306 PU M Tech Exploration Geosciences and Earth sciences

1 of 100

149 PU-2016-306_E

Dimension of a boudin measured in transverse section and parallel to the layering is referred as:

- C Thickness
- Separation
- © Width
- C Length

2 of 100

108 PU-2016-306_E

A tonalite formed $\overline{2}600$ Ma ago is made up of quartz, plagioclase and biotite. ⁸⁷Sr/⁸⁶Sr ratios measured in these minerals will be:-



equal in all the minerals

- biotite will have the highest and plagioclase lowest ratios
- Plagioclase will have the highest and biotite lowest ratios
- Plagioclase will have the highest and quartz lowest ratios

3 of 100

182 PU-2016-306_E

Which of the following is an example of continent-rifting:-

- Basin and Range Province of USA
- C Isua province of Greenland
- Emperor-Hawaiin chain of islands
- C Eastern Ghats of India

4 of 100

194 PU-2016-306_E

Orthorhombic pyroxenes are similar to monoclinic pyroxenes in cell parameters except in the length of:-

- a axis which is higher in orthorhombic than in monoclinic
- a axis which is less in orthorhombic than in monoclinic
- c axis which is higher in orthorhombic than in monoclinic
 - b axis which is higher in orthorhombic than in monoclinic

5 of 100

Ō

154 PU-2016-306_E

Shadow zone for seismic S wave is:-

- 90° -180°
- 103° -180°
- ° 90° 120°

103° - 143°

6 of 100

173 PU-2016-306 E

Which of the following seismic waves has highest velocity:-

- O S-wave
- O P-wave
- Ö Rayleigh waves
- O love waves

7 of 100

125 PU-2016-306 E Ganitic igneous rocks are generally characterized with following texture:-

- O Allotriomorphic
- O Hypidimorphic
- C Ophitic
- O Panidimorphic

8 of 100

208 PU-2016-306 E

A basaltic andesite magma undergoes differentiation and gives rise to dacite magma. The dacite has strong negative Eu anomaly, whereas, basalt has no Eu anomaly. What is the cause of ve Eu anomaly in the dacite?

- C Fractional crystallization of plagioclase
- Ō Addition of plagioclase into dacite magma
- Ö Fractional crystallization of pyroxene
- O Fractional crystallization of olivine

9 of 100

121 PU-2016-306 E

Majority of worlds petroleum resources are restricted to the following geological time period:-

- C Neoproterozoic
- O Mesozoic
- Ö Permo-carboniferous
- O Cambro-Ordovician

10 of 100

130 PU-2016-306_E

Two adjacent vertical aerial photographs taken on a run, with 60% overlap is example of

C sidelaping photos

С panoramic photos

O

endlapping photos

stereopairs

11 of 100

215 PU-2016-306_E

The minerals glaucophane and jadeite are indicative of:-

high-P and high-T

Iow-P and high-T

high-P and low-T

Iow-P and Iow-T

12 of 100

153 PU-2016-306_E Chennai fall in seismic zone _____.

- o IN
- ୍ଥା
- о _Ш
- ° v

13 of 100

174 PU-2016-306 E

According to Richter scale of magnitude, an increase of 2 in magnitude of earthquake causes the increase in release of energy by:-

100 times

10,000 times

1000 times

10 times

14 of 100

109 PU-2016-306_E

Half-life of ¹⁴C decay is 5560 years. ¹⁴C abundance in suitable geological samples can be used to date:-

Events older than 5.56 million years

Archean events

• Events older than 55.6 million years

Events younger than 40,000 years

15 of 100

101 PU-2016-306_E

Among the pyroxenes which one shows the highest order of interference color when observed under petrological microscope?

hypersthene

0

С

- enstatite
- diopside
- augite

117 PU-2016-306 E

Which of the following meteorite would more clearly show abundances of elements varying according to the condensation temperature?

O martian meteorites

- O pallasites
- O chondrites
- C lunar meteorites

17 of 100

133 PU-2016-306 E The First type of remote sensing were:-

O

sketches from a French Map Maker

 \odot aerial photos

O paintings from an air balloon

О TV remote controls

18 of 100

169 PU-2016-306 E

In groundwater flow modeling triangular shaped discretization of cells is called as:-

O Finite difference method

- Ō Finite element method
- O Mesh centered method
- О Node centered method

19 of 100

116 PU-2016-306 E

Which of the following statements is true regarding the cosmic abundance of the elements?

