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ROLL No.

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TEST BOOKLET No.

129

TEST FOR POST GRADUATE PROGRAMMES

GEOLOGY

Time: 2 Hours

Maximum Marks: 450

INSTRUCTIONS TO CANDIDATES

1. You are provided with a Test Booklet and an Optical Mark Reader (OMR) Answer Sheet to mark your responses. Do not soil the Answer Sheet. Read carefully all the instructions given on the Answer Sheet.
2. Write your Roll Number in the space provided on the top of this page.
3. Also write your Roll Number, Test Code, and Test Subject in the columns provided for the same on the Answer Sheet. Darken the appropriate bubbles with a **Ball Point Pen**.
4. The paper consists of 150 objective type questions. All questions carry equal marks.
5. Each question has four alternative responses marked **A, B, C** and **D** and you have to **darken** the bubble corresponding to the correct response fully by a **Ball Point Pen** as indicated in the example shown on the Answer Sheet.
6. Each correct answer carries 3 marks and each wrong answer carries 1 minus mark.
7. Space for rough work is provided at the end of this Test Booklet.
8. You should return the Answer Sheet to the Invigilator before you leave the examination hall. However, you can retain the Test Booklet.
9. Every precaution has been taken to avoid errors in the Test Booklet. In the event of any such unforeseen happening, the same may be brought to the notice of the Observer/Chief Superintendent in writing. Suitable remedial measures will be taken at the time of evaluation, if necessary.

SEAL



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1. The dip of a stratum is the angle between the
 - (A) vertical and horizontal plane
 - (B) inclined and horizontal plane
 - (C) bedding and horizontal plane
 - (D) vertical and inclined plane

2. Khondalite is a product of
 - (A) high grade metamorphism of shales
 - (B) low grade metamorphism of basalts
 - (C) high grade metamorphism of high alumina basalts
 - (D) high grade metamorphism of limestone and greywacke

3. The trilobite *Olenus* is characteristic of
 - (A) lower cambrian
 - (B) upper cambrian
 - (C) middle cambrian
 - (D) lower silurian

4. Index fossil refers to a fossil which has
 - (A) wide geographic distribution and long geological time
 - (B) less geographic distribution and long geological time
 - (C) wide geographic distribution and short geological time
 - (D) less geographic distribution and short geological time

5. Conrad discontinuity lies between
 - (A) sial and sima
 - (B) lower and upper mantle
 - (C) inner and outer core
 - (D) crust and mantle

6. After which Indian geologist, a fossil representing oldest known complex life form is named?
 - (A) D.N. Wadia
 - (B) S.B. Misra
 - (C) Birbal Sahni
 - (D) M.S. Krishnan

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7. Sunstone and Moonstone belong to
- (A) quartz group (B) zeolite group
(C) pyroxene group (D) feldspar group
8. Which mineral is added to paper pulp to give the paper a better surface?
- (A) Kaolinite (B) Natrolite
(C) Bauxite (D) Feldspar
9. Lower Gondwana rocks range in age from
- (A) upper cambrian to ordovician
(B) upper carboniferous to lower triassic
(C) upper triassic to lower cretaceous
(D) upper silurian to devonian
10. The outpouring of Deccan Traps started towards the end of
- (A) triassic (B) permo-carboniferous
(C) jurassic (D) cretaceous
11. The Lower and Upper Gondwana are characterised by
- (A) glossopteris and vertebraria
(B) glossopteris and schizoneura
(C) gangamopteris and ptilophyllum
(D) glossopteris and ptilophyllum
12. Neogene includes
- (A) miocene to pliocene (B) oligocene to miocene
(C) paleocene to eocene (D) eocene to oligocene
13. In Kutch, the Katrolg group is overlain by
- (A) patcham group (B) umia group
(C) chari group (D) surma group



