

## 110 PU Ph D Earth Sciences

### 1 of 100

105 PU\_2016\_110\_E

If the following reaction proceeds forward what changes occur in  $\Delta S$  and  $\Delta V$  of the reaction?

diopside  $\rightarrow$  melt

- $\Delta S$  is negative and  $\Delta V$  is 0
- both are negative
- both are positive
- $\Delta S$  is negative and  $\Delta V$  is positive

### 2 of 100

160 PU\_2016\_110\_E

The dominant forms of microfossils in the abyssal region are:-

- Ostracods
- Radiolarians
- Diatoms
- Foraminifers

### 3 of 100

157 PU\_2016\_110\_E

Which of the following logging technique can be best utilized for hydrocarbon exploration?

- density logging
- shale logging
- induction logging
- porosity logging

### 4 of 100

141 PU\_2016\_110\_E

If the net slip of a fault is parallel to the trace of the bedding on the fault plane, then:-

- Strike separation is zero
- Dip separation is zero
- Both strike and dip separations are zero
- Both strike and dip separations are non-zero

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216 PU\_2016\_110\_E

The ability of a sensor to detect finite colour differences in a scene is called as:-

- temporal resolution
- spectral resolution

- spatial resolution
- radiometric resolution

### 6 of 100

204 PU\_2016\_110\_E

The difference between tholeiitic and calc-alkaline basalts is mainly in:-

- quartz content
- alkali content
- calcium content
- iron and alumina content

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193 PU\_2016\_110\_E

Two atoms are likely to make an ionic bond if:-

- there is large difference in their electronegativity values
- they are of equal size
- there is not much difference in their electronegativity values
- if both of them are non-metals

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208 PU\_2016\_110\_E

Tonalites extensively occur in Archean terrains. These rocks essentially consist of:-

- Quartz = 30 %, Plagioclase >50 %, Alkali feldspar <10 % and hornblende =10 %
- Quartz = 30 %, Plagioclase =30 %, Alkali feldspar= 30 % and hypersthene =10 %
- Quartz = 30 %, Plagioclase <10 %, Alkali feldspar >50 % and hornblende =10 %
- Quartz = 30 %, Plagioclase =30 %, Alkali feldspar =30 % and hornblende =10 %

### 9 of 100

129 PU\_2016\_110\_E

Under isobaric (i.e. equal pressure) condition, H<sub>2</sub>O solubility is highest in:-

- Basaltic magma
- Granitic magma
- Ultrabasic magma
- Andesitic magma

### 10 of 100

125 PU\_2016\_110\_E

Diamond stability field is situated in following part of the earth:-

- Lower mantle
- Upper mantle

- Transition zone between upper and lower mantle
- Lower crust

**11 of 100**

140 PU\_2016\_110\_E

Shear strain is measured by:-

- change in right angle relationship between two lines
- change in shape of a line
- displacement of a line along
- change in original length of a line

**12 of 100**

152 PU\_2016\_110\_E

The travel time curve of critically refracted wave is:-

- hyperbola
- parabola
- polygon
- straight line

**13 of 100**

188 PU\_2016\_110\_E

The log that measures the velocity of rock surrounding an uncased fluid filled hole is:-

- Acoustic log
- Dip meter log
- Resistivity log
- Caliper log

**14 of 100**

176 PU\_2016\_110\_E

Deposition in Cuddapah basin is characterized by \_\_\_\_\_ cycle:-

- Quartzite-Carbonate-Shale
- Carbonate-Quartzite-Shale
- Conglomerate-Quartzite-Shale
- Shale-Quartzite-Carbonate

**15 of 100**

177 PU\_2016\_110\_E

Ages Lutetian, Ypresian and Barterian belongs to:-

- Triassic
- Eocene

- Proterozoic
- Cambrian

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133 PU\_2016\_110\_E

In an aerial photograph, the object with an elevation (eg. trees, poles, buildings etc.) appear to lean away from the center of the photo. This distortion is known as:-

- parallax
- relief displacement
- stereovision
- none of the above

### 17 of 100

197 PU\_2016\_110\_E

Carbonatite complexes are associated with:-

- Alkaline rocks
- Layered igneous complexes
- Ophiolites
- Flood basalts

### 18 of 100

173 PU\_2016\_110\_E

The correlation of Precambrian terrains is mostly based on:-

- Eustatic changes
- Fossils
- Crustal upliftment
- Lithology

### 19 of 100

180 PU\_2016\_110\_E

The maximum amount of water that soil can hold is known as:-

- Field capacity
- Wilting capacity
- Infiltration rate
- Infiltration capacity

### 20 of 100

153 PU\_2016\_110\_E

Acoustic impedance is the \_\_\_\_\_ of density and velocity.

