (a) North American plate. (b) Eurasian plate.  
(c) Pacific plate. (d) Antarctic plate.
12. Earthquake waves that travels fastest and that first arrive on the surface is :
- (a) P-waves. (b) S-waves.  
(c) Rayleigh waves. (d) Love waves.
13. A geomorphic feature created by glacier when it cuts a U-shaped valley, usually below mean sea level :
- (a) Hanging valley. (b) Fjord.  
(c) Cirque. (d) Crevasses.
14. Which one of the following is formed by glacial erosion ?
- (a) Potholes. (b) Yardang.  
(c) Arete. (d) Cuesta.
15. Lonar is known for :
- (a) Volcanism. (b) Meteorite impact.  
(c) Earthquake. (d) Orogeny.

16. \_\_\_\_\_ is the ratio of the number of stream segments in the specified order to the number of streams in the next higher order.
- (a) Reynolds number. (b) Bifurcation ratio.  
(c) Drainage density. (d) None of these.
17. Which one of the following neither store nor yield water ?
- (a) Aquifer. (b) Aquitard.  
(c) Aquiclude. (d) Aquifuge.
18. Upper surface of zone of saturation is called :
- (a) Perched water table. (b) Water table.  
(c) Piezometric surface. (d) Capillary table.
19. Water with a pH of 4 is :
- (a) Acidic. (b) Basic (Alkaline).  
(c) Neutral. (d) None of these.
20. Series of glacial lakes linked together by a single stream or a braided stream system :
- (a) Tarn Lake. (b) Paternoster Lake.  
(c) Polje. (d) Uvala.
21. Meteorite impact crater lakes are called :
- (a) Astrobleme. (b) Plunge pools.  
(c) Atoll. (d) Kettle.
22. Aeolian deposits of silt and clay are called :
- (a) Dunes. (b) Barchans.  
(c) Pavement. (d) Loess.
23. A bar connecting an island to another island or mainland is :
- (a) Spit. (b) Bar.  
(c) Tombolo. (d) Estuary.

24. Lines connecting points of equal depths :
- (a) Contour. (b) Isoseismal.  
(c) Isohyets. (d) Isobaths.
25. Match the following :
- |                  |                         |
|------------------|-------------------------|
| A. Himalayas     | i Block mountains.      |
| B. Arvallis      | ii Youngest mountain.   |
| C. Vindhyan      | iii Continental margin. |
| D. Western Ghats | iv Fold mountain.       |
- (a) A-ii ; B-iv ; C-i ; D-iii. (b) A-ii ; B-iv ; C-iii ; D-i.  
(c) A-iv ; B-ii ; C-i ; D-iii. (d) A-ii ; B-i ; C-iv ; D-iii.
26. The slowest movement of earth materials down the slope is :
- (a) Avalanche. (b) Debris Flow.  
(c) Debris slide. (d) Creep.
27. Planetary bodies situated between Mars and Jupiter :
- (a) Kuiper belt. (b) Asteroid Belt.  
(c) Oort cloud. (d) Meteorite belt.
28. Super Nova is \_\_\_\_\_.
- (a) An asteroid. (b) A black hole.  
(c) A comet. (d) A dying star.
29. Mid-oceanic ridges are located at :
- (a) Divergent boundaries. (b) Convergent boundaries.  
(c) Transform boundaries. (d) None of these.
30. Subduction zones are seen at :
- (a) Divergent boundaries. (b) Convergent boundaries.  
(c) Transform boundaries. (d) None of these.

31. Given below are two statements marked as Assertion (A) and Reason (R). Read both the statements carefully and choose the correct alternative from the following :

Assertion (A) : Karst topography are seen in limestone terrain.

Reason (R) : Limestone is more prone to erosion by water.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true and but R is not the correct explanation of A.
- (c) A is true, but R is false.
- (d) A is false, but R is true.

32. Boundary between core and mantle :

- (a) Mohorovicic discontinuity.
- (b) Gutenberg discontinuity.
- (c) Lehman discontinuity.
- (d) Asthenosphere.

33. St Mary's Island in Malpe is famous for :

- (a) Intertrappeans.
- (b) Infratrappeans.
- (c) Columnar joints.
- (d) Mural joints.