- O Abundances of the first 50 elements increases exponentially
- Ô Even atomic number elements are less abundant
- O Hydrogen and helium are the most abundant elements
- 0 Li, Be and B abundance is anomalously high

20 of 100

165 PU-2016-306 E

The flow with large viscous forces and with small velocities and momentum where no eddies are developed is termed as:-

O

- Stream flow
- Viscous flow
- C Laminar flow
- C Turbulent flow

146 PU-2016-306_E Visibility of joint surface features increases with:

- Decreasing abundance of phyllosilicate
- C Increasing grain size
- Increasing abundance of phyllosilicate
- O Decreasing grain size

22 of 100

209 PU-2016-306_E

An olivine basalt undergoes fractional crystallization of olivine which results in tholeiite basalt. What are the elements that will be depleted in the tholeiite basalt relative to its parent?

- Ce and Fe
- Ni and Mg
- Cr and Zr

Cr and Ce

23 of 100

190 PU-2016-306_E Which one of the following mineral is uniaxial negative in optical properties?

- C Zircon
- Quartz
- Nepheline
- C Rutile

24 of 100

158 PU-2016-306_E

The presence of 85 East ridge in the bay of Bengal region is first identified based on the study of:-

- bathymetry
- magnetic
- gravity
- o seismic

25 of 100 198 PU-2016-306_E Identify the sequence of rocks arranged in the increasing order of density.

- gabbro, andesite, diorite
- basalt, andesite, diorite
- andesite, gabbro, basalt

• Andesite, basalt, gabbro

26 of 100

202 PU-2016-306_E Kimberlite magmas are generated below:-

- Continental rift
- Mid-ocean ridge
- Continental lithosphere
- C Island arc

27 of 100

162 PU-2016-306_E The water that has been out of contact with the atmosphere is known as:-

- O Juvenile water
- Metamorphic water
- Connate water
- Magmatic water

28 of 100

104 PU-2016-306_E

The upper continental crust higher rate of heat production than the lower crust. Why?

- Heat conductivity is higher in upper crust than lower crust
- ^O The upper crust has higher concentrations of K, Rb, U and Th
- C The upper crust receives heat from the Sun
- Heat conductivity is lower in upper crust than lower crust

29 of 100

178 PU-2016-306_E

Hawaiin-Emperor chain of oceanic islands is a result of:-

- movement of Pacific oceanic plate over a hot-spot
- movement of Atlantic oceanic plate over a hot-spot
- Subduction of pacific plate
- Subduction of Atlantic oceanic plate

30 of 100 177 PU-2016-306 E The rock-deformation is said to be Newtonian (viscous) when:-

- Strain is not proportional to stress
- Strain is independent of stress
- Strain is linearly proportional to stress
- rate of strain is linearly proportional to stress

31 of 100

142 PU-2016-306_E

A hangingwall cut-off will be:

- footwall ramp over hangingwall ramp
- footwall ramp over hanging wall flat
- footwall flat over hangingwall ramp
- footwall flat over hangingwall flat

32 of 100

150 PU-2016-306 E

An increase in magnitude by two unit corresponds to ______ fold increase in amplitude of the seismic waves.

- O 10
- ° 100
- ° 200
- ° 20

33 of 100

112 PU-2016-306_E

Sediments on the present ocean floor are not older than Jurassic because:-

- sediments were not deposited on ocean floor prior to Jurassic
- Sediment production rate was inefficient prior to Jurassic
- ^O dating of the older sediments is not possible

oldest sea floor is of Jurassic age

34 of 100

138 PU-2016-306 E

How many GPS satellites currently orbit the earth?

O 12

° 224

о ₃₂

0

24

35 of 100

134 PU-2016-306_E

Radar is very beneficial because it can penetrate thick:-

- sand and very dry objects
- C clouds and moisture
- walls and concrete
- Steel and wood

36 of 100

200 PU-2016-306_E

When enstatite is heated to its melting point it gives rise to:-

- Melt of its composition
- ^C melt of different composition and forsterite
- melt of different composition and quartz
- ^O melt of different composition and periclase

37 of 100

100 PU-2016-306_E

Number of identi-points that belong to all face-centered orthorhombic unit cell is:-

°₂

3

° 6

° 4

38 of 100

157 PU-2016-306_E

Hydrothermal vents formed due to:-

• wind driven circulation

- C ocean upwelling
- C thermo haline circulation

• hydrothermal circulation

39 of 100

166 PU-2016-306_E Hardness of water is due to the presence of which pair of ions.

- Cl and SO₄
- Ca and Mg
- Na and K

NO₃ and PO₄

40 of 100

205 PU-2016-306_E

During partial melting of mantle which one of the following elements behave as incompatible element?