- difference

- product
- sum
- ratio

**21 of 100**

172 PU\_2016\_110\_E

Age of Macrocephalus beds is:-

- lower Bajocian
- Lower Bathonian
- Mid Callovian
- Upper Oxfordian

**22 of 100**

117 PU\_2016\_110\_E

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

- martian meteorites
- pallasites
- chondrites
- lunar meteorites

**23 of 100**

164 PU\_2016\_110\_E

Most "petrified wood" is an example of:-

- replacement
- carbonization
- cast
- preservation or original material

**24 of 100**

116 PU\_2016\_110\_E

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

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

**25 of 100**

109 PU\_2016\_110\_E

In a well preserved layered igneous complex what rock types will be found at the bottom and top, respectively?

- Dunite and rhyolite
- Rhyolite and pyroxenite
- Pyroxenite and rhyolite
- Andesite and dunite

**26 of 100**

213 PU\_2016\_110\_E

Which of the following is example of active remote sensing sensor?

- aerial camera
- CCD array
- microwave radiometer
- Synthetic Aperture Radar

**27 of 100**

217 PU\_2016\_110\_E

In a hydrothermal ore forming process, second boiling refers to vapour saturation achieved by:-

- increase in pressure
- decrease in pressure
- addition of boiling hydrothermal water to magmatic water
- progressive crystallisation of anhydrous minerals

**28 of 100**

148 PU\_2016\_110\_E

Stress relaxation is characteristic behavior of a:-

- Bingham substance
- Kelvin substance
- Hooke substance
- Maxwell substance

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137 PU\_2016\_110\_E

Which wavelength region is best suited to demarcate land and water?

- TIR region
- FIR region
- visible region
- NIR region

**30 of 100**

189 PU\_2016\_110\_E

Water that has flown through a gypsum formation picks Ca ions and when enters limestone formation it would not pick up Ca and this consequence of water is called as:-

- Ion exchange effect
- Reverse ion exchange effect
- Base exchange effect
- Common ion effect

### 31 of 100

165 PU\_2016\_110\_E

Taphonomy is the:-

- study of types of fossils
- study of fossil pollens and spores
- reconstruction of paleoenvironments by means of fossils
- study of the conditions of preservation of fossils

### 32 of 100

104 PU\_2016\_110\_E

The upper mantle is mainly composed of:-

- wherelite
- peridotite
- websterite
- pyroxenite

### 33 of 100

100 PU\_2016\_110\_E

Maximum possible symmetry present in monoclinic system:-

- 2 fold axis and centre of symmetry
- 2 fold axis, centre of symmetry and a mirror plane
- 2 fold axis only
- 2 fold axis and a mirror plane perpendicular to it

### 34 of 100

181 PU\_2016\_110\_E

A saturated but relatively impermeable material that does not yield appreciable quantities of water to wells is called as:-

- Aquitard
- Aquifer
- Aquifuge
- Aquiclude

**35 of 100**

205 PU\_2016\_110\_E

The composition of the bulk earth is similar to:-

- Carbonaceous chondrites
- Fe-Ni meteorites
- Mercury
- Moon

**36 of 100**

192 PU\_2016\_110\_E

There are 5 ways in which building blocks of crystal can be arranged in 2-dimensions giving rise to 5-plane lattices. In how many ways could these be arranged in 3- dimensions?

- 232
- 14
- 32
- 7

**37 of 100**

112 PU\_2016\_110\_E

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

- sediment production rate was inefficient prior to Jurassic
- dating of the older sediments is not possible
- oldest sea floor is of Jurassic age
- sediments were not deposited on ocean floor prior to Jurassic

**38 of 100**

124 PU\_2016\_110\_E

Concentration of elements Fe, Ni, Au Pt are highest in following part of the earth:-

- Mantle
- Oceanic crust
- Continental crust
- Core

**39 of 100**

128 PU\_2016\_110\_E

Which of the following opaque minerals have lowest reflectance value:-

- Pyrite
- Galena
- Chalcopyrite
- Sphalerite



**40 of 100**

145 PU\_2016\_110\_E

The characteristic outcrop pattern of non-plane cylindrical fold is:-

- Mirror-image like pattern
- Mushroom shaped pattern
- Hook-shaped pattern
- Oval-shaped pattern

**41 of 100**

136 PU\_2016\_110\_E

Which is not an Indian remote sensing satellite?

