

19. Which is the predominantly exposed rock along the Lunar Highlands?
 A) Granite B) Basalt
 C) Gabbro D) Anorthosite
20. Who coined the term "Neogeomorphology" to highlight the anthropogenically driven landscape alteration ?
 A) A.N.Strahler B) R.E. Horton
 C) T.K. Haff D) K.G.Cox
21. Which of the following dominates the pelagic sediments?
 A) Diatom ooze B) Radiolarian ooze
 C) Pteropod ooze D) Calcareous ooze
22. Which clay mineral predominates the surface sediments of the Arabian-sea floor?
 A) Kaolinite B) Illite
 C) Montmorillonite D) Smectite
23. With the exploration of which of the following the term 'bottom-simulating-reflector' is used?
 A) Petroleum B) Natural Gas
 C) Gas Hydrate D) Shale Gas
24. Of the 14 Bravais lattices, how many are body-centered?
 A) 3 B) 4 C) 5 D) 6
25. Out of 32 point groups, how many come under the Tetragonal System?
 A) 7 B) 6 C) 5 D) 4
26. Who grouped igneous rocks into *oversaturated* and *under saturated*?
 A) N. L. Bowen B) A. Johannsen
 C) A. Harker D) S. J. Shand
27. Which of the following is the most abundant mineral in the Earth's crust?
 A) Quartz B) Orthoclase
 C) Plagioclase D) Pyroxene
28. Match the following set of minerals with their optical groups:
- | | |
|----------------|----------------------|
| 1. Tourmaline | a. Isotropic |
| 2. Hercynite | b. Uniaxial positive |
| 3. Sillimanite | c. Uniaxial negative |
| 4. Zircon | d. Biaxial positive |
| 5. Muscovite | e. Biaxial negative |
- A) 1-b; 2-a; 3-c; 4-d; 5-e B) 1-c; 2-a; 3-d; 4-b; 5-e
 C) 1-c; 2-a; 3-b; 4-d; 5-e D) 1-d; 2-e; 3-c; 4-b; 5-a

29. Match the following sets of minerals with their chemical groups:
- | | |
|------------------|--------------|
| 1. Cassiterite | a. Oxide |
| 2. Fluorite | b. Halide |
| 3. Celestine | c. Sulphate |
| 4. Rhodochrosite | d. Carbonate |
| 5. Cheralite | e. Phosphate |
- A) 1-a; 2-b; 3-c; 4-d; 5-e B) 1-c; 2-a; 3-d; 4-b; 5-e
C) 1-c; 2-a; 3-b; 4-d; 5-e D) 1-d; 2-e; 3-c; 4-b; 5-a
30. Name the plutonic rock with 50 % orthopyroxene, 45 % clinopyroxene and 5 % olivine.
- A) Peridotite B) Harzburgite
C) Websterite D) Olivine Websterite
31. How many cotectic line(s) are there in the Di-Ab-An ternary system?
- A) 1 B) 2 C) 3 D) 4
32. Which of the following statements is correct?
- A) All primary magmas are primitive
B) All primitive magmas are primary
C) All magmas are either primary or primitive
D) All primary magmas are parental
33. Which of the following can be regarded as high-Mg andesites?
- A) Komatiite B) Keratophyre
C) Boninite D) Picrite
34. Which is not true in the case of kimberlites?
- A) Occur as diatremes B) Low Mg numbers
C) LREE enrichment D) Brecciated texture
35. What petrogenetic inference is there for low values (< 0.704) of $^{87}\text{Sr}/^{88}\text{Sr}$ ratios in magmatic rocks?
- A) Crustal anatexis B) Extreme differentiation
C) Mantle source D) Crustal contamination
36. Which of the following represents a magma chamber?
- A) Large Igneous province B) Continental Flood Basalt province
C) Greenstone belts D) Layered ultramafic complex
37. Which of the following forms the most abundant group of sedimentary rocks ?
- A) Sandstones B) Mudstones
C) Lime stones D) Carbonaceous rocks