- ° _{Cr}
- O _{Ni}
- o _
- Zr
- С _{Со}

41 of 100

213 PU-2016-306 E

Which of the following rocks is completely unfoliated?

C Schist

Mylonite

Slate

granofels

42 of 100

189 PU-2016-306_E Which one of the following mineral is optically biaxial?

Dolomite

Calcite

Aragonite

Siderite

43 of 100

170 PU-2016-306_E

The mean radius of the Earth is 6371 km. On taking a gravimeter 1 km up in a balloon you would expect the value of g to decrease by:-

• 1%

° 0.03%

о _{3%}

~ 57

° 0.007%

44 of 100

105 PU-2016-306_E Incongruent melting behavior is shown by:-

albite

enstatite

nepheline

olivine

181 PU-2016-306_E

Aulacogen type of sedimentary basins form due to:-

- C Strike slip faulting along the margin of continent
- Subsidence due to normal faulting
- C Thrusting in a collision related mountain building process
- Failing of one of the rifts of triple-rift junction

46 of 100

129 PU-2016-306_E

Bouma type beds are commonly associated with:-

- C Shallow sea deposit
- C Deep sea deposits
- C Lacustrine deposits
- Fluvial deposits

47 of 100

193 PU-2016-306_E

An example of a Pyroxene in which more than two thirds of the M2 sites are occupied by Ca cations:-

- O Jadeite
- C Enstatite
- Diopside
- Aegirine

48 of 100

161 PU-2016-306_E

The volume of voids in a formation when interconnected and transmits flow is defined as:-

- O Hydraulic conductivity
- C Effective porosity
- Permeability
- C Total porosity

49 of 100

218 PU-2016-306_E What causes ice ages?

- 0
- no definite cause has been conclusively proven
- variations in sunlight reflected by the earth
- variations in sun's heat output
- variations in the earth's orbit

185 PU-2016-306_E

The number of space lattices and point groups present in all types of crystals are _____ and ____ respectively.

- 14 & 32
- O 30 & 232
- O 32 & 230
- 16 & 30

51 of 100

204 PU-2016-306_E

If melting point of a mineral is to be calculated using thermodynamic data then which one of the following is the correct equation ? (H= enthalpy, S= entropy, V= molar volume, G= Gibb's free energy)

- T = ΔΗ/ΔV
- T = ΔS/ΔV
- T = ΔΗ/ΔS

52 of 100

113 PU-2016-306_E

The concentration of 10 ml solution taken out of 1 liter of 100ppm solution is:-

- 0.1 ppm
- 1000 ppm
- 100 ppm
- 10 ppm

53 of 100

141 PU-2016-306_E Creep in a rock indicates the relation between:

- C Strain and time
- C Stress rate and time
- C Strain rate and time
- C Stress and time

54 of 100

145 PU-2016-306 E

If axial plane thickness ratio $(T/_{45^\circ})$ of a fold is 2, then the corresponding orthogonal thickness ratio $(t/_{45^\circ})$ will be:

° 1.6

° _{1.4}

° 1

° _{1.2}

55 of 100 120 PU-2016-306_E Diamond deposits are associated with:-

- ^O Granitic intrusions
- Conglomerate
- Ultrmafic lava flows
- C Kimberlite pipes

56 of 100

137 PU-2016-306_E

GIS Maps can:-

- Help us visualize information
- Help us compare information
- Tell us where something is
- All of the above

57 of 100

212 PU-2016-306_E

Both temperature and deviatoric stress are important agents in case of ______ metamorphism.

- O Dynamic
- O Dynamo-thermal
- C Thermal
- Burial

58 of 100

186 PU-2016-306_E

A mineral gives X-ray diffraction peak at 20=60°. Assuming that the X-ray wavelength is 1.5 Å calculate the d-spacing.

- ° 3.0 Å
- ° 0.5 Å
- ° 0.75 Å
- ° 1.5 Å

59 of 100

197 PU-2016-306_E What are the major minerals present in peridotte?

- pyroxene, biotite and quartz
- pyroxene, plagioclase and garnet

- amphibole, biotite and plagioclase
 - olivine, pyroxene and spinel

126 PU-2016-306_E

Blue schist facies metamorphic rocks are product of:-

- High P high T regional metamorphism
- High P low T regional metamorphism
- Low P high T regional metamorphism
- Contact metamorphism

61 of 100

245 PU-2016-306_M

One of the following is a magmatic sulphide deposit.

