

C 41686

(Pages : 14)

Name.....

Reg. No.....

PG/INTEGRATED PG ENTRANCE EXAMINATION, APRIL 2023

APPLIED GEOLOGY

Time : Two Hours

Maximum : 400 Marks

Each question carries 4 marks.

1 mark will be deducted for each wrong answers.

1. Stream ordering was first introduced by :

- | | |
|-------------|---------------|
| (a) Horton. | (b) Strahler. |
| (c) Davis. | (d) Penck. |

2. The rolling of loose materials downstream during the process of transportation is :

- | | |
|----------------|-----------------|
| (a) Saltation. | (b) Suspension. |
| (c) Creep. | (d) Solution. |

3. Average density of the Earth is :

- | | |
|-------------------------------|-------------------------------|
| (a) 2750 kgm^{-3} . | (b) 5500 kgm^{-3} . |
| (c) 4475 kgm^{-3} . | (d) 1550 kgm^{-3} . |

4. Volcanoes are more numerous around which ocean ?

- | | |
|-------------|---------------|
| (a) Indian. | (b) Atlantic. |
| (c) Arctic. | (d) Pacific. |

5. The concept of 'Hotspot' is proposed by :

- | | |
|-------------|-------------|
| (a) Wilson. | (b) Newton. |
| (c) Morgan. | (d) Wegner. |

6. Knick points indicate changes in the :

- | | |
|-------------------------|----------------------|
| (a) Attitude of bed. | (b) Strike of fault. |
| (c) Attitude of joints. | (d) Stream gradient. |

7. Drainage pattern observed in massive granitic terrain is :

- | | |
|--------------|------------------|
| (a) Radial. | (b) Rectangular. |
| (c) Trellis. | (d) Dendritic. |

Turn over

8. The concept of Sea floor spreading is proposed by :
- (a) Alfred Wegner.
 - (b) Tuzo Wilson.
 - (c) James Hutton.
 - (d) Henry Hess and Robert Dietz.
9. The term "Isostasy" was first proposed by :
- (a) Clarence Dutton.
 - (b) R. A. Daly.
 - (c) Archdeacon Pratt.
 - (d) Sir George Airy.
10. Which one of the following layers of the Earth has the largest volume ?
- (a) Outer core.
 - (b) Inner core.
 - (c) Upper mantle.
 - (d) Lower mantle.
11. Which of the following processes is associated to chemical weathering ?
- (a) Unloading.
 - (b) Frost action.
 - (c) Salt-crystal growth.
 - (d) Hydration.
12. Earthquake waves that travels fastest and first to arrive on the surface :
- (a) P-waves.
 - (b) S-waves.
 - (c) Rayleigh waves.
 - (d) Love waves.
13. The instrument used for measuring earthquake is :
- (a) Seismology.
 - (b) Seismogram.
 - (c) Seismograph.
 - (d) Seismometer.
14. Choose the variable gas in the Earth's present day atmosphere :
- (a) Carbon Dioxide.
 - (b) Nitrogen.
 - (c) Neon.
 - (d) Helium.
15. The lake formed by glacial activity is :
- (a) Kettle.
 - (b) Reservoir.
 - (c) Backwaters.
 - (d) Atoll.

16. Lonar is known for :
- (a) Volcanism. (b) Meteorite impact.
(c) Earthquake. (d) Orogeny.
17. The Ganga Delta belongs to which type ?
- (a) Lake-dominated. (b) River-dominated.
(c) Tide-dominated. (d) Wave-dominated.
18. Water present in the zone of saturation is known as :
- (a) Soil moisture. (b) Vadose water.
(c) Groundwater. (d) Juvenile water.
19. A groundwater holding and yielding horizon is called :
- (a) Aquifer. (b) Aquitard.
(c) Aquiclude. (d) Aquifuge.
20. Half-life of C^{14} is :
- (a) ~ 5730 years. (b) ~ 57 million years.
(c) ~ 57 billion years. (d) None of these.
21. Which among the following is formed by wind erosion ?
- (a) Yardangs. (b) Barchans.
(c) Seif dunes. (d) Gorges.
22. The removal of particles of dust and sand by strong winds is called :
- (a) Abrasion. (b) Depletion.
(c) Deflation. (d) Aeration.
23. Mushroom shaped rocks seen in desert :
- (a) Ventifacts. (b) Desert pavement.
(c) Barchans. (d) Pedestal rock.
24. A narrow passage of water connecting two large bodies of water :
- (a) Spit. (b) Bar.
(c) Strait. (d) Estuary.

