

Question Booklet No. :

AGPG/2021

Register
Number

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2021
GEOLOGY
(P.G. Degree Standard)

Duration : Three Hours]

[Total Marks : 300

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. You will be supplied with this question booklet 15 minutes prior to the commencement of the examination.
2. This question booklet contains 200 questions. Before answering the questions, you shall check whether all the questions are printed serially and ensure that there are no blank pages in the question booklet. **If any defect is noticed in the question booklet, it shall be reported to the invigilator within the first 10 minutes and get it replaced with a complete question booklet. If the defect is reported after the commencement of the examination, it will not be replaced.**
3. Answer all the questions. All the questions carry equal marks.
4. You must write your register number in the space provided on the top right side of this page. Do not write anything else on the question booklet.
5. An answer sheet will be supplied to you separately by the room invigilator to shade the answers. Instructions regarding filling of answers etc., which are to be followed mandatorily, are provided in the answer sheet and in the memorandum of admission (Hall Ticket).
6. You shall write and shade your question booklet number in the space provided on page one of the answer sheet with **BLACK INK BALL POINT PEN**. If you do not shade correctly or fail to shade the question booklet number, your answer sheet will be invalidated.
7. Each question comprises of five responses (answers) : i.e. (A), (B), (C), (D) and (E). You have to select **ONLY ONE** correct answer from (A) or (B) or (C) or (D) and shade the same in your answer sheet. If you feel that there are more than one correct answer, shade the one which you consider the best. **If you do not know the answer, you have to mandatorily shade (E).** In any case, choose **ONLY ONE** answer for each question. If you shade more than one answer for a question, it will be treated as a wrong answer even if one of the given answers happens to be correct.
8. You should not remove or tear off any sheet from this question booklet. You are not allowed to take this question booklet and the answer sheet out of the examination room during the time of the examination. After the examination, you must hand over your answer sheet to the invigilator. You are allowed to take the question booklet with you only after the examination is over.
9. **You should not make any marking in the question booklet except in the sheets before the last page of the question booklet, which can be used for rough work. This should be strictly adhered to.**
10. Failure to comply with any of the above instructions will render you liable for such action as the Commission may decide at their discretion.

SEAL

SPACE FOR ROUGH WORK



1. Location of pole of Trapezohedron (211) can be in between which of the poles of given faces?
- (A) (001) and (011) (B) (001) and (110)
(C) ✓ (100) and (111) (D) (100) and (101)
(E) Answer not known
2. In case of Gnomonic projection, the plane of the projection is usually taken as _____ plane which lies tangent to the north pole of the sphere of the spherical projection.
- (A) Vertical (B) Gently Inclined
(C) ✓ Horizontal (D) Steeply Inclined
(E) Answer not known
3. The Olivine group of minerals are structurally
- (A) Soro silicates (B) ✓ Neso silicates
(C) Ino silicates (D) Phyllo silicates
(E) Answer not known
4. Mn_2SiO_4 is the chemical composition of which of the olivine group mineral?
- (A) Forsterite (B) Fayalite
(C) ✓ Tephroite (D) Monticellite
(E) Answer not known
5. Pick out the correct pair from the following :
- (A) Olivine - Single Salt
(B) Fayalite - Tetra Salt
(C) Forsterite - Hexa Salt
(D) ✓ Monticellite - Double Salt
(E) Answer not known

6. Normal zoning in plagioclase feldspars show a gradation from
(A) ✓ Calcic core to a sodic rim
(B) Sodic core to a calcic rim
(C) Admixing of calcic and sodic layers
(D) Spherulic growth of calcite and sodic feldspars
(E) Answer not known
7. The Extinction angle of about 2° to 10° is characteristic of which of the following pyroxene group minerals?
(A) Augite
(B) ✓ Aegirine
(C) Hedenbergite
(D) Diopside
(E) Answer not known
8. The optic sign of orthoclase is
(A) Biaxial +
(B) ✓ Biaxial -
(C) Uniaxial +
(D) Uniaxial -
(E) Answer not known
9. The structure of leucite at ordinary temperature is
(A) Monoclinic
(B) Orthorhombic
(C) ✓ Tetragonal (Pseudocubic)
(D) Triclinic
(E) Answer not known
10. A thin film of electrically conductive material is to be coated on the mounted specimens for SEM analysis, which is
(A) Cu
(B) Al
(C) ✓ Au
(D) Hg
(E) Answer not known

11. *Glossopteris* flora corresponds mainly with _____ regime.
- (A) ✓ Cold (glacial) to cool temperate
 - (B) Warm temperate
 - (C) Moist climate
 - (D) None of the above
 - (E) Answer not known
12. The earliest known dendroid graptolites were found in
- (A) ✓ Cambrian
 - (B) Ordovician
 - (C) Devonian
 - (D) Carboniferous
 - (E) Answer not known
13. In Graptolites the outer layer of skeleton, consisting of super imposed Laminae is
- (A) Bitheca
 - (B) Fusellar layer
 - (C) Sicular
 - (D) ✓ Cortex
 - (E) Answer not known
14. The Benthonic algae *Lithothamnion* ranges from
- (A) ✓ Cretaceous to Recent
 - (B) Ordovician to Jurassic
 - (C) Ordovician
 - (D) Jurassic
 - (E) Answer not known
15. Pick out the incorrect pair from the following
- (A) *Didymograptus* - Lower and Middle Ordovician
 - (B) *Goniograptus* - Lower Ordovician
 - (C) *Dimorphograptus* - Lower Silurian
 - (D) ✓ *Acanthograptus* - Lower and middle Silurian
 - (E) Answer not known

16. The age of phacops is
(A) ✓ Ordovician to Devonian (B) Lower Cambrian
(C) Upper Cambrian (D) Permian
(E) Answer not known
17. The Goniatite type of suture virtually disappeared in
(A) Devonian (B) Jurassic
(C) Cretaceous (D) ✓ Triassic
(E) Answer not known
18. Shells having ammonite sutures and highly ornamented shells are common during
(A) Triassic (B) ✓ Jurassic
(C) Cretaceous (D) Carboniferous
(E) Answer not known
19. In evolutionary history of Ammonoids, which among the following is not in Devonian Silurian periods
(A) ✓ Agoniatites (B) Anarcestes
(C) Gyroceratites (D) Lobobactrites
(E) Answer not known
20. Mid-Palaeozoic ammonoids have septal necks pointing back toward the proto conch, a condition termed
(A) Protoconchate
(B) Retro protoconchate
(C) Prosiphonate
(D) ✓ Retrosiphonate
(E) Answer not known

