PU M Tech Exploration Geo Sciences

1 of 100

147 PU_2015_306_New Khondalites are characteristic rocks of:-

- \Box Greenschist facies
- C Amphibolite facies
- \square Granulite facies
- \square Eclogite facies

2 of 100

104 PU 2015 306 New According to Richter scale of magnitude, an increase of 2 in magnitude of earthquake causes the increase in release of energy by:-

- \Box 1000 times
- \square 10,000 times
- C 10 times
- 100 times

3 of 100

106 PU_2015_306_New Epicentral distance of 180° equals to approximately how many kilometers on the surface of the earth. (radius of the earth is 6371 km)

- \Box 18000 km
- \square 40010 km
- 20005 km
- 180 km

4 of 100

117 PU 2015 306 New

The unit cell parameter for rutile is a:c = 1: 0.64. If d $_{(100)}$ = 4.6 Å what is the unit cell volume (in cubic Å)?

- C 97.336
- 31.1
- \square 21.16
- C 62.3

5 of 100

149 PU_2015_306_New Glacial striations on an outcrop trend NE-SW. The direction of ice movement was:-

- С NW to SE
- \square NE to SW
- \square SW to NE
- \square could be either NE or SW

110 PU_2015_306_New

Suture Zone present in an orogenic belt is characterized by:-

- Normal faults
- Horst and graben structures
- \square

Oceanic crustal rocks and arc-trench sediments

Molasse sedeiments

7 of 100

150 PU_2015_306_New

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.

- 0.001%
- C 10%
- 1%
- □ 0.1%

8 of 100

141 PU_2015_306_New

The difference between Bingham magma and Newtonian magma is that:-

- Bingham magma requires to be provided a yield stress to initiate flow
- Bingham magma flows turbulently
- Stress is linearly proportional to strain in Bingham magma
- Bingham magma is less viscous

9 of 100

101 PU_2015_306_New

The isostatic gravity anomaly over a topographic high is positive. It means:-

- C Isostatic overcompensation
- Isostatic undercompensation
- presence of deep root zone
- complete isostatic comensation

10 of 100

123 PU_2015_306_New

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

- Jadeite
- Diopside
- Aegirine
- Enstatite

151 PU_2015_306_New

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

- \square schist
- \Box
- marble
- \square conglomerate
- \square gneiss

12 of 100

126 PU_2015_306_New Glaucophane is:-

- a calcic amphibole
- \square an alkali amphibole
- \Box a magnesium amphibole
- a white mica

13 of 100

113 PU_2015_306_New The interfacial angle between the faces of tetrahedron is:-

- C _{90°}
- 109° 28' 16"
- □ _{54° 44' 8"}
- C _{45°}

14 of 100

120 PU_2015_306_New Which one of the following mineral is uniaxial negative in optical properties?

- C Zircon
- Nepheline
- \square Rutile
- C Quartz

15 of 100

144 PU_2015_306_New Which one of the following minerals indicates low-P condition?

- \square Sillimanite
- C
- Garnet
- Cordierite
- C Kyanite

139 PU_2015_306_New

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?

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

Ce and Fe

17 of 100

142 PU_2015_306_New

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

- C Burial
- Thermal

Dynamic

Dynamo-thermal

18 of 100

133 PU_2015_306_New

Which one of the following minerals is suitable for Rb-Sr method of dating?

- Biotite
- Pyrope
- \Box
- Plagioclase
- Diopside

19 of 100

102 PU_2015_306_New

Which of the following statements is Not true?