38. What is the range of silica (SiO_2 wt.%) in andesites?
 A) 46-59 B) 49-62 C) 52-65 D) 55-68
39. Where does the mineral cordierite plot on an ACF diagram?
 A) At F corner B) Midway between A and F
 C) Midway between A and C D) Midway between C and F
40. Which is the correct expression of Goldschmidt's Mineralogical Phase Rule?
 A) $P+F=C+2$ B) $P+F=C$
 C) $P+F=C+1$ D) $P=C$
41. What is the chemical composition of the normative mineral kaliophilite (kp)?
 A) $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot \text{SiO}_2$ B) $\text{K}_2\text{O} \cdot 2\text{Al}_2\text{O}_3 \cdot 2 \text{SiO}_2$
 C) $\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2 \text{SiO}_2$ D) $2\text{K}_2\text{O} \cdot \text{Al}_2\text{O}_3 \cdot 2 \text{SiO}_2$
42. Match the following pioneers in Stratigraphy with their contributions.
 1. R. Murchison a. Defined 3 eras, Paleozoic, Mesozoic & Cenozoic
 2. James Hutton b. Wrote the book *The Theory of the Earth* in 1795
 3. A. Sedgwick c. Founded Silurian in 1835
 4. John Phillips d. Founded Cambrian in 1835
 5. C. Lapworth e. Founded Ordovician in 1879
- A) 1-a; 2-b; 3-c; 4-d; 5-e B) 1-c; 2-a; 3-d; 4-b; 5-e
 C) 1-e; 2-a; 3-b; 4-d; 5-c D) 1-c; 2-b; 3-d; 4-a; 5-e
43. Which of the following boundaries is not characterized by large mass extinction?
 A) Cretaceous-Paleocene B) Jurassic-Cretaceous
 C) Triassic-Jurassic D) Permian-Triassic
44. Which time period is termed the Little Ice Age?
 A) 1400-1850 AD B) 400- 900 AD
 C) 1200-300 BC D) 2300-1400 BC
45. Who among the following is a pioneer in Seismic Stratigraphy?
 A) P.R.Vali B) W.C.Krumbein
 C) L.L.Sloss D) D.P.J.Swift
46. To which of the following the 'Fairbridge curve' is related?
 A) Ice formation along low latitudes in the Pleistocene
 B) Ice melting along low latitudes in the Pleistocene
 C) Ice formation along high latitudes in the Pleistocene
 D) Holocene sea level changes
47. Which chronostratigraphic unit corresponds to the time interval 'epoch'?
 A) Series B) Stage
 C) System D) Group

48. Which regional structure separates the Himalayas from the Tibetan plateau?
 A) Main Central Thrust B) Main Boundary Thrust
 C) Indus-Tsangpo suture D) Chapman Fault
49. Which one of the following gives the approximate gravity value along the Himalayas?
 A) - 4000 gu B) - 6000 gu C) + 4000 gu D) + 6000 gu
50. To which of the following the Signor-Lipps Effect is related?
 A) In deciding the time of extinction of a fossil.
 B) In correlating plant and animal fossil from the same strata
 C) In finding out Carbon isotope ratios in graphite
 D) In reconstructing dinosaur body from fossil skeleton
51. Which of the following terms indicate the study of decaying of organisms in time and the process of their fossilization?
 A) Taxonomy B) Taphonomy C) Typhology D) Therology
52. What name is given to a branching treelike diagram used to illustrate evolutionary (phylogenetic) relationships among organisms?
 A) Genogram B) Taxogram
 C) Cladogram D) Phyllogram
53. As per the human evolution models, when did the ancestors of humans and chimpanzees separate?
 A) 3-1 Ma B) 4-2 Ma C) 6-4 Ma D) 8-6 Ma
54. Which of the following cratons lies between the Godavari and Mahanadi rifts?
 A) Singhbhum B) Bastar C) Bundelkhand D) Aravalli
55. What is the mean periodicity at which the magnetic reversals took place during the last 35 million years?
 A) 0.1 My B) 0.2 My C) 0.3 My D) 0.4 My
56. In which craton the Sandmata complex occurs?
 A) Singhbhum B) Bastar
 C) Bundelkhand D) Aravalli
57. Match the following Siwalik fossils with their corresponding mammal groups:
 1. Chilotherium a. Primate
 2. Sivatherium b. Giraffidae
 3. Hipparion c. Rhinocerotidae
 4. Gigantopithecus d. Equidae
 5. Rhizomys e. Rodentia
- A) 1-a; 2-b; 3-c; 4-d; 5-e B) 1-c; 2-a; 3-d; 4-b; 5-e
 C) 1-c; 2-b; 3-d; 4-a; 5-e D) 1-d; 2-e; 3-c; 4-b; 5-a