21. In biotite lamprophyre, the dominant mafic mineral is potassic feldspar, then it is referred as
- (A) Vogasite
(B) Minettes
(C) Ijolite
(D) Kersantite
(E) Answer not known
22. Alkaline rocks have high concentration of
- (A) Na and K
(B) Si and Fe
(C) Mg and Mn
(D) Fe and Mg
(E) Answer not known
23. The chemical composition " $KAlSi_3O_8$ " denotes
- (A) Kaliophilite
(B) Albite
(C) Nepheline
(D) Orthoclase
(E) Answer not known
24. In a hand specimen, Gabbro and Diorite are classified on the basis of
- (A) Plagioclase composition
(B) Color index
(C) Mafic minerals
(D) Grain size
(E) Answer not known
25. The orogenic granite associated with piles of sediments accumulated in a rapidly subsiding environment is
- (A) Geanticline
(B) Geosyncline
(C) Subsidence
(D) Collision
(E) Answer not known

26. The Volcanic equivalent of the plutonic rock syenite is
- (A) Rhyolite (B) Dacite
(C) Trachyte (D) Andesite
(E) Answer not known
27. Aplites is a _____ type of texture.
- (A) Panidiomorphic (B) Hypidiomorphic
(C) Porphyritic (D) Allotriomorphic
(E) Answer not known
28. Lamprophyres are rich in
- (A) Ferro magnesium silicates
(B) Feldspar and quartz rich fine grained
(C) Lime-soda composition
(D) Pottash Feldspar
(E) Answer not known
29. In Igneous rock, the essential minerals are the product of
- (A) Circulating solution
(B) Metamorphism
(C) Weathering
(D) Magmatic crystallisation
(E) Answer not known
30. The Calc – alkaline magmatic rock suite falls on plate tectonic setting of
- (A) Continental rift (B) Oceanic rift
(C) Subduction zone (D) Intraplate zone
(E) Answer not known

31. Which one of the minerals is heat-resistant, acid-alkali resistant and has higher dielectric strength?

- (A) Barite (B) Graphite
(C) Magnesite (D) Asbestos
(E) Answer not known

32. Bayer's synthetic Chemical process is associated with

- (A) Extraction of graphite
(B) Extraction of manganese
(C) Extraction of metallic aluminium
(D) Extraction of gold
(E) Answer not known

33. Match the following : The Indian origin of manganese ore deposits may be formed as :

- | | |
|-----------------------------|--|
| (a) Hydrothermal deposits | 1. Due to chemical precipitation |
| (b) Sedimentary deposits | 2. It is formed by magmatic hot water |
| (c) Residual deposits | 3. Due to action of under ground water |
| (d) Metasomatic replacement | 4. Due to residual concentration |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) | 3 | 4 | 2 | 1 |
| (B) | 4 | 3 | 1 | 2 |
| (C) <input checked="" type="checkbox"/> | 2 | 1 | 4 | 3 |
| (D) | 4 | 2 | 1 | 3 |
| (E) | Answer not known | | | |

34. Residual magnetic field following the removal of an external field is called
- (A) Chemical Remanent Magnetisation
 - (B) Detrital Remanent Magnetisation
 - (C) Isothermal Remanent Magnetisation
 - (D) Thermo Remanent Magnetisation
 - (E) Answer not known
35. Metasomatic replacement deposits have been source of metals like
- (A) Tungsten and Uranium
 - (B) Garnet and Topaz
 - (C) Quartz and fluorite
 - (D) None of the above
 - (E) Answer not known
36. The resultant hydrothermal alteration products of lime stone under mesothermal conditions are
- (A) Calcite and Epidote
 - (B) Dolomites and Siderites
 - (C) Topaz and Pyrite
 - (D) Calcite and Sericite
 - (E) Answer not known
37. Example for Breccia filling deposits.
- (I) Wajrakarur Kimberlite pipe
 - (II) Singhbhum shear zone
 - (III) Baryte deposits of Himachal Pradesh
- (A) (I) is correct
 - (B) (II) is correct
 - (C) (I) and (II) are correct
 - (D) (III) is correct
 - (E) Answer not known
38. Which one of the following mineral melting point is 630°C?
- (A) Aegirine
 - (B) Antimony
 - (C) Cinnabar
 - (D) Stibnite
 - (E) Answer not known

39. High iron oxide in a soil will significantly
- (A) increase reflectance (B) decrease reflectance
(C) decrease transmittance (D) increase brightness
(E) Answer not known
40. Slow flowing of water saturated earth by gravity is known as
- (A) Mud flow (B) Soil creep
(C) Solifluction (D) Slump
(E) Answer not known
41. Pick out the non renewable energy from the following
- (A) Geothermal Energy (B) Wind Energy
(C) Nuclear Energy (D) Solar Energy
(E) Answer not known
42. Mining and processing of mineral resources have adverse impact on
- (1) land
(2) water
(3) air
(4) biological sources
- (A) (1), (2) and (3) only (B) (2), (3) and (4) only
(C) (1), (3) and (4) only (D) (1), (2), (3) and (4)
(E) Answer not known
43. _____ is the process of breaking big rock formation for extracting the ore or economic mineral from the Earth.
- (A) Drilling (B) Mining
(C) Blasting (D) Winning
(E) Answer not known