34. The fault in which the block above the fault plane is moved up :

- (a) Normal fault.
- (b) Reverse fault.
- (c) Strike slip fault.
- (d) None of these.

35. A sag pond is formed along :

- (a) Thrust fault.
- (b) Normal fault.
- (c) Strike-slip.
- (d) Grabens.

36. The direction of the imaginary line formed by the intersection of a horizontal plane with an inclined surface :

- (a) Dip.
- (b) Axial plane.
- (c) Lineation.
- (d) Strike.

37. A rock found in ductile shear zone is :

- (a) Breccia.
- (b) Mylonite.
- (c) Trachyte.
- (d) Melt-rock.

**Turn over**

38. A fold in which the axial plane is essentially horizontal :
- (a) Canoe fold. (b) Recumbent fold.  
(c) Chevron fold. (d) Isoclinal fold.
39. A fossil with limited stratigraphic range :
- (a) Zone fossil. (b) Leaked fossil.  
(c) Index fossil. (d) Transported fossil.
40. Pecten can be distinguished by :
- (a) Triangular shell with radiated ribs.  
(b) Presence of ears.  
(c) Straight hinge line.  
(d) All the above.
41. The Upper Gondwana plant leaf fossil with prominent ribs and veins :
- (a) Lepidodendron. (b) Ptylophyllum.  
(c) Glossopteris. (d) Gangamopteris.
42. Which of the following groups of invertebrates exhibits 'torsion' ?
- (a) Bivalves. (b) Gastropods.  
(c) Trilobites. (d) Echinoids.
43. The correct order of taxonomic sequence is :
- (a) Phylum, order, class, family, genus, species.  
(b) Phylum, class, order, family, genus, species.  
(c) Phylum, order, family, class, genus, species.  
(d) Phylum, family, class, order, genus, species.
44. Of the following, which is a brachiopod-mollusc pair :
- (a) Lingula-Nautilus. (b) Arca-Pecten.  
(c) Turritella-Belemnites. (d) Cidarid-Fusulina.

45. Shells with ammonite suture appeared first during :
- (a) Permian. (b) Devonian.  
(c) Cretaceous. (d) None of these.
46. The time equivalent of the time-stratigraphic term 'Series' is :
- (a) Period. (b) Age.  
(c) Stage. (d) Epoch.
47. Correct stratigraphic sequence of the Vindhyan Supergroup is :
- (a) Semri-Kaimur-Rewa-Bhander. (b) Rewa- Bhander- Kaimur- Semri.  
(c) Semri- Rewa- Kaimur- Bhander. (d) Semri- Bhander- Rewa- Kaimur.
48. The stratigraphy of Jurassic of Kutch is :
- (a) Chari-Patcham-Katrol-Umia. (b) Chari-Patcham-Umia-Katrol.  
(c) Patcham-Chari-Katrol-Umia. (d) Patcham-Chari-Umia-Katrol.
49. The fundamental chronostratigraphic unit is :
- (a) System. (b) Stage.  
(c) Series. (d) Era.
50. Cretaceous-Paleogene (K-Pg) boundary is famous for :
- (a) Cenomanian transgression. (b) Extinction of dinosaurs.  
(c) Pan-African event. (d) Rajmahal Traps.
51. Which formation in the Lower Gondwana sequence is devoid of coal ?
- (a) Barakar. (b) Raniganj.  
(c) Karharbari. (d) Barren Measure.
52. The principle of original horizontality was proposed by :
- (a) Nicholas Steno. (b) James Hutton.  
(c) Fermor. (d) Smith.
53. Which of the mineral is an example for Tetragonal system ?
- (a) Zircon. (b) Beryl.  
(c) Staurolite. (d) Halite.