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14. Find the odd one out
- (A) Spirifer (B) Athyris
(C) Phacops (D) Terebratula
15. Where do you find abundant vertebrate fossils?
- (A) Cretaceous of Trichy (B) Gondwanas
(C) Jurassic of Kutch (D) Siwaliks
16. Ambulacral plates are found in
- (A) echinoids (B) gastropods
(C) graptolites (D) corals
17. The simplest type of suture is commonly described as
- (A) ceratitic suture (B) nautilitic suture
(C) ammonitic suture (D) goniatitic suture
18. Cranium in Trilobite is a combination of
- (A) fixed and free cheeks (B) glabella and genal angle
(C) glabella and fixed cheeks (D) glabella and free cheeks
19. The whole skeleton of a simple colony of Graptolites is known as
- (A) rhabdosome (B) sicula
(C) theca (D) virgula
20. When a fold is overturned with its axial plane horizontal, it is known as
- (A) drag fold (B) recumbent fold
(C) open fold (D) chevron fold
21. A fold which is generally convex upwards is termed as
- (A) syncline (B) monocline
(C) synclinalorium (D) anticline

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22. Slaty cleavage is best developed in rocks rich in
 (A) ferruginous minerals (B) silicate minerals
 (C) micaceous minerals (D) calcareous minerals
23. Foot wall and hanging wall are associated with
 (A) fault (B) joint
 (C) fold (D) schistosity
24. Earliest multicellular organisms evolved during
 (A) cambrian (B) paleozoic
 (C) archaean (D) proterozoic
25. Diapiric movements are generally related to
 (A) diagenesis (B) plate tectonics
 (C) lithification (D) salt Domes
26. Ophitic texture is commonly exhibited by
 (A) lamprophyre (B) trachyte
 (C) dolerite (D) andesite
27. The eutectic intergrowth of orthoclase and quartz results in
 (A) monzonite (B) graphic granite
 (C) pegmatite (D) granodiorite
28. The rock that essentially consists of quartz and tourmaline is
 (A) schrol rock (B) pegmatitic rock
 (C) doliomorphic rock (D) hybrid rock
29. The sedimentary rock without stratification is
 (A) limestone (B) tillite
 (C) shale (D) sandstone



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30. A calcitic crust produced over the surface of semi-arid region by evaporation of ground water drawn upward under capillary action is
- (A) grit (B) arkose
(C) travertine (D) caliche
31. Pebbles and boulders formed elsewhere and brought into a sediment from outside is called
- (A) biogenic (B) dendrite
(C) allogenic (D) authigenic
32. Sandstone having more than 25% of feldspar is
- (A) graywacke (B) litharenite
(C) diamictite (D) arkose
33. Gypsum, Anhydrite and Halite are examples of
- (A) evaporite facies (B) shale facies
(C) euxinic facies (D) molasse facies
34. Green schist facies is suggestive of
- (A) high grade (B) kata zone
(C) low grade (D) medium grade
35. The process of melting of crustal rock is known as
- (A) metamorphism (B) anatexis
(C) assimilation (D) zone refining
36. Coal was formed in large amounts when the climate was
- (A) warm and moist (B) temperate and dry
(C) cool and moist (D) cool and dry

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37. Pegmatite is an example of
(A) sublimate deposit (B) replacement deposit
(C) late magmatic injection (D) early magmatic injection
38. Largest producer of mica in the world is
(A) Russia (B) U.K.
(C) India (D) USA
39. Wolframite is an ore of
(A) Arsenic (B) Uranium
(C) Tin (D) Tungsten
40. Diamond is found in
(A) Panna (B) Singhbhum
(C) Kolar (D) Zawar
41. Bauxite deposits of India are confined to the rocks of
(A) triassic (B) cretaceous
(C) tertiary (D) jurassic
42. Which one of the following raw materials is used in the production of Cement?
(A) Limestone and Soda (B) Limestone and Clay
(C) Limestone and Iron ore (D) Limestone and Potash
43. The only place in India where we get oil in Carbonate rock is
(A) Digboi (B) Cauvery Basin
(C) Ankleshwar (D) Bombay High
44. Singareni coal mine is situated in
(A) Gujarat (B) Andhra Pradesh
(C) Maharashtra (D) Madhya Pradesh