44. The primary Geochemical prospecting are called
- (A) The process are mainly associated with supergene agents of rock degradation
 - (B) The process are connected with magmatism as well as the process of metamorphic evolution
 - (C) Through the evolutionary circuit
 - (D) Factors influencing chemical dispersion
 - (E) Answer not known
45. Following are the parameters of the geochemical environment that determine the mineral phases that are stable at a given point of
- (A) Pressure and Temperature
 - (B) Temperature and Chemical components
 - (C) Chemical components and pressure
 - (D) Pressure, Temperature and Chemical components
 - (E) Answer not known
46. Consider the following statement :
- I. Chondrite is a group of aerolite meteorites.
 - II. Chondrite meteorites contain 40% olivine.
- (A) Both I and II are True
 - (B) I is True II is False
 - (C) I is False II is True
 - (D) Both I and II are False
 - (E) Answer not known
47. The elements with same mass number and different number of protons and neutrons are said to be
- (A) Isotopes
 - (B) Isobars
 - (C) Isotones
 - (D) Isoelements
 - (E) Answer not known

48. Consider the following statement
1. Induced Polarization (IP) is a type of Geophysical electrical method
 2. Measurements are made while applying current
 3. IP methods are superior to the resistivity methods
 4. The change of resistivity with change of frequency is called 'frequency effect'
- (A) 1, 2, and 3 are correct 4 is incorrect
(B) 1, 3 and 4 are correct 2 is incorrect
(C) 1 and 2 are correct 3 and 4 are incorrect
(D) 1 and 2 are incorrect 3 and 4 are correct
(E) Answer not known
49. Off set of beds of one series along a line is
- (A) Blended unconformity (B) Para unconformity
(C) Line of unconformity (D) Unequal competence
(E) Answer not known
50. A Sharp contrast in the degree of induration indicates
- (A) Fault (B) Fracture
(C) Joints (D) Unconformity
(E) Answer not known
51. The Ariyalur beds overlying the Trichinopoly stage is
- (A) Off lap (B) Inlier
(C) Overlap (D) Outlier
(E) Answer not known
52. Compression joints are seen in the
- (A) Sedimentary rocks (B) Metamorphic rocks
(C) Igneous rocks (D) Meta-sedimentary formations
(E) Answer not known

53. Choose the correct statement among the following
- (A) Current ripples can be used to determine top from bottom
 - (B) Sole markings are overturned casts on the underside of bed
 - (C) Current ripples cannot be used to determine top from bottom
 - (D) Sole markings are casts on the upper side of bed
 - (E) Answer not known
54. Fault dip towards the master fault, but the displacement on them is down dip
- (A) Plunger
 - (B) Radiating normal fault
 - (C) Antithetic fault
 - (D) Enechelon fault
 - (E) Answer not known
55. The types of fold formed by thinning and disappearance of limbs, leaving only the hinges
- (A) Rootless intrafolial folds
 - (B) Intrafolial folds
 - (C) Kink bands
 - (D) Monocline
 - (E) Answer not known
56. The relationship between throw and true displacement in a dip-slip fault, where α is the dip of the fault
- (A) $\tan \alpha = \frac{\text{throw}}{\text{true displacement}}$
 - (B) $\cos \alpha = \frac{\text{throw}}{\text{true displacement}}$
 - (C) $\cot \alpha = \frac{\text{throw}}{\text{true displacement}}$
 - (D) $\sin \alpha = \frac{\text{throw}}{\text{true displacement}}$
 - (E) Answer not known
57. Gharwal Thrust of the Himalayas along southern side represents
- (A) Sinistral Fault
 - (B) Lateral Fault
 - (C) Reverse Fault
 - (D) Normal Fault
 - (E) Answer not known

58. The displacement of particles at right angles to the time of force
- (A) Shear strains (B) Compression
(C) Axes of stress (D) Normal strain
(E) Answer not known
59. Tatrot formation belongs to which of the following sub-groups?
- (A) Lower Siwaliks (B) Middle Siwaliks
(C) Upper Siwaliks (D) Lower Gondwana
(E) Answer not known
60. The primates fossil present in the Upper Siwalik are
- (A) Macacus and Paleopithicus
(B) Simia and Papio
(C) Felis and Larva
(D) Leptobos and Anoa
(E) Answer not known
61. Talcher stage component rocks shales and sandstones suggests a _____ agency of transport and deposition.
- (A) Fluvial (B) Glacial
(C) Fluvioglacial (D) Marine
(E) Answer not known
62. The 'Variegated series' of Silurian contains the lithology of
- (A) Limestones (B) Shales
(C) Both limestones and shales (D) Sandstones
(E) Answer not known

63. The Vindhyan system is rich in mineral deposit and economically important because of occurrence of
- (A) Limestones (B) Diamond
(C) Sandstones (D) All of the above
(E) Answer not known
64. Thickness of sediments in Kaimur Group is almost
- (A) 1300 – 1500 m (B) 400 m
(C) 100 – 300 m (D) 450 – 550 m
(E) Answer not known
65. The enormous thickness of the Cuddapah sediments (6300 m) indicates that
- (A) A rapid and quiet submergence
(B) A slow and distributed type of submergence
(C) Slow and quiet submergence
(D) None of these are correct
(E) Answer not known
66. The term 'Muth Quartzites' was first used by
- (A) Colbert (B) Pilgrim
(C) Stoliczka (D) B. Ramarao
(E) Answer not known
67. Kolar Greenstone belt is of an areal extent of
- (A) (80 × 2 sq km) (B) (75 × 2.5 sq km)
(C) (80 × 2.5 sq km) (D) (75 × 2 sq km)
(E) Answer not known

68. The petrological composition of Deccan basalts

- (A) varies randomly
- (B) is uniform
- (C) becomes acidic towards east
- (D) is uniform in the centre than in periphery
- (E) Answer not known

69. Match the following - Time and Rock units

- | | |
|------------|-----------|
| (a) Era | 1. stage |
| (b) Period | 2. series |
| (c) Epoch | 3. system |
| (d) Age | 4. group |

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) <input checked="" type="checkbox"/> | 4 | 3 | 2 | 1 |
| (B) | 2 | 1 | 3 | 4 |
| (C) | 1 | 2 | 3 | 4 |
| (D) | 3 | 2 | 1 | 4 |
| (E) | Answer not known | | | |

70. The sediments from continents called molasse is belong to _____ type of geosyncline.

- (A) Eurasian type
- (B) Atlantic type
- (C) Indonesian type
- (D) African type
- (E) Answer not known