25. Lines connecting points of equal elevations :
- (a) Contour.
 - (b) Isoseismal.
 - (c) Isohyets.
 - (d) Isobaths.
26. Match the following :
- | | |
|----------------------------|----------------------------|
| A) Planetesimal hypothesis | i) Chamberlin and Moulton. |
| B) Nebular hypothesis | ii) Jeans and Jeffrey. |
| C) Big bang theory | iii) Kant and Laplace. |
| D) Tidal hypothesis | iv) Lemaitre. |
- (a) A-ii ; B-iii ; C-i ; D-iv. (b) A-ii ; B-iii ; C-iv ; D-i.
- (c) A-i ; B-iii ; C-iv ; D-ii. (d) A-ii ; B-i ; C-iv ; D-iii.
27. The fastest movement of earth materials down the slope is :
- (a) Avalanche.
 - (b) Debris Flow.
 - (c) Debris slide.
 - (d) Creep.
28. The major lithounits on Moon are :
- (a) Basalt and gabbro.
 - (b) Basalt and anorthosite.
 - (c) Granite and anorthosite.
 - (d) Granite and gabbro.
29. Which planet has the highest bulk density :
- (a) Jupiter.
 - (b) Saturn.
 - (c) Mars.
 - (d) Venus.
30. Indian plate is :
- (a) Moving west.
 - (b) Moving northward.
 - (c) Moving southward.
 - (d) Static.
31. The zone located between a depth of 410 and 660 km ?
- (a) Low velocity zone.
 - (b) Transition zone.
 - (c) D" layer.
 - (d) None of these.

32. 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) : Speleothems are seen in limestone terrain
- Reason (R) : Speleothems are formed by springs
- (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.
33. Boundary between crust and mantle :
- (a) Mohorovicic discontinuity.
 - (b) Gutenberg discontinuity.
 - (c) Lehman discontinuity.
 - (d) Asthenosphere.
34. Devil's Tower in Wyoming is known for :
- (a) Intertrappeans.
 - (b) Infratrappeans.
 - (c) Columnar joints.
 - (d) Mural joints.
35. 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.
36. The ductile structure among the following :
- (a) Fault.
 - (b) Fold.
 - (c) Vein.
 - (d) Joint.
37. 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.
38. Which one of the following is not a strain associated with geologic structures ?
- (a) Continuous.
 - (b) Extensional.
 - (c) Compressional.
 - (d) Strike-slip.

39. Age of fishes :
- (a) Carboniferous.
 - (b) Devonian.
 - (c) Silurian.
 - (d) Permian.
40. Characteristics of arca are :
- (a) Straight hinge line.
 - (b) Ornamentation.
 - (c) Jurassic to present.
 - (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. Gastropods belong to which of the following phylum ?
- (a) Coelenterata.
 - (b) Brachiopoda.
 - (c) Trilobita.
 - (d) Mollusca.
43. Cephalon, thorax and pygidium are morphological classifications of a :
- (a) Porifera.
 - (b) Graptolithina.
 - (c) Echinodermata.
 - (d) Trilobita.
44. Belemnite is a :
- (a) Cephalopoda.
 - (b) Gastropoda.
 - (c) Brachiopoda.
 - (d) Trilobita.
45. Facial suture originating from anterior and ending in front of the genal angle in trilobites is called :
- (a) Gonatoparian.
 - (b) Lateral.
 - (c) Proparian.
 - (d) Protoparian.
46. The bird-like dinosaur fossil :
- (a) Enantiornithes.
 - (b) Hesperornithiformes.
 - (c) Archaeopteryx.
 - (d) Diatrymidæ.

47. Which among the following is the correct sequence of successive Periods in the Paleozoic Era ?
- (a) Cambrian, Silurian, Jurassic, Carboniferous, Ordovician, Permian.
 - (b) Cambrian, Devonian, Ordovician, Carboniferous, Silurian, Permian.
 - (c) Cambrian, Silurian, Ordovician, Carboniferous, Devonian, Permian.
 - (d) Cambrian, Ordovician, Silurian, Devonian, Carboniferous, Permian.
48. Which among the following is not an Eon ?
- (a) Archean.
 - (b) Hadean.
 - (c) Paleozoic.
 - (d) Proterozoic.
49. Papaghani Series of Cuddapah System is equivalent to ————— series of Delhi System.
- (a) Gwalior.
 - (b) Delhi.
 - (c) Bijawar.
 - (d) Kaladgi.
50. Choose the correct chronological order (oldest to youngest) of the following volcanic eruptions :
- (a) Malani-Panjal-Rajmahal-Deccan.
 - (b) Panjal-Rajmahal-Deccan-Malani.
 - (c) Rajmahal-Malani-Panjal-Deccan.
 - (d) Malani-Rajmahal-Deccan-Panjal.
51. The equivalent of Cuddalore Sandstone in Kerala is :
- (a) Warkalli sandstone.
 - (b) Quilon limestone.
 - (c) Vaikkom gritstone.
 - (d) Guruvayoor siltstone.
52. Cretaceous-Paleogene (K-Pg) boundary is famous for :
- (a) Cenomanian transgression.
 - (b) Extinction of dinosaurs.
 - (c) Pan-African event.
 - (d) Rajmahal Traps.
53. Which formation in the Lower Gondwana sequence is devoid of coal ?
- (a) Barakar.
 - (b) Raniganj.
 - (c) Karharbari.
 - (d) Barren Measure.
54. Tatrot Stage of Siwalik System is sandwiched between :
- (a) Kamlial and Nagri.
 - (b) Chinji and Dhok Pathan.
 - (c) Dhok Pathan and Pinjor.
 - (d) Pinjor and Boulder Conglomerate.