- Climax-type molybdenum
- C Cyprus-type copper-zinc
- C Sudbury copper-nickel
- C Kuroko-type lead-zinc

62 of 100

241 PU-2016-306_M

The 3 domains involved in all the ore forming processes are:-

- Partial melting-transportation-deposition
- Melting-migration-crystallisation
- Dissolution-transportation-precipitation
- Source-migration path-ore trap

63 of 100

229 PU-2016-306_M Which is most likely to represent a deposit formed on dry land?

- Dolomite
- Black shale
- Mudrocks
- C Red sandstone

64 of 100

257 PU-2016-306_M

One of the following metals does not form any mineral in which it is a constituent element.

- Niobium
- C Rhenium

0 0 \mathbf{O} Platinum

O Cerium

65 of 100

221 PU-2016-306 M

Lithification is the *primary* process in the formation of one of the following rocks.

О conglomerate

- \odot gneiss
- O schist
- O marble

66 of 100

244 PU-2016-306_M One of the following is not a silicate ore mineral.

- Ō lepidolite
- Ō braunite
- O beryl
- O leucoxene

67 of 100

232 PU-2016-306_M Which of the following is a local base level?

- O lake
- O point bar
- O ocean
- 0 floodplain

68 of 100

236 PU-2016-306 M Bays and headlands are generally found in shoreline of:-

- O emergence
- O submergence
- Ċ neutral
- O faulted

69 of 100

O

249 PU-2016-306_M

The ore metal of one of the following deposits is derived from rocks of continental crust, transported by meteoric water and deposited in organic carbon-rich zones of fluvial sediments.

Unconformity-type uranium

- C Redbed-type copper
- C Sandstone-type uranium
- Quartz-pebble-conglomerate type uranium

237 PU-2016-306_M Which type of coiling is rare in gastropoda?

- C trochospiral
- O dextral
- C armestral
- C sinistral

71 of 100

253 PU-2016-306_M

Uranium deposit types are correctly arranged in decreasing order of age (that is old to young) in one of the following.

- O Unconformity QPC Sandstone
- Sandstone Unconformity QPC
- QPC Unconformity Sandstone
- O Unconformity Sandstone QPC

72 of 100

248 PU-2016-306_M

The ore metals of one of the following deposits are derived from MOR basalt, transported by and deposited from sea water- hydrothermal fluid, and forms massive sulphide deposits.

C Epithermal silver-lead

- Cyprus-type copper-zinc
- C Sudbury-type nickel-copper
- C Kuroko-type lead-zinc

73 of 100

240 PU-2016-306_M Flat topped sea mounts are termed as:-

- monodnock
- inselberg
- O guyots
- C mesa

74 of 100

256 PU-2016-306_M Metals in one of the following options are recovered from their ores by acid leaching.

- Silver and uranium
- silver and molybdenum
- gold and zinc

gold and molybdenum

75 of 100

C

224 PU-2016-306_M

Most limestones have a large component of calcite that was originally extracted from seawater by:-

- C lithification
- C chemical weathering
- inorganic chemical reactions
- evaporation

76 of 100

252 PU-2016-306_M

Boiling of fluid, mixing of fluids and fluid-rock interaction are the important processes responsible for:-

- C deposition of ore from a hydrothermal fluid
- O dispersion of metal in a rock
- Ieaching of metal from source rock
- transport of metal by a fluid phase

77 of 100

228 PU-2016-306_M

In a cliff, you see coal near the base, then sandstone above it, then limestone, then sandstone again, and finally coal near the top. This pattern most likely means:-

- The sea retreated and then advanced again
- The sea advanced and then retreated again
- C Rainfall decreased and then increased again
- C The climate changed from warm to cold and back

78 of 100

225 PU-2016-306_M

The superposition of offshore facies over nearshore facies occurs when there is a marine:-

- O
- invasion
- regression
- C transgression
- Superposition

79 of 100 233 PU-2016-306 M A stream can lengthen its channel by:-

- headward erosion
- hydraulic action
- downcutting
- runoff

80 of 100

220 PU-2016-306_M

Water from a certain source is shown to contain 10,000 ppm dissolved solids. This indicates that ______ percentage of the *particles* in this water are represented by the dissolved solids.

- ° 0.1%
- ° 10%
- 1%
- 0 00
- 0.001%

81 of 100

276 PU-2016-306_D

Which of the following magmas contain high water content?