71. When the width of the valley is greater than the width of the river, than the valley is called?

- (A) Bad-land
- (B) Butte
- (C) Strath
- (D) Braided-river
- (E) Answer not known

72. Which of the following statement are wrongly paired?

- I. Elastic rebound theory according to Prof. H.F. Reid
- II. Volcanic earthquakes are Earthquakes associated with volcanoes
- III. Shallow earthquakes originate at a depth of 30 miles
- IV. Tsunami is known as seismograms

- (A) I, II only
- (B) II, III only
- (C) III and IV only
- (D) IV only
- (E) Answer not known

73. Lava of basaltic nature is erupted by

- (A) Explosive type volcano
- (B) Quiet type volcano
- (C) Hawaiian type volcano
- (D) Vesu Vian type Volcano
- (E) Answer not known

74. Various scales have been proposed to estimate the intensity of Earthquake from the damages caused, and thus,

- (1) Richter scale is devised in 12 numbers with increase in intensity and
- (2) Mercall-Scale 0-9 with increase in magnitude

- (A) Statements (1) and (2) are correct
- (B) Statements (1) and (2) are incorrect
- (C) Statement (1) is correct and statement (2) is incorrect
- (D) Statement (1) is incorrect and statement (2) is correct
- (E) Answer not known

75. According to Wegener's concept, in which period the pangaea broken into India and Africa?

- (A) Jurassic
- (B) Cretaceous
- (C) Ice age
- (D) Triassic
- (E) Answer not known

76. The main density break (3.36 to 3.87) inside the earth is at
- (A) 35 kms (B) 60 kms
 (C) 80 kms (D) 100 kms
 (E) Answer not known

77. Match the followings :

Formation		P-wave velocity (m/s)
(a) Massive granite	1.	800 – 2500
(b) Weathered granite	2.	300 – 800
(c) Sandstone	3.	1500 – 4000
(d) Sand	4.	5000 – 7000

- | | (a) | (b) | (c) | (d) |
|-----|------------------|-----|-----|-----|
| (A) | 1 | 3 | 4 | 2 |
| (B) | 1 | 2 | 4 | 3 |
| (C) | 4 | 1 | 3 | 2 |
| (D) | 4 | 2 | 3 | 1 |
| (E) | Answer not known | | | |

78. Match the following :

(a) Density break	1.	150 km depth
(b) Gravity break	2.	80 km depth
(c) Repetiti discontinuity	3.	Metallic nickel and Iron
(d) Nife	4.	950 km depth

- | | (a) | (b) | (c) | (d) |
|-----|------------------|-----|-----|-----|
| (A) | 4 | 3 | 2 | 1 |
| (B) | 2 | 1 | 4 | 3 |
| (C) | 3 | 2 | 1 | 4 |
| (D) | 2 | 4 | 3 | 1 |
| (E) | Answer not known | | | |

79. High temperature changes which takes place along the immediate contacts of Magma with country rock is called as
- (A) Pneumatolytic metamorphism
 - (B) Cataclastic metamorphism
 - (C) Pyro metamorphism
 - (D) Load metamorphism
 - (E) Answer not known
80. The Calcareous schists consists of
- (A) Calcite – Epidote – Tremolite – Quartz
 - (B) Hornblende – Chlorite – Allamanda
 - (C) Hornblende – Albite – Epidote – Allamanda
 - (D) Quartz – Albite – Microclines
 - (E) Answer not known
81. The directed pressure acts generally in a vertical direction and the process of change in the structure of the rock is referred as
- (A) Rock flowage
 - (B) Dynamothermal metamorphism
 - (C) Metasomatism
 - (D) Load metamorphism
 - (E) Answer not known
82. Identify the correct sequence of increasing grade of metamorphic zones
- (A) Chlorite – Biotite – Garnet – Kyanite – Sillimanite
 - (B) Chlorite – Biotite – Garnet – Sillimanite – Kyanite
 - (C) Chlorite – Biotite – Sillimanite – Kyanite – Garnet
 - (D) Chlorite – Biotite – Kyanite – Garnet – Sillimanite
 - (E) Answer not known

83. The term 'Itacolumite' refers to
- (A) Ore of columbium (B) Placer sands
(C) Flexible sand stone (D) Calcite in the stalagmite
(E) Answer not known
84. Graywackes are mostly _____ in origin.
- (A) Marine (B) Fluvial
(C) Glacial (D) Estuarine
(E) Answer not known
85. Decomposition of the rocks is more active in
- (A) Higher elevated areas
(B) Colder regions of the earth surface
(C) Low-lying areas
(D) Mainly in the Drier areas
(E) Answer not known
86. In sediment grain size analysis, if the central portion is better sorted than the tails, the frequency curve is said to be
- (A) Positively skewed (B) Leptokurtic
(C) Platykurtic (D) Negatively skewed
(E) Answer not known
87. Tillite is a kind of
- (A) Ortho conglomerate (B) Para conglomerate
(C) Oligomictic conglomerate (D) Conglomerite
(E) Answer not known

88. How to identify the sea water intrusion?
- (A) Chloride – Bicarbonate ratio
 - (B) Chloride ratio
 - (C) Bicarbonate ratio
 - (D) Nitrate ratio
 - (E) Answer not known
89. Yield tests are known as
- (A) The test may be depressed to an amount – equal to the safe working lead of the subsoil
 - (B) Test may be performed to get an idea of the probable yield of the well
 - (C) Test may be well is depressed by an less than the safe working lead for subsoil
 - (D) If the water level inside the rises from time to time draw down at any time
 - (E) Answer not known
90. Rotary Drilling is used to drill _____ depth.
- (A) Smaller
 - (B) Greater
 - (C) Intermediate
 - (D) Very greater
 - (E) Answer not known
91. In which method during the time of drilling, the casing also done?
- (A) Cable-tool-percussion method
 - (B) Air rotary method
 - (C) Rotary cum Hammer drilling method
 - (D) Rotary drilling method
 - (E) Answer not known