- Each planet is roughly twice as far from the Sun as its closest neighbor
- Great planets away from Sun have low densities

The Sun has almost 99.9 % of the angular momentum of the solar system while the planets account for more than 99% of the mass

The planets revolve around the Sun in same directional sense

20 of 100

125 PU_2015_306_New

The group of clay minerals having 1:1 ratio of tetrahedral and octahedral components is:-

- Smectite
- Kaolinite
- C,
- Vermiculite

105 PU_2015_306_New

Seismic stations around the world have recorded a 'push' as the first motion. It means:-



a double-couple source

С

an underground explosion

- \Box strong P-wave arrival
- \square a single-couple source

22 of 100

115 PU 2015 306 New

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

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

23 of 100

111 PU_2015_306_New

Aulacogen type of sedimentary basins form due to:-

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

24 of 100

121 PU_2015_306_New Refractive indices of olivine increase:-

- \square with increase in Fayalite content
- \mathbf{C} with increase in size
- \square with decrease in Fayalite content
- with increase in zoning

25 of 100

155 PU_2015_306_New The superposition of offshore facies over nearshore facies occurs when there is a marine:-

- invasion
- C superposition
- \square
- regression
- \square transgression

122 PU_2015_306_New

Out of the three polymorphs of aluminum silicates:-

- C Sillmanite is the high temperature polymorph while andulasite is high pressure
- \square Kyanite is the high temperature polymorph while sillimanite is high pressure
- C Andulasite is the high temperature polymorph while sillimanite is high pressure
- \square Sillimanite is the high temperature polymorph, while Kyanite is high pressure

27 of 100

127 PU 2015 306 New

What are the major minerals present in peridotte?

- C amphibole, biotite and plagioclase
- \square olivine, pyroxene and spinel
- \square pyroxene, biotite and quartz
- \Box pyroxene, plagioclase and garnet

28 of 100

154 PU_2015_306_New

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

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

29 of 100

129 PU_2015_306_New What is the temperature of crystallization of tholeiite basalt at 1 atm. P.?

- C 700°C
- \Box 900°C
- \square 1200°C
- □ _{1700°C}

30 of 100

114 PU_2015_306_New Which one of the following forms does NOT belong to the isometric system?

- C tetrahedron
- \square diploid
- \mathbf{C} octahedron
- \square pyramid

158 PU_2015_306_New

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:-

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

32 of 100

159 PU 2015 306 New

Which is most likely to represent a deposit formed on dry land?

- C Mudrocks
- \Box Black shale
- C Dolomite
- \square
- Red sandstone

33 of 100

100 PU_2015_306_New

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:-

- \Box 0.03%
- \square 0.007%
- \Box 1%
- C _{3%}

34 of 100

130 PU_2015_306_New

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

- \square melt of different composition and periclase
- \Box melt of its composition
- C melt of different composition and forsterite
- \square melt of different composition and guartz

35 of 100

116 PU 2015 306 New

A mineral gives X-ray diffraction peak at 2 θ =60°. Assuming that the X-ray wavelength is 1.5 Å calculate the d-spacing.

- 0.75 Å
- 3.0 Å
- C 0.5 Å
- □ 1.5 Å

157 PU_2015_306_New

A mature sedimentary rock would exhibit which of these features?

- \square A wide variety of particle sizes
- С Angular mineral fragments
- C Stable mineral fragments
- \square Unstable mineral fragments

37 of 100

108 PU_2015_306_New

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

- \square subduction of Atlantic oceanic plate
- \Box movement of Atlantic oceanic plate over a hot-spot
- \Box subduction of pacific plate
- \Box movement of Pacific oceanic plate over a hot-spot

38 of 100

134 PU_2015_306_New

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 = $\Delta H / \Delta V$
- $T = \Delta G / \Delta S$
- $T = \Delta S / \Delta V$

 $T = \Delta H / \Delta S$

39 of 100

136 PU_2015_306_New

During partial melting of basalt under granulite facies name the minerals that will be left in the residue?

- С Pyroxene and plagioclase
- C Hornblende and plagioclase
- Hornblende and garnet
- Pyroxene and quartz

40 of 100

148 PU_2015_306_New What causes ice ages?

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

118 PU_2015_306_New

What is the appropriate crystal section to determine the extinction angle of a monoclinic crystal?