55. Choose the lithostratigraphic unit of the Phanerozoic Eon :
- (a) Semri Group. (b) Uttatur Group.
(c) Papaghni Group. (d) Sargur Group.
56. The form of Normal Class of Crystal System that has 12 faces :
- (a) Octahedron. (b) Dodecahedron.
(c) Tetrahexahedron. (d) Trisoctahedron.
57. Match the type mineral with the crystal class :
- A. Zircon i. Iron cross twin.
B. Albite ii. Twinned cubic crystals.
C. Fluorite iii. Pericline twin.
D. Pyrite iv. Rutile law.
- (a) A-iv, B-iii, C-ii, D-i. (b) A-iii, B-iv, C-i, D-ii.
(c) A-ii, B-iii, C-iv, D-i. (d) A-i, B-ii, C-iii, D-iv.
58. Match the following based on crystal form and corresponding number of faces :
- A. Cube i. Two.
B. Tetrahedron ii. Four.
C. Dodecahedron iii. Six.
D. Pinacoid iv. Twelve.
- (a) A-iii, B-ii, C-i, D-iv. (b) A-iii, B-iv, C-i, D-ii.
(c) A-ii, B-iii, C-iv, D-i. (d) A-i, B-ii, C-iii, D-iv.
59. Al_2SiO_5 polymorph belongs to which silicate structure ?
- (a) Sorosilicate. (b) Tektosilicate.
(c) Phyllosilicate. (d) Nesosilicate.
60. The mineral that soils one's hand :
- (a) Graphite. (b) Stibnite.
(c) Molybdenite. (d) All of these.

61. The mineral having a hardness of 7 :

- (a) Feldspar.
- (b) Fluorite.
- (c) Topaz.
- (d) Quartz.

62. Peridot is a gem variety of :

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

63. 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.

64. Malachite and azurite are ores of :

- (a) Copper.
- (b) Cobalt.
- (c) Uranium.
- (d) Nickel.

65. Riebeckite is a/an :

- (a) Olivine .
- (b) Feldspar.
- (c) Pyroxene.
- (d) Amphibole.

66. Identify the mineral which is in the 'Mohs scale of hardness' :

- (a) Cordierite.
- (b) Corundum.
- (c) Covellite.
- (d) Chrysoberyl.

67. Scheelite is an ore of :

- (a) Iron.
- (b) Bismuth.
- (c) Tungsten.
- (d) Mercury.

68. Bragg's equation is expressed as :

- (a) $n \lambda = 2 d \cos \theta$.
- (b) $n \lambda = 2 d \sin \theta$.
- (c) $2 \lambda = n d \cos \theta$.
- (d) $2 \lambda = 2 d \sin \theta$.

69. Which among the following is not an oxide mineral ?
- (a) Hematite. (b) Limonite.
(c) Bornite. (d) Corundum.
70. Li-bearing mica is called :
- (a) Paragonite. (b) Pigeonite.
(c) Phlogopite. (d) Zinnwaldite.
71. Mineral which is identified by variable hardness and patchy blue colour is :
- (a) Barite. (b) Kyanite.
(c) Fluorite. (d) Andalusite.
72. The habit exhibited by natrolite :
- (a) Acicular. (b) Bladed.
(c) Fibrous. (d) Foliated.
73. Well-developed crystal faces are termed :
- (a) Subhedral. (b) Euhedral.
(c) Anhedral. (d) Tabular.
74. The intergrowth texture formed by oligoclase and vermicular quartz :
- (a) Graphic. (b) Myrmekitic.
(c) Orbicular. (d) Spherulitic.
75. An ultrabasic igneous rock that is unique to Archean greenstone belts :
- (a) Komatite. (b) Aplite.
(c) Lamprophyre. (d) Kimberlite.
76. A body of intrusive rock with a dome-shaped upper surface and a level base that is fed from below by a conduit :
- (a) Phacolith. (b) Lopolith.
(c) Laccolith. (d) Batholith.