92. In which type of formation, the capillary rise will be high
- (A) Gravel (B) Medium sand
(C) Loam (D) Clay
(E) Answer not known
93. Secondary storage spaces may be resulted due to
- (A) Diastrophism (B) Removal of overburden
(C) Reduction in volume of rocks (D) All of the above
(E) Answer not known
94. New water of magmatic or cosmic origin is known as
- (A) Juvenile water (B) Plutonic water
(C) Connate water (D) Metamorphic water
(E) Answer not known
95. The water in the zone of aeration is
- (A) Vadose water (B) Phreatic water
(C) Fringe water (D) Juvenile water
(E) Answer not known
96. Water entrapped in sediment is called,
- (A) Meteoric water (B) Connate water
(C) Juvenile water (D) Plutonic water
(E) Answer not known

97. In the Bragg's law which states that $n\lambda = 2d \sin \theta$, the glancing angle is given by which of the following symbols?
- (A) λ (B) θ ✓
(C) d (D) η
(E) Answer not known
98. Pyrite is the type mineral for which of the following crystal classes?
- (A) Tetrahedral class of Isometric system
(B) Plagiohedral class of Isometric system
(C) ✓ Pyritohedral class of Isometric system
(D) Normal class of Tetragonal system
(E) Answer not known
99. In stereographic projection, the plane of projection is taken as
- (A) ✓ Equatorial plane of sphere
(B) Southern hemisphere
(C) Coinciding point of centre of sphere and centre of crystal
(D) Horizontal plane tangent to North Pole of sphere
(E) Answer not known
100. Chalcopyrite is the type mineral for which of the following crystal classes?
- (A) Normal class of Tetragonal System
(B) ✓ Sphenoidal class of Tetragonal System
(C) Tripyramidal class of Tetragonal System
(D) Hemimorphic class of Tetragonal System
(E) Answer not known
101. Ullmanite is the type mineral for which of the following crystal classes?
- (A) ✓ Tetartohedral class of Isometric System
(B) Tetrahedral class of Isometric System
(C) Plagiohedral class of Isometric System
(D) Sphenoidal class of Tetragonal System
(E) Answer not known

102. Diopside and Hedenbergite
- (A) are Isomorphous mixtures
 - (B) are end members of solid solution series
 - (C) exhibit pseudomorphism
 - (D) are solid solution series
 - (E) Answer not known
103. The cleavage angles in Amphibole group of minerals are in general
- (A) 87° and 93°
 - (B) 56° and 124°
 - (C) 40° and 140°
 - (D) 60° and 120°
 - (E) Answer not known
104. Cumingtonite crystallizes in which of the following crystal systems?
- (A) Orthorhombic
 - (B) Monoclinic
 - (C) Triclinic
 - (D) Tetragonal
 - (E) Answer not known
105. Which of the following pyroxene group mineral is optically negative?
- (A) Hypersthene
 - (B) Enstatite
 - (C) Diopside
 - (D) Augite
 - (E) Answer not known
106. Which of the following Feldspathoidal mineral contain Cl in its composition?
- (A) Leucite
 - (B) Nepheline
 - (C) Sodalite
 - (D) Melinite
 - (E) Answer not known
107. The maximum range of extinction angle for Anorthite on Albite twins are
- (A) 51° to 70°
 - (B) 39° to 51°
 - (C) 28° to 39°
 - (D) 13° to 28°
 - (E) Answer not known

108. Thin sections of larger benthic foraminifera are done to study
- (A) External morphological features
 - (B) Internal morphological features
 - (C) Wall Structure
 - (D) Ornamentation
 - (E) Answer not known
109. The FSST is characterized by derived terrestrial fossils and reworked microfossils of the previously deposited
- (A) HST
 - (B) LST
 - (C) TST
 - (D) HST and LST
 - (E) Answer not known
110. The lower and upper Gondwanas are separated by
- (A) Panchet and Mahadeva series
 - (B) Damuda and Panchet series
 - (C) Mahadeva and Rajmahal series
 - (D) Damuda and Mahadeva series
 - (E) Answer not known
111. The stem thickness of the plant Pentoxylon is
- (A) 5 cm to 8 cm
 - (B) 6 cm to 10 cm
 - (C) 1 cm to 3 cm
 - (D) 1 cm to 12 cm
 - (E) Answer not known
112. Cycadophyta is the name of
- (A) Phylum
 - (B) Class
 - (C) Sub class
 - (D) Order
 - (E) Answer not known

113. Choose the correct pair from the following
- (A) Monograptus - Ordovician
 - (B) Cyrtograptus - Upper Ordovician
 - (C) Rastites - Lower Ordovician
 - (D) Retiolites - Lower and Middle Silurian
 - (E) Answer not known
114. Rastrites were present during
- (A) Silurian
 - (B) Devonian
 - (C) Carboniferous
 - (D) Cambrian
 - (E) Answer not known
115. In Trilobites the segments of the thorax and the pygidium can be differentiated by
- (A) Their shape and size
 - (B) Their movable and immovable character
 - (C) The nature of the furrow
 - (D) The total number of segment
 - (E) Answer not known
116. The facial suture that starts from genal angle and ends at anterior lateral margin of cephalon is designated as
- (A) Hypoparian type
 - (B) Opisthoparian type
 - (C) Proparian type
 - (D) Gonatoparian type
 - (E) Answer not known
117. The class trilobite were _____ forms.
- (A) Living forms
 - (B) Extinct forms
 - (C) Both living and extinct forms
 - (D) None of the above
 - (E) Answer not known

118. Variation diagram is constructed by
- (A) ✓ Silica percentage vs other oxides
 - (B) Silica percentage vs other minerals
 - (C) Minerals vs Temperature
 - (D) Minerals vs liquid
 - (E) Answer not known
119. In a QAP diagram, Assume 30% Q, 40% A and 30% P then what type of rock is formed?
- (A) ✓ Granite
 - (B) Anorthosite
 - (C) Gabbro
 - (D) Monozite
 - (E) Answer not known
120. The incongruent melting point in forsterite – silica system is
- (A) 1457°C
 - (B) ✓ 1557°C
 - (C) 1567°C
 - (D) 1467°C
 - (E) Answer not known
121. What are the end members of the isomorphous series of plagioclase?
- (A) Nepheline and sodalite
 - (B) ✓ Albite and Anorthite
 - (C) Orthoclase and plagioclase
 - (D) Pyroxene and amphibole
 - (E) Answer not known
122. The origin of anorthosite is
- (A) ✓ Magmatic and metamorphic
 - (B) Magmatic origin
 - (C) Metamorphic origin
 - (D) Residual and magmatic
 - (E) Answer not known