- Landsat 6 TM
- Cartosat I
- Resourcesat
- IRS LISS III

**42 of 100**

212 PU\_2016\_110\_E

Hummocky cross stratification is a product of storm induced unidirectional current and they are generally formed in following depositional areas of a marine basin:-

- Inner shoreface region
- Outer shelf region
- Outer shoreface region
- Foreshore region

**43 of 100**

156 PU\_2016\_110\_E

Upward continuation technique in potential field methods can be best approximated to:-

- marine survey
- satellite survey
- land survey
- airborne survey

**44 of 100**

108 PU\_2016\_110\_E

Which one of the following statements is NOT correct for the Archean Epoch?

- Increasing oxygen concentration in atmosphere
- Increasing CO<sub>2</sub> concentration in atmosphere
- Rapid growth of continental crust

- komatiite magmatism

**45 of 100**

113 PU\_2016\_110\_E

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

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

**46 of 100**

120 PU\_2016\_110\_E

Which of the following mineral deposit is most abundant in earth crust:-

- Iron deposit
- Gold deposit
- Aluminium deposit
- Copper deposit

**47 of 100**

169 PU\_2016\_110\_E

The most ancient type of eyes in Trilobites are:-

- abathochroal
- Holochroal
- schizochroal
- achroal

**48 of 100**

161 PU\_2016\_110\_E

Which of the following is a trace fossil?

- worm burrow
- clam shell
- bird bone
- rozen mammoth

**49 of 100**

196 PU\_2016\_110\_E

What causes magmatism above subduction zones?

- Fluids released from subducting plate
- Mantle convection
- Plume

- Melting of subducting plate

### 50 of 100

209 PU\_2016\_110\_E

If the average density of the continental crust with a thickness of 40 km is  $2700 \text{ kg/m}^3$  and acceleration due to gravity is  $9.8 \text{ m/s}^2$  then what will be the pressure expected at its base?

- 0.78 GPa
- 0.56 GPa
- 2.16 GPa
- 1.06 GPa

### 51 of 100

201 PU\_2016\_110\_E

Aulacogen type of sedimentary basins form due to:-

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

### 52 of 100

132 PU\_2016\_110\_E

What is photogrammetry?

- Determining the geometric properties of objects from photographic images
- Optical illusion of depth created from flat, two-dimensional image or images
- Estimating the three-dimensional coordinates of points on an object
- Acquisition of objects without contact of large complex scenes in 3D

### 53 of 100

185 PU\_2016\_110\_E

When the well discharge is divided by draw down the resulting parameter is:-

- Well efficiency
- Well loss
- Specific capacity
- Storage coefficient

### 54 of 100

144 PU\_2016\_110\_E

If the axial plane of a fold has an attitude of  $40^\circ/40^\circ\text{SE}$  and pitch of the fold axis on the axial plane is  $40^\circ$  from  $40^\circ$  end, the fold can be called as:-

- Inclined plunging
- Upright plunging

- Inclined horizontal
- Upright horizontal

**55 of 100**

184 PU\_2016\_110\_E

The flow characterized by chaotic eddies with larger velocities and momentum is termed as:-

- base flow
- viscous flow
- inter flow
- turbulent flow

**56 of 100**

121 PU\_2016\_110\_E

Which of the following element more likely to form oxide mineral deposit?

- Ti
- Cu
- Pt
- Fe

**57 of 100**

101 PU\_2016\_110\_E

To obtain centered biaxial interference figure the mineral section has to be cut perpendicular to:-

- acute bisectrix
- c-axis
- Optic axis
- Optic normal

**58 of 100**

200 PU\_2016\_110\_E

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

- Horst and graben structures
- Oceanic crustal rocks and arc-trench sediments
- Normal faults
- Molasse sediments

**59 of 100**

168 PU\_2016\_110\_E

Preservation of cellulose is an example of \_\_\_\_\_ level preservation of Plant.