- \Box (110)
- С (111)
- C (010)
- C (100)

42 of 100

140 PU 2015 306 New

Pyroclastic rocks are formed as a result of explosive volcanism. What are the factors responsible for explosive volcanism?

- \Box
- Less viscous magma with high volatile content
- C Less viscous magma low with volatile content
- U Viscous magma and poor in volatile content
- U Viscous magma with high % of volatile content

43 of 100

128 PU_2015_306_New

Identify the sequence of rocks arranged in the increasing order of density.

- basalt, andesite, diorite
- C andesite, gabbro, basalt
- \square andesite, basalt, gabbro
- \square gabbro, andesite, diorite

44 of 100

146 PU 2015 306 New

The 'Buchan-type' metamorphism is characterized by the following metamorphic zones with increasing grade:-

- C Chlorite zone-Biotite zone-Cordierite zone-Andalusite zone-Sillimanite zone
- C Chlorite zone-Biotite zone-Garnet zone-Staurolite zone-Kyanite zone-Sillimanite zone
- С Chlorite zone- Cordierite zone-Biotite zone- Andalusite zone-Sillimanite zone
- \Box Chlorite zone-Biotite zone-Staurolite zone-Garnet zone -Kyanite zone-Sillimanite zone

45 of 100

156 PU_2015_306_New Well-sorted sediments contain:-

- C a wide size range of particles
- \square abundant clay minerals
- \Box a limited size range of particles
- C only pebbles

103 PU_2015_306_New	
Which of the following seismic waves has highest veloc	ity?

- S-wave
- P-wave
- P-wave
- love waves
- Rayleigh waves

47 of 100

112 PU_2015_306_New

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

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

48 of 100

124 PU_2015_306_New

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

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

49 of 100

137 PU_2015_306_New

Partial melting of an Olivine basalt at granulite facies gives rise to granodiorite magma. The concentration of Ce in the basalt is 6 ppm and in granodiorite magma is 60 ppm. Calculate the extent of partial melting in % assuming that Ce is an incompatible element with D=0.001.

- C 10%
- C 0.1%
- 6%
- C 1%

50 of 100

152 PU_2015_306_New Which of these would indicate the former presence of a glacial lake?

- Out wash sands
- Сті
- C Varved clay
- Loess

107 PU_2015_306_New

The rock-deformation is said to be Newtonian (viscous) when:-

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

52 of 100

145 PU_2015_306_New

The minerals glaucophane and jadeite are indicative of:-

- high-P and low-T
- low-P and high-T
- high-P and high-T
- L low-P and low-T

53 of 100

143 PU_2015_306_New Which of the following rocks is completely unfoliated?

- Slate
- Schist
- C Mylonite
- Granofels

54 of 100

153 PU_2015_306_New A medial moraine is developed:-

- in the middle of two coalesced glaciers
- on the side of a glacier
- at the end of the glacier
- in the bergschrund

55 of 100

135 PU_2015_306_New

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

- Co
- C _{Cr}
- C _{Zr}

131 PU_2015_306_New

Which one of the following rocks is made up of > 90% of cummulate minerals?

harzburgite

- tonalite
- Iherzolite
- C dunite

57 of 100

132 PU_2015_306_New

- Kimberlite magmas are generated below:-
- Continental lithosphere
- Continental rift
- Mid-ocean ridge
- Island arc

58 of 100

138 PU_2015_306_New

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?

- Fractional crystallization of pyroxene
- Addition of plagioclase into dacite magma
- Fractional crystallization of olivine
- Fractional crystallization of plagioclase

59 of 100

109 PU_2015_306_New

Igneous rocks usually associated with a mature Island-arc are:-

- tholeiitic
- carbonatites
- calc-alkline
- peralkaline

60 of 100

119 PU_2015_306_New Which one of the following mineral is optically biaxial?

- Siderite
- Dolomite
- Aragonite
- Calcite

179 PU_2015_306_New

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.

- Quartz-pebble-conglomerate type uranium
- Sandstone-type uranium
- \square
- Unconformity-type uranium
- Redbed-type copper

62 of 100

164 PU_2015_306_New

Which factor does not directly influence the shape of a delta?