- O granite and granodiorite
- andesite and komatiite
- basalt and andesite
- O basalt and anorthosite

82 of 100

289 PU-2016-306_D

Ni-Cu sulphide deposits are associated with mafic-ultarmafic magma because of the following process:-

- Magmatic hydrothermal process
- Partial melting and filter pressing
- Segregation of early formed crystals
- C Sulfide liquid immiscibility

83 of 100

264 PU-2016-306_D

In mineral processing plants, run-off mine is reduced in size by crushing and grinding for:-

- Separation of gangue minerals
- Classification of run-off mine according to size
- O optimal liberation of ore minerals from gangue minerals
- C concentration of ore minerals

84 of 100

292 PU-2016-306_D

Deep focus earthquakes are associated with one of the following sedimentary basins:-

- passive margin
- rift basin
- intracratonic basin
- o foreland basin

85 of 100

288 PU-2016-306_D

Volcanogenic massive sulfide deposits are associated with following tectonic setting:-

- Spreading centres
- Collisional plate margin
- Conservative plate margin
- Plate interior

86 of 100

272 PU-2016-306_D

What is the thickness of a crystal plate of an uniaxial mineral cut parallel to its optic axis with ε = 1.685 and ω = 1.670 and path difference = 1500 nm.

- 0.10 mm
- 0.075 mm
- 0.070 mm
- 💛 0.03 mm
- O.15 mm

87 of 100

265 PU-2016-306_D

Jigging is a process in which minerals are separated according to their:-

- magnetic susceptibility
- C density
- ° _{size}
- water-adhering or air-adhering character

88 of 100

284 PU-2016-306_D One of the following is NOT a magmatic deposit.

- C Sudbury nickel
- Podiform chromite
- Unconformity type uranium
- C Titaniferous magnetite deposit in gabbro

277 PU-2016-306_D

Consider Ab-An-Di system at 1 atmospheric pressure in which melt is in equilibrium with diopside and plagioclase crystals. By fixing temperature what parameters can be varied?

- Composition of the melt and plagioclase
- Composition of melt only
- Composition of plagioclase only
- None of the parameters can be varied

90 of 100

281 PU-2016-306 D

One of the following is NOT a kimberlite field.

- C Lattavaram
- C Lambapur
- Panna

O

Wajrakarur

91 of 100

299 PU-2016-306_D

Geothermal gradient is lowest in following tectonic setting:-

- Continental shields
- C Transform faults
- C Subduction zones
- Mid oceanic ridge

92 of 100

293 PU-2016-306_D

In a longitudinal geological cross sections of fluvial deposits, sands are encompassed by muds and the sandbodies have sheet like geometry. The probable depositional environment would be:-

- C alluvial fan deposit
- C braided river deposit
- meandering river deposit
- anastomosed river deposit

93 of 100

260 PU-2016-306_D

The asbestos mined from Pulivendla area of Cuddapah basin is a:-

- C chiastolite
- Cristobalite
- Chrysolite

chrysotile

94 of 100 273 PU-2016-306 D K⁺ ions occupy which site in K-rich amphibole?

- O A site
- O M2 site
- O M1 site
- O M3 site

95 of 100

296 PU-2016-306_D The average thickness of the continental crust is about:-

- O 35-40 km
- Ō 100-200 km
- O 1000-2000 km
- O 5-10 km

96 of 100

261 PU-2016-306_D

"Green marble" mined from Rishabdev area of Aravalli fold belt is:-

- O serpentinised peridotite
- O actinolite-bearing dolomitic marble
- O diopside-bearing dolomitic marble
- \odot epidote-bearing dolomitic marble

97 of 100

269 PU-2016-306_D

Dolostone hosted uranium deposit occurs at:-

- O Tummalapalle
- O Gogi
- O Jaduguda
- \odot Domiasiat

98 of 100

280 PU-2016-306_D

Fractional crystallization of which one of the following minerals will result in depletion of Cr in mafic and ultramafic magmas?

- C plagioclase
- O pyroxene

O

o rutile

ilmenite

99 of 100

285 PU-2016-306_D

What would be the pressure at the base of 35 km thick granitic crust of a constant density of 2.8 g/cm³?

O 1 GPa

• 3.5 GPa

0.96 GPa

• 9.6 GPa

100 of 100

268 PU-2016-306_D One of the following mineral deposits does not occur in skarn:-

Cu-Pb-Zn

• Wollastonite

- Cr-Ni-Ti
- C Fe-Sn-W