54. Match the type mineral with the crystal class :

- |                             |                             |
|-----------------------------|-----------------------------|
| A. Cuprite                  | i Pyritohedral.             |
| B. Chalcopyrite             | ii Holohedral.              |
| C. Baryte                   | iii Plagiohedral.           |
| D. Pyrite                   | iv Sphenoidal class.        |
| (a) A-iv, B-iii, C-ii, D-i. | (b) A-iii, B-iv, C-ii, D-i. |
| (c) A-ii, B-i, C-iv, D-iii. | (d) A-iii, B-iv, C-ii, D-i. |

55. Staurolite, which crystallizes in monoclinic system, forms :

- |                        |                      |
|------------------------|----------------------|
| (a) Tartan twin.       | (b) Cruciform twin.  |
| (c) Swallow-tail twin. | (d) Iron cross twin. |

56. Which mineral is known as peacock ore ?

- |               |                   |
|---------------|-------------------|
| (a) Pyrite.   | (b) Chalcopyrite. |
| (c) Hematite. | (d) Bornite.      |

57. Lustre exhibited by diamond :

- |               |                 |
|---------------|-----------------|
| (a) Vitreous. | (b) Adamantine. |
| (c) Pearly.   | (d) Metallic.   |

58. Mineral with six cleavage ?

- |                 |               |
|-----------------|---------------|
| (a) Spinel.     | (b) Fluorite. |
| (c) Sphalerite. | (d) Calcite.  |

59. In nesosilicates, the Si:O ratio is :

- |             |             |
|-------------|-------------|
| (a) 1 : 4.  | (b) 2 : 7.  |
| (c) 3 : 10. | (d) 4 : 13. |

60. Peridot is a gem variety of :

- |               |              |
|---------------|--------------|
| (a) Olivine.  | (b) Quartz . |
| (c) Feldspar. | (d) Beryl.   |

61. In a quartz wedge, if the number of red bands produced is 2, then the order of interference colour will be :
- (a) 1. (b) 2.  
(c) 3. (d) 4.
62. Name the mineral that is isotropic :
- (a) Garnet. (b) Quartz.  
(c) Orthoclase. (d) Hypersthene.
63. The most abundant mineral on the Earth's crust :
- (a) Feldspar. (b) Quartz.  
(c) Mica. (d) Clay.
64. Which of the following is not an ore of iron (Fe) ?
- (a) Magnetite. (b) Chalcopyrite.  
(c) Pyrite. (d) Goethite.
65. Bragg's equation is expressed as :
- (a)  $n\lambda = 2d \cos \theta$ . (b)  $n\lambda = 2d \sin \theta$ .  
(c)  $2\lambda = nd \cos \theta$ . (d)  $2\lambda = nd \sin \theta$ .
66. Play of colours is shown by which type of feldspar :
- (a) Bytownite. (b) Oligoclase.  
(c) Labradorite. (d) Andesine.
67. An ore of aluminium :
- (a) Bauxite. (b) Cryolite.  
(c) Hematite. (d) All of these.
68. Fibrous variety of gypsum :
- (a) Icelandspar. (b) Satinspar.  
(c) Dog toothspar. (d) Schillarspar.

69. Mineral which is identified by variable hardness and patchy blue colour is :

- (a) Barite. (b) Kyanite.  
(c) Fluorite. (d) Andalusite.

70. High-pressure variety of quartz :

- (a) Coesite. (b) Cristobalite.  
(c) Stishovite. (d) Chalcedony.

71. The intergrowth texture formed by oligoclase and vermicular quartz :

- (a) Graphic. (b) Myrmekitic.  
(c) Orbicular. (d) Spherulitic.

72. Saucer shaped concordant igneous plutons are called :

- (a) Laccolith. (b) Lopolith.  
(c) Phacolith. (d) Sill.

73. In discontinuous reaction series, two consecutive members are called :

- (a) Congruent pair. (b) Incongruent pair.  
(c) Eutectic pair. (d) Reaction pair.

74. Which mineral is found unstable in Eclogite facies ?

- (a) Kyanite. (b) Plagioclase.  
(c) Rutile. (d) Phengite.

75. The degree of disorder of a system is called :

- (a) Enthalpy. (b) Entropy.  
(c) Phase. (d) Degree of freedom.

76. Columnar joints are seen in which type of rocks :

- (a) Basalt. (b) Rhyolite.  
(c) Phonolite. (d) All of these.

77. The volcanic equivalent of Nepheline syenite ?

- (a) Dacite. (b) Syenite.  
(c) Phonolite. (d) Andesite.