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45. Which one of the following is a terrestrial planet?
- (A) Jupiter (B) Saturn
(C) Mercury (D) Uranus
46. The equivalent time unit of 'SYSTEM' is
- (A) Epoch (B) Period
(C) Age (D) Era
47. The discontinuity that marks the base of the crust is known as
- (A) Gutenberg discontinuity (B) Conrad discontinuity
(C) Weichert discontinuity (D) Mohorovic discontinuity
48. An isothermal region free of clouds, dust and water vapour that extends for a height of about 50 km is known as
- (A) mesosphere (B) ionosphere
(C) troposphere (D) stratosphere
49. The amount of oxygen in the atmosphere is
- (A) 20 volume percentage (B) 30 volume percentage
(C) 40 volume percentage (D) 50 volume percentage
50. Basaltic magmas originate from
- (A) upper mantle (B) lower mantle
(C) lower crust (D) upper crust
51. Thin sheets of rock split off owing to differential expansion and contraction during heating and cooling is known as
- (A) aggradation (B) exfoliation
(C) degradation (D) carbonation



52. Transverse waves that travel only in solid medium having short wavelength and high frequency are known as
- (A) primary waves (B) Love waves
(C) shear waves (D) Rayleigh waves
53. The process in which the particles during transport get reduced in size to sand and silt is known as
- (A) hydraulic action (B) abrasion
(C) cavitation (D) attrition
54. Sediments with grain size ranging between 64 and 256 mm are known as
- (A) pebbles (B) granules
(C) boulders (D) cobbles
55. Which of the following is most abundant in the Earth's crust?
- (A) Fe (B) Mg
(C) Al (D) K
56. In a region, where hard and soft rocks alternate, wind erodes away the softer rock. The hard rocks, protruding in between grooves, are known as
- (A) ventifacts (B) cave rocks
(C) mesa (D) yardangs
57. The ozone layer is found in
- (A) stratosphere (B) thermosphere
(C) troposphere (D) mesosphere



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58. Small, very intense wind vortex with extremely low air pressure in centre, formed beneath a dense cumulonimbus cloud in proximity to a cold front is known as
- (A) hurricane (B) tornado
(C) cyclone (D) typhoon
59. What is the Si : O ratio in single chain inosilicates?
- (A) 1:4 (B) 2:7
(C) 1:3 (D) 1:2
60. Which one of the following is an intrusive rock?
- (A) Rhyolite (B) Andesite
(C) Basalt (D) Peridotite
61. Which one of the following is a clastic rock?
- (A) Limestone (B) Shale
(C) Dolomite (D) Chert
62. A fault in which the inclination of the fault plane is such that one block rides over the other and a crustal shortening occurs is known as
- (A) normal fault (B) overthrust fault
(C) shear (D) transcurrent fault
63. In high mountains, frost action on cliffs of bare rocks detaches rock fragments that fall to the cliff base. These loose fragments are known as
- (A) Felsenmeer (B) Regolith
(C) Colluvium (D) Talus
64. Which is the volcanic equivalent of diorite?
- (A) Andesite (B) Basalt
(C) Trachyte (D) Ijolite

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65. Which of the following rock has two variants, namely, "Massif-type" and "Layered type"?
- (A) Carbonatite (B) Kimberlite
(C) Anorthosite (D) Lamprophyre
66. Geologic formations that are completely impermeable and are devoid of water are called
- (A) aquiclude (B) aquitard
(C) aquifer (D) aquifuge
67. In many regions, where the rainfall is well distributed throughout the year and where there is contribution to the stream flow from ground water or melting of snow and ice, the streams that carry water throughout the year are known as
- (A) perennial streams (B) seasonal streams
(C) ephemeral streams (D) allochthonous streams
68. Flowing water generally follows the slope of the land surface. The courses of the streams are parallel to the direction of surface slope. Such a stream is called a
- (A) subsequent stream (B) consequent stream
(C) obsequent stream (D) insequent stream
69. The drainage pattern characterised by elongated tributaries flowing parallel or sub-parallel to the main stream is referred as
- (A) dendritic pattern (B) radial pattern
(C) trellis pattern (D) annular pattern
70. Which of the following is not a cyclosilicate?
- (A) Beryl (B) Tourmaline
(C) Epidote (D) Cordierite