123. Consider the following statements :
- (a) In granite industries, black granite is dolerite
 - (b) But dolerite is basic igneous rock, granite is acid igneous rock
- (A) Both (a) and (b) are true
 - (B) (a) is false and (b) is true
 - (C) Both (a) and (b) are false
 - (D) (a) is true and (b) is false
 - (E) Answer not known
124. The rock showing graphic texture is
- (A) Diorite
 - (B) Gabbro
 - (C) Dolerite
 - (D) Granite
 - (E) Answer not known
125. The IUGs classification is based on
- (A) Color index
 - (B) Chemical composition of minerals
 - (C) Mineral composition and percentage of five minerals
 - (D) Grain size
 - (E) Answer not known
126. Glassy rock of acidic composition is
- (A) Pitchstone
 - (B) Pumice
 - (C) Obsidian
 - (D) Oceanite
 - (E) Answer not known
127. Rocks composed entirely of glassy materials are called
- (A) Holocrystalline
 - (B) Holohyaline
 - (C) Merocrystalline
 - (D) Microcrystalline
 - (E) Answer not known

128. The coarser intergrowth of quartz and alkali feldspar may give rise to the _____ texture.
- (A) Graphic texture (B) Porphyritic texture
(C) Prikilitic texture (D) Ophitic texture
(E) Answer not known
129. The reservoir rock is the material in which Oil and Gas are found, consists chiefly of
- (A) Sandstone, limestone, and dolomites
(B) Arkose, grit, gravel
(C) Conglomerate, clay, calcite
(D) Clay, calcite, conglomerate
(E) Answer not known
130. In India lignite deposits are found to occur during
- (A) Eocene to Pliocene
(B) Cambrian to ordovician
(C) Jurassic to cretaceous
(D) Pre-Cambrian
(E) Answer not known
131. Constituent of coal that is glassy looking, bright, jetlike with conchoidal fracture is termed as
- (A) Durain (B) Anthraxylon
(C) Clarain (D) Fusain
(E) Answer not known
132. Which of these is called as "Blue Asbestos"
- (A) Amosite (B) Crocidolite
(C) Actinolite (D) Tremolite
(E) Answer not known

133. Match the following basis of manganese contents :

- | | |
|----------------------------------|------------------------|
| (a) Chemical grade | 1. Less than 10% of Mn |
| (b) Mn ore grade | 2. 35 – 45% of Mn |
| (c) Ferruginous Mn grade | 3. 10 – 35% of Mn |
| (d) Manganiferous iron ore grade | 4. 82 – 87% Mn |

- | | (a) | (b) | (c) | (d) |
|-------|------------------|-----|-----|-----|
| (A) | 1 | 4 | 2 | 3 |
| (B) | 2 | 3 | 4 | 1 |
| (C) | 3 | 1 | 2 | 4 |
| (D) ✓ | 4 | 2 | 3 | 1 |
| (E) | Answer not known | | | |

134. The inclination within an ore shoot vein is called the

- | | |
|----------------------|-------------|
| (A) Dip | (B) ✓ Rake |
| (C) Slope | (D) Ore run |
| (E) Answer not known | |

135. What is the percentage of limestone used for cement Industries in India?

- | | |
|----------------------|---------|
| (A) 95% | (B) 70% |
| (C) ✓ 84% | (D) 60% |
| (E) Answer not known | |

136. "Selenite" is a variety of

- | | |
|----------------------|------------|
| (A) Ilmenite | (B) Garnet |
| (C) ✓ Gypsum | (D) Zircon |
| (E) Answer not known | |

137. _____ deposits are the source of metals like niobium, rubidium, tin, tungsten and uranium.

- | | |
|-------------------------------|-----------------|
| (A) Magmatic | (B) Metamorphic |
| (C) ✓ Metasomatic replacement | (D) Residual |
| (E) Answer not known | |

138. _____ and _____ are original cavities of Hydrothermal ore forming processes.

- (A) Saddle reefs and Volcanic Pipes
- (B) Tectonic breccias and Collapse breccias
- (C) Solution caves and Fissures
- (D) Pore spaces and Bedding planes
- (E) Answer not known

139. Match the List I with List II and select your answer using the codes given below :

List I		List II	
(a) Digboi		1. Barites	
(b) Jadaguda		2. Coal fields	
(c) Mangampetta		3. Oil fields	
(d) Jharia		4. Uranium deposits	

- | | | | | |
|---|------------------|-----|-----|-----|
| | (a) | (b) | (c) | (d) |
| (A) <input checked="" type="checkbox"/> | 3 | 4 | 1 | 2 |
| (B) | 3 | 4 | 2 | 1 |
| (C) | 3 | 2 | 4 | 1 |
| (D) | 4 | 3 | 1 | 2 |
| (E) | Answer not known | | | |

140. Which of the following is incorrect answer?

- (A) Metallic minerals ore are Bauxite, Chromite, Chalcopyrite
- (B) Nonmetallic mineral ores are Asbestos, Corundum, Diamond
- (C) The Nuclear minerals are Feldspar, Garnet, Vermiculite
- (D) Kyanite and sillimanite are in the manufacture of high temperature refractories
- (E) Answer not known

141. Shape of an object in an image is represented as

- (A) Geometric form
- (B) Relief displacement
- (C) Parallax
- (D) Linear form
- (E) Answer not known