69. Which of the following hypothesis states that the slip on a given fault occurs along the greatest resolved shear stress?
 A) Anderson's hypothesis B) Ramsay's hypothesis
 C) Wallace-Bott hypothesis D) Griggs-Handin hypothesis
70. When did the supercontinent Rodinia exist?
 A) 1.1-0.8 Ga B) 2.1 – 1.9 Ga
 C) 1.5 – 1.1 Ga D) 1.8 – 1.3 Ga
71. Which is the correct order of rocks in the increasing porosity?
 A) Clay-Shale- Sandstone-Gravel-Silt
 B) Clay-Silt- Shale- Sandstone-Gravel
 C) Shale-Sandstone-Gravel-Silt-Clay
 D) Clay-Shale-Silt-Sandstone-Gravel
72. Which of the following is the water that forms very thin films around soil particles and is not available to the plant as it is held so tightly by the soil that it cannot be taken up by roots.
 A) Gravitational water B) Hygroscopic water
 C) Vadose water D) Capillary water
73. At the central part of an oceanic island which is 4 m above MSL, the groundwater occurs at 2 m MSL. At what depth will be the fresh-water sea-water interface at that location as per the Ghyben-Herzberg equation?
 A) 80 m B) 60 m C) 40 m D) 20 m
74. Under which condition the Gondwana sediments were essentially deposited?
 A) Fluvial B) Fluviomarine
 C) Fluviolacustrine D) Fluvioglacial
75. To which schist belt the Patna and Bisanattom granites are intruded?
 A) Dharwar B) Chitradurga C) Kolar D) Shimoga
76. Which of the following magmatic series is typical of subduction zones?
 A) Komatiitic B) Tholeiitic
 C) Alkaline D) Calc-alkaline
77. Which is the correct statement regarding oxygen isotope abundance in water?
 A) Sea water is richer in ^{16}O and rain and snow relatively depleted in ^{16}O
 B) Sea water is richer in ^{18}O and rain and snow relatively depleted in ^{18}O
 C) All natural waters have constant $^{18}\text{O} / ^{16}\text{O}$ ratio
 D) The $^{18}\text{O} / ^{16}\text{O}$ ratio depends on age of groundwater
78. Where does the plot of a lineation plunging 88° towards North plot on a structural stereogram?
 A) Exactly at the centre B) Close to the centre
 C) Near N at the N-S line D) Near S at the N-S line

90. The silica and alkali contents of five plutonic rocks are given below. Assign appropriate names to them:

Sl. No.	SiO ₂ wt%	(Na ₂ O+K ₂ O) wt. %
1	60	4
2	55	10
3	45	4
4	70	7
5	58	14

- A) 1-Diorite; 2-Syenite; 3-Gabbro; 4-Granite; 5-Nepheline Syenite
 B) 1-Syenite; 2-Diorite; 3-Gabbro; 4-Granite; 5- Nepheline Syenite
 C) 1-Syenite; 2-Gabbro; 3-Diorite; 4- Nepheline Syenite; 5-Granite
 D) 1-Gabbro; 2-Syenite; 3-Diorite; 4- Nepheline Syenite; 5-Granite
91. Which is the principal clay mineral in Bentonite?
 A) Kaolinite B) Illite
 C) Montmorillonite D) Smectite
92. Which is the main source of Lithium?
 A) From native lithium ore
 B) From geothermal wells
 C) As a by-product of zinc ore beneficiation
 D) As a by-product of crude oil refining
93. With which of the exploration technique the term 'nanotesla' is associated?
 A) Gravity B) Seismic C) Magnetic D) Resistivity
94. To which of the categories an aerial photograph of 1:50,000 scale can be grouped as?
 A) Large-scale B) Medium-scale
 C) Small-scale D) Very small-scale
95. What is the normal overlap and side-lap in aerial photographs?
 A) 40% overlap and 10-20 % side-lap
 B) 60% overlap and 20-30 % side-lap
 C) 40% overlap and 20-30 % side-lap
 D) 60% overlap and 10-20 % side-lap
96. What is the name given to a stream whose course follows the original relief, but at a lower level than the original slope?
 A) Consequent B) Subsequent
 C) Resequent D) Insequent
97. Cadmium is essentially produced by:
 A) From cadmium ore like greenockite
 B) From geothermal wells
 C) As a by-product of zinc ore beneficiation
 D) As a by-product of crude oil refining