 \square

strength and height of tides

- volume of sediment carried by the river
- intensity of wave action on the shore
- none of the above

63 of 100

162 PU_2015_306_New Which of the following is a local base level?

- point bar
- floodplain
- lake
- ocean

64 of 100

177 PU_2015_306_New

The ore metal of one of the following deposits is derived from silicate magma of intermediate composition, transported by and deposited from magmatic-hydrothermal fluid, and forms very large deposits of low grade ore.

- SEDEX lead-zinc
- Skarn tungsten
- Porphyry copper
- Greisen tungsten

65 of 100

165 PU_2015_306_New

A stream that has more sediment to move than it can carry at one time is likely to be:-

- C mature
- youthful
- C
- meandering
- braided

172 PU_2015_306_New PGE refers to a group of six precious metals including:-

- C Pt-Pd-Rh-Ru-Ir-Os
- Pt-Pd-Re-Os-Au-Ag
- Pt-Pd-Rh-Ru-Re-Os

C Pt-Pd-Re-Os-Rh-Ru

67 of 100

176 PU_2015_306_New Magmatic sulphide deposits are hosted by:-

- \Box anorthosite
- \Box nepheline syenite-carbonatite
- \square
- granite-granodiorte
- \square mafic-ultramafic rocks

68 of 100

169 PU_2015_306_New

The Ordovician period is known as the age of:-

- \Box corals
- \square
- brachiopoda
- \square crinoids
- \square graptolites

69 of 100

173 PU_2015_306_New One of the following group is called as rare metals:-

- Ce-Nd-Sm
- \Box Sn-W-Mo
- Cu-Pb-Zn
- Li-Be-Nb

70 of 100 168 PU_2015_306_New When did the Trilobite disappear from the Earth?

- End of Permian
- \square Devonian
- C End of Cretaceous
- C Carboniferous

161 PU_2015_306_New

Which of the following controls flow velocity in streams?

- \square gradient
- \square
- depth

 \Box channel shape

 \square all of these

72 of 100

160 PU_2015_306_New

Trellis drainage is most likely to develop on:-

- \square horizontal layers of volcanic rocks
- C granite
- С
- natural levees
- \square tilted sedimentary rock layers

73 of 100

174 PU_2015_306_New One of the following is not a silicate ore mineral:-

- \square leucoxene
- \square lepidolite
- \square braunite
- \Box beryl

74 of 100

167 PU_2015_306_New Which type of coiling is rare in gastropoda?

- \square sinistral
- \square trochospiral
- \square dextral
- \square armestral

75 of 100

170 PU_2015_306_New Flat topped sea mounts are termed as:-

- \Box guyots
- \square
- mesa
- \square monodnock
- inselberg

171 PU_2015_306_New

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

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

77 of 100

163 PU_2015_306_New

A stream can lengthen its channel by:-

- hydraulic action
- \square headward erosion
- \Box
- downcutting
- С runoff

78 of 100

178 PU_2015_306_New

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.



- \square Kuroko-type lead-zinc
- \square
 - Cyprus-type copper-zinc
- \mathbf{C} Epithermal silver-lead

79 of 100

175 PU_2015_306_New One of the following is a magmatic sulphide deposit:-

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

80 of 100

166 PU_2015_306_New Bays and headlands are generally found in shoreline of:-

- \Box neutral
- C faulted
- \square emergence
- \square submergence

180 PU_2015_306_New

A basic assumption in the interpretation of fluid inclusions is that these are:-

- \square isobaric
- С
- isothermal
- \square isochoric
- \square isochemical

82 of 100

187 PU 2015 306 New

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

- Cerium
- C Platinum
- \square Niobium
- \square Rhenium

83 of 100

192 PU_2015_306_New

A world class wollastonite deposit occurs in southern part of Delhi fold belt at:-