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71. Part of the load which moves downstream along the river in rolling or sliding fashion is referred as
- (A) bed load
 - (B) solid load
 - (C) solution load
 - (D) particulate load
72. Dust or silt (0.01 to 0.05 mm) that are carried in suspension by wind and deposited usually at a distance of thousands of kilometers from the source area is referred to as
- (A) transverse dune
 - (B) loess
 - (C) parabolic dune
 - (D) star dune
73. Moving ice confined to an amphitheater-shaped depression on mountain sides is known as
- (A) valley glacier
 - (B) piedmont glacier
 - (C) cirque glacier
 - (D) mountain ice sheet
74. Distinctive ridges running transverse to the direction of the flow of ice and lunate-shaped in places are known as
- (A) terminal moraines
 - (B) recessional moraines
 - (C) lateral moraines
 - (D) rogen moraines
75. Low, narrow and regularly spaced ridges aligned in the direction of ice movement and mostly of till is known as
- (A) Flutes
 - (B) Drumlins
 - (C) Kettles
 - (D) Eskers
76. In a region of sub-horizontal beds, a gentle slope is developed along the gentle dips of strata, and such a landscape is called
- (A) Butte
 - (B) Cuesta
 - (C) Mesa
 - (D) Hogback



77. In deserts that consists of basins enclosed by mountain ranges, the drainage is towards the centre of the basin from all margins. When there is sufficient water, this plain is covered by a broad shallow lake called
- (A) Inselberg (B) Pediment
(C) Playa (D) Alluvial fan
78. A river that drains in the same direction as the original consequent, but at a lower topographic level is called
- (A) obsequent (B) subsequent
(C) insequent (D) resequent
79. Zone of deep sea-floor with a depth range from 1000m to 4000m and characterised by a slimy mud-like deposit called ooze and red clay is known as
- (A) continental shelf (B) abyssal plain
(C) continental slope (D) continental rise
80. More or less circular coral reefs enclosing a lagoon but without any land inside is called
- (A) barrier reef (B) spit
(C) atoll (D) fringing reef
81. In a fold, the stretch of the rock bed lying between the crest and the adjacent trough on either side is known as
- (A) axial plane (B) hinge
(C) axis (D) limb
82. Angular fold having straight limbs and sharp hinges is known as
- (A) fan fold (B) chevron fold
(C) box fold (D) flexure fold



83. The angle between the horizontal surface and the plane of the fault and measured in a vertical plane that strikes at right angles to the fault is called
- (A) strike (B) hade
(C) dip (D) heave
84. Relatively short faults that overlap each other are known as
- (A) radial faults (B) arcuate faults
(C) step faults (D) en echelon faults
85. Inclined faults in which the hanging wall side appears to have moved relatively downwards in comparison to the adjoining footwall side is called
- (A) normal fault (B) strike fault
(C) reverse fault (D) dip fault
86. Diamond exhibits
- (A) Vitreous lustre (B) Adamantine lustre
(C) Silky lustre (D) Pearly luster
87. The hardness of Topaz is
- (A) 10 (B) 9
(C) 8 (D) 7
88. Phenomenon in which substances containing the same chemical composition but differs from one another by some physical properties is known as
- (A) isomorphism (B) pseudomorphism
(C) paramorphism (D) polymorphism
89. The Volcanic equivalent of Granite is
- (A) Rhyolite (B) Trachyte
(C) Basalt (D) Andesite

90. Which one of the following is not a Metamorphic rock?
- (A) Gneiss (B) Shale
(C) Slate (D) Quartzite
91. Which one of the following is not an igneous rock?
- (A) Anorthosite (B) Granite
(C) Amphibolite (D) Syenite
92. Crescentic shaped igneous bodies occurring along the crests and troughs of folds of country rocks are known as
- (A) Batholiths (B) Laccoliths
(C) Lopoliths (D) Phacoliths
93. Very coarse grained rocks where the size of grains are those of boulders and transported in traction are called
- (A) Rudaceous rocks (B) Arenaceous rocks
(C) Silt rocks (D) Argillaceous rocks
94. Radiolarian ooze is a
- (A) Calcareous deposit (B) Siliceous deposit
(C) Phosphatic deposit (D) Ferruginous deposit
95. Spotted structure produced by thermal metamorphism of argillaceous rocks like shale is called
- (A) Maculose structure (B) Schistose structure
(C) Granulose structure (D) Gneissose structure
96. A typical foliated metamorphic rock usually having alternate dark and light streaks or bands is called
- (A) Slate (B) Gneiss
(C) Schist (D) Quartzite