98. Match the economic deposits in *Group I* with their Indian occurrences in *Group II*.

Group I

P. Gold
Q. Copper
R. Uranium
S. Sulphur

Group II

1. Amjhor
2. Malanjkhanda
3. Bhatin
4. Hutti

- A) P-4, Q-2, R-3, S-1 B) P-4, Q-3, R-2, S-1
C) P-4, Q-2, R-1, S-3 D) P-3, Q-1, R-2, S-4

99. Match the economic deposits in *Group I* with their place of occurrence in Kerala in *Group II*.

Group I

P. Ilmenite
Q. Phlogopite
R. Gold
S. Clay

Group II

1. Punalur
2. Pazhayangadi
3. Chavara
4. Attappady

- A) P-4, Q-1, R-2, S-3 B) P-3, Q-4, R-1, S-2
C) P-3, Q-2, R-1, S-4 D) P-3, Q-1, R-4, S-2

100. Match the economic deposits in *Group I* with Indian States that produce the maximum in *Group II*.

Group I

P. Gypsum
Q. Steatite
R. Glass sand
S. Magnesite
T. Sillimanite

Group II

1. Meghalaya
2. Tamil Nadu
3. Uttar Pradesh
4. Bihar
5. Rajasthan

- A) P-4, Q-1, R-2, S-3, T-5 B) P-5, Q-4, R-3, S-2, T-1
C) P-3, Q-5, R-1, S-2, T-4 D) P-3, Q-1, R-4, S-2, T-5

101. What was the pre-runner and basis for the development of Sequence Stratigraphy?

- A) Chronostratigraphy B) Magnetostratigraphy
C) Biostratigraphy D) Seismic stratigraphy

102. What forms the basis of Allostratigraphy?

- A) Spores and pollens B) Microforaminifera
C) Discontinuities D) Magmatic events

103. What property of a reservoir rock is determined by a sonic tool by measuring the internal transit time?
 A) Effective porosity B) Percentage of fluids
 C) Fluid pressure D) Oil to gas ratio
104. To calculate which of the following parameters, the *Archie's equation* is used in Wel-logging?
 A) Effective porosity B) Pore-water pressure
 C) Water-saturation D) Oil to gas ratio
105. To measure which of the following, a field geologist carries a Pedometer?
 A) Dip and Strike B) Latitude and Longitude
 C) Altitude D) Distance
106. What is the approximate depth range at which petroleum originates?
 A) 2-6 km B) 1-4km C) 5-10 km D) 10-12 km
107. Which satellite imagery is available as stereopairs ?
 A) LANDSAT B) SPOT C) IRS 2 D) IRS 3
108. Which technique in geological mapping involves washing and panning of soil to infer the rock underneath?
 A) Loaming B) Pacing
 C) Shadowing D) Traversing
109. Which of the following rocks yields a red-brown soil on weathering and helps to infer it while mapping?
 A) Granite B) Anorthosite
 C) Dolerite D) Carbonatite
110. Which ion reacts and breaks down ozone molecule in the stratosphere to cause ozone depletion?
 A) Oxygen B) Helium
 C) Carbon D) Fluorine
111. Which mineral predominates young bauxite deposits?
 A) Diaspore B) Gibbsite
 C) Boehmite D) Kaolinite
112. For which of the following minerals, India is the largest world producer?
 A) Andalusite B) Sillimanite
 C) Kyanite D) Corundum
113. The presence of which of the following contaminants in drinking water is related to the risk of causing Hepatitis A?
 A) Bacteria B) Virus C) Arsenic D) Cadmium

114. A field geologist prepares his final report with various portions. What is the correct sequence in which they have to be arranged?
- A) Title page - Preface- Contents - Main report - Bibliography- Appendix
 - B) Title page - Contents - Preface - Main report - Bibliography- Appendix
 - C) Title page - Preface- Contents - Main report - Appendix -Bibliography
 - D) Title page - Preface- Contents - Appendix -Main report – Bibliography
115. An item from the Bibliography of a geological report is given below:
Williams J. (1996) Sulphide Copper Minerals. *In* Sulphide Ore Deposits, New York (McGrawHill), 1450-1483.
Which crucial aspect is missing in the reference?
- A) Volume number
 - B) Journal Name
 - C) Name of the Editor
 - D) Month of publication
116. Which gas plays critical role in the formation of photochemical smog?
- A) Carbon dioxide
 - B) Carbon monoxide
 - C) Sulphur dioxide
 - D) Nitrogen dioxide
117. The emission of which of the following will be reduced by using catalytic converters in automobiles?
- A) Hydrocarbons
 - B) Carbon dioxide
 - C) Nitrogen
 - D) Sulphur compounds
118. Why most of the dams are constructed along fault zones ?
- A) Poor site selection due to inadequate geological knowledge
 - B) Impermeable rocks tend to be associated with faults
 - C) Fault zones form natural topographic lows
 - D) Land values are lower in fault zones
119. Which element limits the uptake of Cadmium by plants?
- A) Chlorine
 - B) Boron
 - C) Zinc
 - D) Aluminium
120. Which kind of small magnetometer is used by field geologists for quick magnetic surveys?
- A) Proton Precession
 - B) Torsion Balance
 - C) Flux gate
 - D) SQUID
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