142. What type of technique is adopted for bedded banded, and vein type mineral deposits?
- (A) Bulk Sampling
 - (B) Coning of Quartering
 - (C) Grab Sampling
 - (D) Channelling of Grooving
 - (E) Answer not known
143. Uniaxial compressive strength of Igneous rock "Basalt" ranges from
- (A) 1500 – 3500
 - (B) 1000 – 2500
 - (C) 1500 – 2500
 - (D) 1500 – 3000
 - (E) Answer not known
144. Uniaxial compressive strength of metamorphic rock "Marble" ranges from
- (A) 500 – 2500
 - (B) 700 – 2000
 - (C) 1500 – 3000
 - (D) 500 – 2000
 - (E) Answer not known
145. The Jawahar Tunnel on the National Highway in Jammu and Kashmir is a
- (A) Single Tube Tunnel
 - (B) Single Track Tunnel
 - (C) Double Tube Tunnel
 - (D) Double Track Tunnel
 - (E) Answer not known
146. Which one of the following is not an example of concrete dam?
- (A) Gravity Dam
 - (B) Buttress Dam
 - (C) Composite Dam
 - (D) Arch Dam
 - (E) Answer not known

147. The scintillation counters employ certain substances like zinc sulphide or thallium activated sodium iodide crystals, which emit visible light when struck by α, β, γ radiations. Such substances are known as
- (A) Cluckers
 - (B) Photo amplifiers
 - (C) Luminous
 - (D) Phosphors
 - (E) Answer not known
148. Seismic reflection method is commonly and successfully employed for
- (A) Placed along selected points at different distance
 - (B) Waves travelling horizontally
 - (C) Oil exploration and also for subsurface geology
 - (D) Low velocity medium is encountered
 - (E) Answer not known
149. The electrical method that involves measuring the potential between the potential electrodes for different electrode spacing ('a') without any current input into the ground is
- (A) Self-potential method
 - (B) Surface electrical prospecting
 - (C) Electrical resistivity method
 - (D) Well-logging technique
 - (E) Answer not known
150. Pick out the correct method from the following
- (A) $\rho_1 > \rho_2 < \rho_3$ - Q type
 - (B) $\rho_1 < \rho_2 < \rho_3$ - H type
 - (C) $\rho_1 < \rho_2 > \rho_3$ - K type
 - (D) $\rho_1 > \rho_2 > \rho_3$ - A type
 - (E) Answer not known

151. In a cooling lava, dikes and sills, a uniform tension may develop in the plane parallel to the contacts and thus, result

- (A) Columnar joints (B) Release joints
(C) Extension joints (D) Dip joints
(E) Answer not known

152. Microbreccia, can also be called as

- (A) Mylonite (B) Silicification
(C) Silicken sides (D) Gouge
(E) Answer not known





153. The down throw block is topographically higher than the up throw block indicate

- (A) Thrust fault (B) Composite fault scrap
(C) Fault scrap (D) Fault-line scarp
(E) Answer not known

154. Anticline and dome folds form oil-traps in

- (A) Bombay High, Maharastra (B) Digboi, Assam
(C) Cauvery Basin, Tamil Nadu (D) Mahanadi Basin, Odisha
(E) Answer not known

155. Match the following and choose the correct answer :

- (a)  1. Concealed fault
(b)  2. Possible fault
(c)  3. Normal fault-with down thrown block
(d)  4. Thrust on up thrown block

- | | (a) | (b) | (c) | (d) |
|---|------------------|-----|-----|-----|
| (A) <input checked="" type="checkbox"/> | 1 | 2 | 3 | 4 |
| (B) | 2 | 1 | 4 | 3 |
| (C) | 3 | 2 | 4 | 1 |
| (D) | 2 | 3 | 1 | 4 |
| (E) | Answer not known | | | |

156. Narrow bands with few inches (or) few feet wide, in which beds assume a dip that is steeper (or) gentler than that of adjacent beds are called
- (A) Disharmonic bands (B) Monocline and terrace
(C) Kink bands (D) Arch bend
(E) Answer not known
157. A parallel or concentric fold maintain same layer thickness throughout the fold and developed under compression is called as
- (A) Flexural slip fold (B) Oblique shear fold
(C) Kinking fold (D) Buckling fold
(E) Answer not known
158. If the orientation of the principal stress axes X, Y and Z have changed during the deformation, the process is known as
- (A) Axial strain (B) Pure shear
(C) Simple shear (D) Triaxial stress
(E) Answer not known
159. The symbol /sign given below represents $Q[\sigma_2]$
- (A) Greatest principal stress axis
(B) Intermediate principal stress axis
(C) Greatest principal strain axis
(D) Intermediate principal strain axis
(E) Answer not known
160. The tangential component is generally called
- (A) Tension (B) Shear
(C) Compression (D) Couple
(E) Answer not known

161. The age of the productus shale is
- (A) Carboniferous (B) Permo-Carboniferous
(C) Permian (D) Permo-Triassic
(E) Answer not known
162. The Fenestella shales of spiti forms part of
- (A) Parahio series (B) Po series
(C) Lipak series (D) Neobolus beds
(E) Answer not known
163. Unia series belong to which of the following sub-groups?
- (A) Lower Gondwana (B) Upper Gondwana
(C) Middle Gondwana (D) Upper Cretaceous
(E) Answer not known
164. The name Gondwana is derived from the Kingdom of the 'Gonds' a great and ancient tribe who still inhabit from
- (A) Maharashtra (B) Madhya Pradesh
(C) Uttar Pradesh (D) Himachal Pradesh
(E) Answer not known
165. The dolerite dykes intrusive into the Lower Gondwanas in the Coal-fields of the Central Provinces are probably related to the
- (A) Plutonic rocks (B) Shield areas
(C) Archaean rocks (D) Deccan traps
(E) Answer not known

166. The Chitradurga-Gadag superbelt is of a linear extent of how many kilometers?
- (A) 300 km (B) 400 km
(C) 200 km (D) 450 km
(E) Answer not known
167. The lithology of Niniyur stage are
- (A) Grit and Conglomerate (B) Clays and Grit
(C) Sands and Clays (D) Limestones and Sandstones
(E) Answer not known
168. Geological age of the rocks of Niniyur stage is from
- (A) Cenomanian to Albian
(B) Turonian to Cenomanian
(C) Senonian to Turonian
(D) Danian to Maestrichtian
(E) Answer not known
169. The cretaceous formation of Trichinopoly mostly rest over a platform of
- (A) Mesozoic era (B) Archaean age
(C) Precambrian age (D) Tertiary age
(E) Answer not known
170. The 'Danian age' is inferred for the Deccan trap based on the presence of _____ beds in the interstratification of a few flows of the trap.
- (A) Morgania potamides (B) Turritella
(C) Cardita beaumonti (D) Hemitoma
(E) Answer not known