- Tissue
- Organ

- Cellular
- Organism

**60 of 100**

149 PU\_2016\_110\_E

For a strain ellipse on XZ reference frame, 'strain ratio ( $R_s$ ) is defined as \_\_\_\_\_, where  $\epsilon_1$ ,  $\epsilon_2$  and  $\epsilon_3$  are elongation along X, Y and Z reference axes of the strain ellipsoid respectively:-

- $(1+\epsilon_1)/(1+\epsilon_2)$
- $(1+\epsilon_3)/(1+\epsilon_1)$
- $(1+\epsilon_2)/(1+\epsilon_1)$
- $(1+\epsilon_1)/(1+\epsilon_3)$

**61 of 100**

237 PU\_2016\_110\_M

In which of the following environments would you expect to find oscillation ripples?

- alluvial
- deep-sea
- desert
- beach

**62 of 100**

232 PU\_2016\_110\_M

Which of the following sedimentary environments would you expect the sand deposits to be poorly sorted?

- glacial
- alluvial
- desert
- beach

**63 of 100**

220 PU\_2016\_110\_M

In pelitic rocks chloritoid is favoured over chlorite in rocks having:-

- Low-Al and high Fe/Mg ratio
- High-Al and high Fe/Mg ratio
- High-Al and high Mg/Fe
- High-K and high Al ratio

**64 of 100**

252 PU\_2016\_110\_M

Trellis drainage is most likely to develop on:-

- horizontal layers of volcanic rocks

- natural levees
- tilted sedimentary rock layers
- granite

**65 of 100**

224 PU\_2016\_110\_M

In case of prolate strain ellipsoid, there will be equal shortening in all direction on/along:-

- $\lambda_3$  axis
- $\lambda_1\lambda_3$  plane
- $\lambda_2\lambda_3$  plane
- $\lambda_1\lambda_2$  plane

**66 of 100**

245 PU\_2016\_110\_M

The lowering effect on the water table about the base of the well stem is called a(n):-

- speleothem
- artesian surface
- cone of depression
- aquiclude

**67 of 100**

256 PU\_2016\_110\_M

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

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

**68 of 100**

229 PU\_2016\_110\_M

In the normal limb of a fold, the dip of the cleavage is \_\_\_\_\_ than/to the bedding dip.

- greater
- similar
- smaller
- half

**69 of 100**

240 PU\_2016\_110\_M

Which of the following sedimentary environments is dominated by waves and tidal currents?

- deep marine

- deltaic
- glacial
- alluvial fans

### 70 of 100

244 PU\_2016\_110\_M

Which of the following sandstone types is most likely to form by the mechanical and intense chemical weathering of a granite?

- litharenite
- quartz arenite
- shale
- arkose

### 71 of 100

249 PU\_2016\_110\_M

Placing geologic events in sequential order as determined by their position in the rock record is called:-

- correlation
- absolute dating
- relative dating
- historical dating

### 72 of 100

257 PU\_2016\_110\_M

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

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

### 73 of 100

233 PU\_2016\_110\_M

Increased concentration of atmospheric CO<sub>2</sub> will lead to:-

- Higher pH of ocean
- More stability of calcareous shells
- Higher weathering of rocks
- Lower global temperature

### 74 of 100

241 PU\_2016\_110\_M

Siliceous environments, named for the silica-rich shells deposited in them, occur:-

- in a reef environment
- in a deep-sea environment
- in a swamp environment
- in an evaporite environment

**75 of 100**

221 PU\_2016\_110\_M

At an invariant point  $\Phi$  (number of phase) is equal to \_\_\_\_\_ where C is the number of component.

- C+1
- C
- C+2
- C+3

**76 of 100**

248 PU\_2016\_110\_M

Which rock type makes a good cap rock for oil and gas reservoirs?

- conglomerate
- limestone
- sandstone
- shale

**77 of 100**

228 PU\_2016\_110\_M

If the pitch of a linear structure is  $90^\circ$  on a bed whose strike is N30E and dip  $50^\circ$  towards SE, then the plunge of the linear structure will be:-

- $30^\circ$
- $60^\circ$
- $50^\circ$
- $45^\circ$

**78 of 100**

225 PU\_2016\_110\_M

In case of non-coaxial (simple shear) deformation, line of no longitudinal strain is \_\_\_\_\_ to the shear direction.