77. The texture indicating mantling of massive voids of K-feldspar by plagioclase rim is known as ?
(a) Ophitic. (b) Rapakivi.
(c) Myrmekitic. (d) Symplectite.
78. Columnar joints are seen in which type of rocks :
(a) Basalt. (b) Rhyolite.
(c) Phonolite. (d) All of these.
79. A coarse-grained rock made primarily of orthopyroxene and plagioclase is known as ?
(a) Gabbro. (b) Lherzolite.
(c) Harzburgite. (d) Syenite.
80. In India, kimberlites are seen in :
(a) Wajrakurur. (b) Patna.
(c) Jaduguda. (d) Kolar.
81. The process of transformation of glass into crystalline rock is called :
(a) Devitrification. (b) Solid solution.
(c) Intergrowth. (d) Lithification.
82. Conglomerate differ from breccia by :
(a) Size. (b) Shape.
(c) Composition. (d) Location.
83. Gypsum is a type of :
(a) Rudaceous. (b) Biogenic.
(c) Arenite. (d) Evaporite.
84. On the Udden-Wentworth scale, sandstones have 'phi' values in the range :
(a) - 8 to - 2. (b) - 1 to 4.
(c) 4 to 8. (d) - 8 to - 1.
85. Toblerone' classification is used for which rock type :
(a) Limestone. (b) Conglomerate.
(c) Breccia. (d) Sandstone.

86. Sandstone with less than 15 % matrix is :

- (a) Mudstone.
- (b) Siltstone.
- (c) Wacke.
- (d) Arenite.

87. Rocks with high concentrations of clay minerals and mica are called :

- (a) Basic.
- (b) Pelitic.
- (c) Calcareous.
- (d) Quartzo-Feldspathic.

88. A rock characterized by the presence of omphacite :

- (a) Eclogite.
- (b) Calc gneiss.
- (c) Charnockite.
- (d) Khondalite.

89. A product of contact metamorphism :

- (a) Charnockite.
- (b) Biotite schist.
- (c) Hornfels.
- (d) Hornblende gneiss.

90. Initiation of metamorphism is indicated by :

- (a) Shale.
- (b) Slate.
- (c) Phyllite.
- (d) Schist.

91. Anatexis is the process of :

- (a) Partial melting.
- (b) Contact metamorphism.
- (c) Hydrothermal alteration.
- (d) Metamictization.

92. Metamorphosed limestone is called :

- (a) Marl.
- (b) Marly limestone.
- (c) Marble.
- (d) Calcareous limestone.

93. Match the following based on rock and its characteristic minerals :
- | | |
|-----------------|-------------------------------|
| A. Granodiorite | i Hornblende-plagioclase. |
| B. Harzburgite | ii Plagioclase-quartz. |
| C. Gabbro | iii Olivine-orthopyroxene. |
| D. Diorite | iv Clinopyroxene-plagioclase. |
- (a) A-ii, B-i, C-iv, D-iii. (b) A-iii, B-iv, C-i, D-ii.
(c) A-ii, B-iii, C-iv, D-i. (d) A-iii, B-iv, C-ii, D-i.
94. ISRO stands for :
- (a) Indian Space Research Organization.
(b) Indian Science Research Organization.
(c) International Space Research Organization.
(d) International Science Research Organization.
95. Correct pair of metal-ore among the following is :
- (a) Tungsten-Scheelite. (b) Manganese-Bornite.
(c) Zinc-Magnetite. (d) Lead-Pyrolusite.
96. India's large thorium beach placers are formed by which of the following ore forming processes ?
- (a) Residual concentration. (b) Hydrothermal.
(c) Mechanical concentration. (d) Supergene enrichment.
97. World's largest kyanite deposit is in :
- (a) Tamil Nadu. (b) Meghalaya.
(c) Rajasthan. (d) Jharkhand.
98. Hutti mines in India is famous for :
- (a) Diamond. (b) Iron.
(c) Gold. (d) Silver.

99. Gold in Kolar Gold Field is hosted in :

- (a) Quartz reef.
- (b) Aplite.
- (c) Dolerite.
- (d) Permatite.

100. In which one of the following types of coal, high percentage of carbon is found ?

- (a) Anthracite.
- (b) Bituminous.
- (C) Lignite.
- (d) Peat.