- \square Belka Pahar and Khera Tarla
- \square Balda and Dewa-ka-bera
- \square Basantgarh and Pipela
- \Box
- Deri and Ambamata

84 of 100

196 PU_2015_306_New One of the following is a hydrothermal deposit:-

- Greisen tungsten
- \square Podiform chromite
- \square Gondite type manganese
- \square BIF hosted iron ore

85 of 100

183 PU_2015_306_New

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

- Unconformity QPC Sandstone
- \square Unconformity - Sandstone - QPC
- C QPC - Unconformity - Sandstone
- \square Sandstone - Unconformity - QPC

181 PU_2015_306_New

Degree of fill of a fluid inclusion refers to the relative proportion of:-

- \Box liquid + vapour phases to the total volume of fluid inclusion
- \square vapour phase to the total volume of fluid inclusion
- \mathbf{C} liquid phase to the total volume of fluid inclusion
- \square daughter crystal to the total volume of fluid inclusion

87 of 100

193 PU 2015 306 New

In the process of froth flotation for concentrating sulphide ores, pine oil and oleic acid are used as:-

- modifier
- C
- collector
- frother and collector respectively
- frother

88 of 100

182 PU_2015_306_New

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

- transport of metal by a fluid phase
- \Box leaching of metal from source rock
- \Box deposition of ore from a hydrothermal fluid
- \square
 - dispersion of metal in a rock

89 of 100

197 PU_2015_306_New One of the following is the characteristic mineral assemblage of greisen:-

- C Quartz-muscovite-topaz-fluorite
- \square Quartz-microcline-sodic plagioclase
- \square Quartz-orthoclase- sodic plagioclase
- \square Quartz-microcline-sodic plagioclase-fluorite

90 of 100

195 PU_2015_306_New

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

- \Box density
- C
- size
- \square water-adhering or air-adhering character
- \square magnetic susceptibility

188 PU_2015_306_New

Apart from lode gold deposits, gold is produced in India from:-

- \square
 - copper concentrate
- \square lead concentrate
- \Box chromite
- \square uranium ore

92 of 100

198 PU_2015_306_New

One of the following mineral deposits does not occur in skarn:-

- Fe-Sn-W
- Cr-Ni-Ti
- Wollastonite
- Cu-Pb-Zn

93 of 100

190 PU_2015_306_New

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

- \square chiastolite
- \square chrysolite
- \square chrysotile
- \square
- cristobalite

94 of 100

184 PU_2015_306_New One of the following ore minerals is not common in beach placer deposits:-

- \square rutile
- \square chromite
- \Box ilmenite
- \square
- monazite

95 of 100

189 PU_2015_306_New Asbestos deposits in Pulivendla area of Cuddapah basin occur:-

- \Box within dolostone
- \square
- at the contact zone between shale and basic dyke
- \square at the contact zone between dolostone and basic dyke
- \square within shale

194 PU_2015_306_New

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

- C classification of run-off mine according to size
- optimal liberation of ore minerals from gangue minerals
- separation of gangue minerals
- concentration of ore minerals

97 of 100

185 PU_2015_306_New

Typical profile of a lateritic bauxite deposit consists of:- (from top to bottom)

- Laterite-bauxite-lithomarge-partially weathered bed rock-bed rock
- bauxite-laterite-lithomarge-partially weathered bed rock-bed rock
- Lithomarge-bauxite-laterite-partially weathered bed rock-bed rock
- Lithomarge-laterite-bauxite-partially weathered bed rock-bed rock

98 of 100

191 PU_2015_306_New

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

- serpentinised peridotite
- diopside-bearing dolomitic marble
- actinolite-bearing dolomitic marble
- \square
- epidote-bearing dolomitic marble

99 of 100

186 PU_2015_306_New Metals in one of the following options are recovered from their ores by acid leaching.

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

100 of 100

199 PU_2015_306_New Dolostone hosted uranium deposit occurs at:-

- Gogi
- []...
- Jaduguda
- Tummalapalle
- Domiasiat