97. Ore deposits formed under low temperature and pressure far away from the parent igneous body are called
- (A) Hypothermal deposits (B) Mesothermal deposits
(C) Telethermal deposits (D) Epithermal deposits
98. Placer deposits along hill slopes formed due to weathering and erosion of the country rocks are known as
- (A) Aeolian placers (B) Alluvial placers
(C) Beach placers (D) Eluvial placers
99. Bauxite deposits that occur on erosional surfaces and invariably occupy unconformities are called
- (A) Interstratified deposits (B) Blanket deposits
(C) Pocket deposits (D) Detrital deposits
100. Lithium-rich mica is called
- (A) Muscovite (B) Lepidolite
(C) Biotite (D) Phlogopite
101. The terms 'uniformitarians' and 'catastrophists' were coined by
- (A) John Playfair (B) William Whewell
(C) William Smith (D) James Hutton
102. Liquid iron, nickel, and silica are believed to make up most of the
- (A) crust (B) lithosphere
(C) asthenosphere (D) outer core
103. Lithosphere represents the
- (A) crust and uppermost rigid mantle
(B) uppermost rigid mantle only
(C) entire mantle
(D) outer core and inner core

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104. Half-life of the Uranium-238 isotope is
- (A) 1730Ma (B) 3500Ma
(C) 4500Ma (D) 5730 Ma
105. Which one of the following land masses would not be included in Gondwanaland?
- (A) Antarctica (B) Australia
(C) South America (D) North America
106. Geyser is a special type of
- (A) Glacier (B) Volcano
(C) Hotspring (D) Stream
107. The imperceptibly slow down slope movement of regolith without the formation of scarps is
- (A) Mudflow (B) Earth flow
(C) Debris avalanche (D) Creep
108. As a stream increases its channel length by developing a mature meander pattern, it also
- (A) decreases its discharge
(B) increases its gradient
(C) increases its competence
(D) increases its velocity of water flow
109. Body waves include
- (A) L waves only (B) P waves only
(C) P and S waves (D) L and S waves
110. $\text{CaSO}_4 + 2\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$. This equation presents an example of what type of weathering process?
- (A) Hydrolysis (B) Oxidation
(C) Hydration (D) Dissolution



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111. An important soluble product of the weathering of limestone is
- (A) Calcium carbonate (B) Calcium bicarbonate
(C) Gypsum (D) Quartz
112. A guyot is a
- (A) seamount (B) reef
(C) cliff (D) graben
113. Which concept follows "the present is the key to the past"?
- (A) Law of superposition
(B) Principle of faunal succession
(C) Law of universal catastrophism
(D) Principle of uniformitarianism
114. Which one of the following is not a period on the geologic time scale?
- (A) Virginian (B) Pennsylvanian
(C) Mississippian (D) Cambrian
115. Which one of the following is not a period in the Paleozoic Era?
- (A) Ordovician (B) Devonian
(C) Silurian (D) Triassic
116. First fish was found in
- (A) Silurian (B) Permian
(C) Devonian (D) Carboniferous
117. Cuddalore Sandstone formation belongs to
- (A) Eocene (B) Cretaceous
(C) Oligocene (D) Mio-Pliocene



118. Which of the following is not pleochroic?
(A) Tourmaline (B) Cordierite
(C) Hypersthene (D) Augite
119. Diamond bearing conglomerate is associated with
(A) Lower Vindhyan (B) Upper Vindhyan
(C) Cuddapah (D) Aravalli
120. Erinpura granite is an intrusion associated with
(A) Gwaliors (B) Dharwars
(C) Delhis (D) Kurnools
121. Type fossil of Raniganj group is
(A) Glossopteris (B) Gangamopteris
(C) Ptilophyllum (D) Elatocladus
122. The major rock type in the Triassic of Spiti is
(A) Limestone (B) Shale
(C) Siltstone (D) Slate
123. The Siwaliks belong to
(A) Outer Himalayas (B) Central Himalayas
(C) Lesser Himalayas (D) Greater Himalayas
124. What is the first mineral formed from a cooling magma according to Bowen's Reaction Series?
(A) Quartz (B) Muscovite
(C) Pyroxene (D) Olivine
125. A common ultramafic igneous rock found in the Earth's crust is
(A) Peridotite (B) Granite
(C) Anorthosite (D) Pyroxenite