171. Submerged equivalents of alluvial fans
- (A) Sloughs (B) Wadies
(C) Deltas (D) Pediment
(E) Answer not known
172. Compound coasts reflect the effects of
- (A) Coastal emergence
(B) Coastal submergence
(C) Coastal erosion
(D) Both emergence and submergence
(E) Answer not known
173. 'Strath', 'Hog-back', 'Cuesta' and Butte are land forms associated with,
- (A) Ideal fluvial cycle in Arid region
(B) Ideal fluvial cycle in Humid region
(C) Ideal fluvial cycle in Youth stage
(D) Ideal fluvial cycle in Old stage
(E) Answer not known
174. _____ is a big dome-shaped, steep-sided, bare on top or bald rock outcropping often made of granite or hard rocks.
- (A) Bornhardt (B) Butte
(C) Monadnock (D) Cuesta
(E) Answer not known
175. Explosive type volcano, generally erupts the lava of _____ nature.
- (A) Acidic (B) Basic
(C) Intermediate (D) Ultra basic
(E) Answer not known

176. According to Wegener, the continental drift was caused by the
- (A) Differential gravitational forces
 - (B) Equatorial forces
 - (C) Polar Wandering forces
 - (D) Magnetic forces
 - (E) Answer not known
177. Choose the correct statement
- (A) The crust is spreading apart along the right
 - (B) The sea floor spreading occurs basaltic lava
 - (C) Due to sea floor spreading a new oceanic crust is formed
 - (D) All are correct
 - (E) Answer not known
178. According to Wegener, the Himalayan Alpine chain of mountains was formed due to
- (A) West-ward force
 - (B) North-ward force
 - (C) South-ward force
 - (D) Equator-ward force
 - (E) Answer not known
179. Axial tilt is identified with
- (A) Active sea floor spreading
 - (B) Isostasy
 - (C) Active Volcano
 - (D) Continental motion
 - (E) Answer not known
180. Which of the following minerals cannot be dated using the Potassium-Argon method?
- (A) Biotite
 - (B) Hornblende
 - (C) Plagioclase
 - (D) Orthoclase
 - (E) Answer not known

181. The circular orbits of the planets forming clouds is due to
- (A) Gravity
(B) Collisions
(C) Angular momentum
(D) Tidal effect
(E) Answer not known
182. The term Auto metamorphism is
- (A) The alteration of an igneous rock by its own residual liquid
(B) The alteration of sedimentary rocks by own residual liquid
(C) Alteration of metamorphic rocks by own residual liquid
(D) The alteration of both sedimentary and metamorphic rock
(E) Answer not known
183. The effect of highest degree of heat possible without fusion under dry condition is called
- (A) Contact metamorphism
(B) Pyro metamorphism
(C) Optalic metamorphism
(D) Pneumatolytic metamorphism
(E) Answer not known
184. From the following rocks, which is chemically equivalent to basalt
- (A) Eclogite
(B) Amphibolite
(C) Hornfels
(D) Serpentinite
(E) Answer not known
185. Who has supplemented the zone concept by that of Metamorphic facies?
- (A) Fermor
(B) Eskola
(C) Van Hise
(D) Grubenmann's
(E) Answer not known

186. The linear metamorphosed tectonized sedimentary trough which are termed as
- (A) Geosyncline (B) Basin
(C) Embayments (D) Trough
(E) Answer not known
187. MacCarthy (1935) discriminated between aeolian and beach sands on the basis of
- (A) Grain size
(B) Roundness
(C) Sorting
(D) Mutual arrangements
(E) Answer not known
188. Which is belongs to evaporite type of rock?
- (A) Chert (B) Anhydrite
(C) Kankar (D) Chalk
(E) Answer not known
189. Choose the correct one formed by residual deposit
- (A) Coal (B) Gypsum
(C) Terra rosa (D) Shale
(E) Answer not known
190. Arkose is derived from the disintegration of
- (A) Granite (B) Carbonatite
(C) Limestone (D) Argillaceous
(E) Answer not known

191. Which phosphatic deposit is directly organic origin?
- (A) ✓ Guano (B) Greywacke
(C) Ganister (D) Shale
(E) Answer not known
192. Which of the following field data can be interpreted using Tagg's method?
- (A) Self potential (B) ✓ Resistivity
(C) Electromagnetic (D) Induced polarisation
(E) Answer not known
193. The electrical resistivity method, the resistance values are plotted against _____ in semi-log paper.
- (A) Current (B) Distance
(C) Time (D) ✓ Depth
(E) Answer not known
194. If the salt index is negative for water sample then the sample is suitable for
- (A) Unsuitable for industrial, irrigation and drinking
(B) Industrial
(C) ✓ Irrigation
(D) Drinking
(E) Answer not known
195. Which of the following are the sources of manganese (Mn) in ground water?
- (A) Clay and limestone
(B) Igneous rocks
(C) ✓ Metamorphic and Sedimentary rocks with biotite, amphibole and hornblende
(D) Igneous rocks with muscovite, chert and feldspars
(E) Answer not known

196. The two uniform sieved sands are mixed in varying proportions, then the hydraulic conductivity is _____ than a linear interpolated.
- (A) Less (B) Greater
(C) Equal (D) Varying
(E) Answer not known
197. Ground water movement is governed by
- (A) Hydraulic conductivity of an aquifer
(B) Hydraulic gradient
(C) Storage capacity of an aquifer
(D) Hydraulic conductivity and gradient of aquifer
(E) Answer not known
198. Portion of runoff contributed by direct precipitation on the stream itself is called
- (A) Depression storage (B) Channel precipitation
(C) Base flow (D) Effluent flow
(E) Answer not known
199. In which of the following sediments the capillary rise is maximum?
- (A) Coarse sand (B) Medium sand
(C) Loam (D) Clay
(E) Answer not known
200. The term kinematic porosity is also called as
- (A) Primary porosity (B) Secondary porosity
(C) Effective porosity (D) Unconnected pores
(E) Answer not known

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

SPACE FOR ROUGH WORK

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SEAL