78. The rock in Kerala Khondalite Belt that host chrysoberyl :
- (a) Khondalite. (b) Pegmatite.  
(c) Charnockite. (d) Laterite.
79. The study of trace fossils is called :
- (a) Palynology. (b) Ecology.  
(c) Ichnology. (d) Paleontology.
80. The fossiliferous lithounits in the geology of Kerala is restricted to :
- (a) Warkalli Formation. (b) Quilon Formation.  
(c) Vaikkom Formation. (d) Periyar Formation.
81. Gypsum is a type of :
- (a) Rudaceous. (b) Biogenic.  
(c) Arenite. (d) Evaporite.
82. 'Toblerone' classification is for :
- (a) Limestone. (b) Conglomerate.  
(c) Breccia. (d) Sandstone.
83. Bouma sequence is characterized by :
- (a) 2 layers. (b) 3 layers.  
(c) 4 Layers. (d) 5 layers.
84. Sandstone with less than 15% matrix is :
- (a) Mudstone. (b) Siltstone.  
(c) Wacke. (d) Arenite.
85. Choose the correct order of decreasing grain size from the following :
- (a) Granule>pebble>sand>silt. (b) Cobble>granule>silt>clay.  
(c) Granule>pebble>clay>silt. (d) Boulder>pebble>silt>sand.
86. A rock characterized by the presence of omphacite :
- (a) Eclogite. (b) Calc gneiss.  
(c) Charnockite. (d) Khondalite.

**Turn over**

87. Metamorphic grade was introduced by :
- (a) Tilley. (b) Myashiro.  
(c) Turner. (d) Winkler.
88. Which among the following is not a metamorphic facies for mafic rocks ?
- (a) Greenschist. (b) Blueschist.  
(c) Amphibolite. (d) Biotite.
89. Graphic and ophitic textures are characteristic of \_\_\_\_\_ rocks.
- (a) Igneous. (b) Vesicular.  
(c) Sedimentary. (d) Metamorphic.
90. Match the following
- |              |                              |
|--------------|------------------------------|
| A. Granite   | i Extrusive igneous rock.    |
| B. Gneiss    | ii Clastic sedimentary rock. |
| C. Basalt    | iii Intrusive igneous rock.  |
| D. Sandstone | iv Metamorphic rock.         |
- (a) A-ii, B-iii, C-iv, D-i. (b) A-iii, B-iv, C-i, D-ii.  
(c) A-ii, B-i, C-iv, D-iii. (d) A-iii, B-iv, C-ii, D-i.
91. GPS is an acronym for :
- (a) Global Polar System. (b) Global Position Satellite.  
(c) Global Polar Satellite. (d) Global Positioning System.
92. Which among the following doesn't form from magmatic ore process ?
- (a) Chromium. (b) Platinum-group of minerals.  
(c) Uranium. (d) Nickel.
93. Largest chromite deposit in the world is :
- (a) Bushveld. (b) Malanjkhand.  
(c) Kiruna. (d) Michigan.

94. Which mineral, seen in beach placers in India, host thorium :
- (a) Ilmenite. (b) Rutile.  
(c) Monazite. (d) Leucoxene.
95. Gold in Kolar Gold Field is hosted in :
- (a) Quartz reef. (b) Aplite.  
(c) Dolerite. (d) Permatite.
96. The largest barite deposit in the world is :
- (a) Jaduguda. (b) Jayakundam.  
(c) Mangampetta. (d) Agnikundala.
97. In which one of the following types of coal, higher percentage of carbon is found ?
- (a) Anthracite. (b) Bituminous.  
(c) Lignite. (d) Peat.
98. Oil-bearing beds of Cauvery Basin are :
- (a) Dalmiapuram. (b) Niniyur.  
(c) Sivaganga. (d) Uttatur.
99. Sea-bottom floors of Indian Ocean is characterized by the presence of :
- (a) Manganese nodules. (b) BIF.  
(c) Evaporites. (d) Ooze.
100. Correct pair of metal-ore among the following is :
- (a) Tungsten-Scheelite. (b) Manganese-Bornite.  
(c) Zinc-Magnetite. (d) Lead-Pyrolusite.