- parallel
- perpendicular
- at  $25^\circ$
- at  $45^\circ$

**79 of 100**



236 PU\_2016\_110\_M

Marine sediments deposited in water depths greater than about 12,000 feet usually lack:-

- silica-rich shells
- carbonate shells
- fine grained material transported by the wind
- all of these

**80 of 100**

253 PU\_2016\_110\_M

Which one of the following is a landform created by wave erosion ?

- breakwater
- spit
- sea arch
- estuary

**81 of 100**

276 PU\_2016\_110\_D

Metals in one of the following options are recovered from their ores by acid leaching:-

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

**82 of 100**

293 PU\_2016\_110\_D

Lack of ocean upwelling in the eastern Pacific is associated with:-

- El Nino
- La Nina
- Coriolis Effect
- Global warming

**83 of 100**

273 PU\_2016\_110\_D

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

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

**84 of 100**

265 PU\_2016\_110\_D

This question is about the correct answer of the previous question. The host rock of the magmatic sulphide deposit is:-

- Carbonatite
- Gabbro
- Pyroxenite
- Dunite

**85 of 100**

296 PU\_2016\_110\_D

Which of the following instruments is necessary for dating of a rock?

- Scanning electron microprobe
- Mass spectrometer
- X-ray diffractometer
- Inductively coupled plasma atomic emission spectrometer

**86 of 100**

269 PU\_2016\_110\_D

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 Phanerozoic arenaceous sediment:-

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

**87 of 100**

261 PU\_2016\_110\_D

One of the following ore minerals is commonly not idiomorphic:-

- sphalerite
- pyrite
- galena
- magnetite

**88 of 100**

285 PU\_2016\_110\_D

In ore processing, size reduction of ore by crushing and grinding results in:-

- separation of gangue minerals
- concentration of ore minerals
- optimal liberation of ore minerals from gangue minerals

- all the above

**89 of 100**

288 PU\_2016\_110\_D

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

- Quartz-microcline-sodic plagioclase  
 Quartz-orthoclase- sodic plagioclase  
 Quartz-microcline-sodic plagioclase-fluorite  
 Quartz-muscovite-topaz-fluorite

**90 of 100**

297 PU\_2016\_110\_D

Which of the following methods is used to date marine, pure, unaltered biogenic material of Phanerozoic age?

- C-14 method  
 Global Standard Strontium isotope Curve  
 K-Ar method  
 U-Th method

**91 of 100**

277 PU\_2016\_110\_D

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

- Cerium  
 Platinum  
 Niobium  
 Rhenium

**92 of 100**

272 PU\_2016\_110\_D

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

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

**93 of 100**

284 PU\_2016\_110\_D

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

- frother and collector respectively  
 collector

- frother
- modifier

**94 of 100**

280 PU\_2016\_110\_D

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

- chrysolite
- chrysotile
- chiastolite
- cristobalite

**95 of 100**

292 PU\_2016\_110\_D

Demonstrated reserve refers to one of the following.

- Proved reserve + Possible reserve
- Proved reserve
- Proved reserve + Probable reserve
- Probable reserve + Possible reserve

**96 of 100**

260 PU\_2016\_110\_D

One of the following pairs does not form exsolution intergrowth in ore mineral assemblages:-

- pyrite-pyrrhotite
- chalcopyrite-sphalerite
- chalcopyrite-cubanite
- magnetite-ilmenite

**97 of 100**

281 PU\_2016\_110\_D

A world class barite deposit occurs in Cuddapah basin at:-

- Vemula
- Mangampet
- Vempalli
- Kodur

**98 of 100**

289 PU\_2016\_110\_D

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

- Fe-Sn-W
- Cu-Pb-Zn

- Wollastonite
- Cr-Ni-Ti

**99 of 100**

264 PU\_2016\_110\_D

One of the following is a magmatic sulphide deposit:-

- Kuroko-type lead-zinc
- Cyprus-type copper-zinc
- Sudbury copper-nickel
- Epithermal silver-lead

**100 of 100**

268 PU\_2016\_110\_D

The ore metals of one of the following deposits are derived from basic volcanic rock, transported by and deposited from sea water-hydrothermal fluid, and forms massive sulphide deposits:-

- Epithermal silver-lead
- Cyprus-type copper-zinc
- Sudbury-type nickel-copper
- Kuroko-type lead-zinc