126. Gypsum is a
- (A) phaneritic rock (B) clastic sedimentary rock
(C) metamorphic rock (D) chemical sedimentary rock
127. A large crystal surrounded by matrix in a metamorphic rock is called a
- (A) phenoblast (B) porphyroblast
(C) xenolith (D) porphyrocryst
128. Which one of the following minerals is indicative of low metamorphic grade?
- (A) Chlorite (B) Sillimanite
(C) Kyanite (D) Garnet
129. Which mineral alteration would occur in retrograde metamorphism?
- (A) Chlorite to Biotite (B) Kyanite to Sillimanite
(C) Chlorite to Garnet (D) Garnet to Biotite
130. Textularia belongs to
- (A) Foraminifera (B) Ostracoda
(C) Mollusca (D) Trilobita
131. Which one of the following Gastropods exhibits sinistral coiling?
- (A) Bellerophon (B) Turbo
(C) Physa (D) Murex
132. Rounded saddles and denticulate lobes in ammonoides characterise suture lines of
- (A) Goniatic type (B) Ceratic type
(C) Ammonite type (D) Nautiloid type



133. Which one of the following is a regular echinoid?
- (A) Micraster (B) Cidaris
(C) Holectypus (D) Stigmatopygus
134. A fold with inclined axis is
- (A) nonplunging fold (B) plunging fold
(C) asymmetrical fold (D) normal fold
135. An erosion surface that forms on plutonic or metamorphic rock, and is covered by layered sedimentary or volcanic rock is called
- (A) angular unconformity (B) conformity
(C) disconformity (D) nonconformity
136. Right-lateral faults are special types of
- (A) normal faults (B) reverse faults
(C) strike – slip faults (D) transform faults
137. Joints that strike perpendicular to the strike of beds is called
- (A) Strike joint (B) Dip joint
(C) Bedding joint (D) Parallel joint
138. Coal with brownish black colour and low density is
- (A) Peat (B) Lignite
(C) Bituminous (D) Anthracite
139. Gossan is
- (A) cap rock of an ore body (B) ore body
(C) oxidized ore (D) primary ore
140. The chemical composition of Magnetite is
- (A) Fe_2O_3 (B) Fe_3O_4
(C) FeCO_3 (D) $\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$



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141. Kaolin is otherwise known as
- (A) Ball clay (B) China clay
(C) Fire clay (D) Red clay
142. The minimum specific gravity of a heavy mineral is
- (A) 2.85 (B) 2.11
(C) 2.75 (D) 2.50
143. Mineral having Piezo-electric property is
- (A) Augite (B) Feldspar
(C) Hornblende (D) Quartz
144. Which one of the following minerals has double hardness?
- (A) Kyanite (B) Andalusite
(C) Orthoclase (D) Microcline
145. Which one of the following minerals crystallizes under triclinic system?
- (A) Quartz (B) Zircon
(C) Galena (D) Axinite
146. Barrel shaped crystals are formed by
- (A) Siderite (B) Corundum
(C) Topaz (D) Calcite
147. The refractive index of Canada balsam is
- (A) 1.6 (B) 1.50
(C) 2.24 (D) 1.54
148. Which of the following has the highest Mg content?
- (A) Komatiite (B) Tholeiite
(C) Tracyte (D) Keratophyre

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149. Porosity percentage is more in

- | | |
|-------------|---------------|
| (A) Granite | (B) Sandstone |
| (C) Marble | (D) Clay |

150. The water that is found in the zone of aeration is known as

- | | |
|---------------------|-----------------------|
| (A) Vadose water | (B) Ground water |
| (C) Capillary water | (D) Hygroscopic water |
