<table>
<thead>
<tr>
<th>Question No.1</th>
<th>4.00</th>
<th>Bookmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name the microfossil in the above figure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Foraminifera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Radiolarian</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Pollen grain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Conodonts</td>
<td></td>
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<table>
<thead>
<tr>
<th>Question No.2</th>
<th>4.00</th>
<th>Bookmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>When the bus was at full speed, its brakes failed and an accident was _______.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ essential</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ undeniable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ inevitable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ infallible</td>
<td></td>
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</tbody>
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<table>
<thead>
<tr>
<th>Question No.3</th>
<th>4.00</th>
<th>Bookmark</th>
</tr>
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<tbody>
<tr>
<td>Greywacke typically exhibits</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Herringbone cross-bedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Flaser bedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Graded bedding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Torrential bedding</td>
<td></td>
<td></td>
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</tbody>
</table>

<table>
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<tr>
<th>Question No.4</th>
<th>4.00</th>
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</thead>
<tbody>
<tr>
<td>Which was the warmest epoch of the Cenozoic?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Eocene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Paleocene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Oligocene</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Miocene</td>
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<table>
<thead>
<tr>
<th>Question No.5</th>
<th>4.00</th>
<th>Bookmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>In contact metamorphism the source of increased temperature and pressure is _______.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ a local intrusive heat source</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ impact metamorphism</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ the increase in temperature with increasing depth of burial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ due to increased rate of radioactive decay</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Question No.6
The specific gravity of a powdered mineral can be determined with the help of
- Walker’s Steel Yard
- Pycnometer
- Chemical balance
- Jolly’s spring balance

Question No.7
We must always try to adapt ourselves ______ our circumstances.
- to
- in
- by
- with

Question No.8
Diamond bearing conglomerates of central India underlie________
- Bhandari series
- Kaladgi series
- Sakoli series
- Saline series

Question No.9
Diagenesis of organic matter forms ----
- Dry Gas
- Gas
- Oil
- Kerogen

Question No.10
The term pH stands to
- Pure Hydrogen
- Per Hydrogen ion
- Puissance de Hydrogen
- Potential Hydrogen

Question No.11
A limestone composed entirely of organic detritus is referred as
- Encrinite
- Coquina
- Oolite
- Spergenite

Question No.12
This pup is very naughty. It is always _____some mischief or the other.
- out for
- up to
- in for
- up at

Question No.13
The path finder element for exploration for gold deposits is__________
Arsenic  Silver  Nickel  Antimony

Question No.14

Gravity fault are formed under____ regime
- Shear
- Compressive force
- Effect of torsion forces
- Tensile stress

Question No.15

________ is a satellite sensor.
- AVIRIS
- HYPERION
- LISS IV
- LISS III

Question No.16

Diamond in Kimberlite and Corundum in Nepheline syenite are examples of__
- Injected deposit.
- Disseminated deposit
- Segregated deposit
- Pegmatitic deposit

Question No.17

Which type of pressure will result in the alignment of metamorphic minerals?
- contact pressure
- chemical pressure
- confining pressure
- directed pressure

Question No.18

Reservoir rock containing____ in the pore space of XYZ layers find the correct content in the pore spaces of XYZ layers
- X-Water Y-gas Z-Oil
Question No.19

In the following question, the first two words (given in italics) have a definite relationship. Choose one word out of the given four alternatives which will fill the blank space and show the same relationship with the third word as between the first two.

Hear is to Deaf as Speak is to ........?.............

- Dumb
- Listen
- Talkative
- Silent

Question No.20

In which type of formation, the capillary rise will be high?
- Medium sand.
- Clay
- Gravel
- Loam.

Question No.21

Find the odd one out?
- Silkworm: Sericulture
- Fish: Pisciculture
- Birds: Horticulture
- Bees: Apiculture

Question No.22

The magnitude of gravity on the earth’s surface depends on
- density variations in the subsurface
- latitude, elevation and topography
- latitude, elevation, topography, earth tides and density variations in the subsurface
- latitude, elevation, topography and earth tides.

Question No.23

Which of the following isotopes is NOT a radioisotope?
- Sulphur-35
- Carbon-14
- Carbon-13
- Tritium

Question No.24

Correct the error in the italicized part of the sentence by choosing the most appropriate option.

Admission Aglasem
Correct the error in the italicized part of the sentence by choosing the most appropriate option.
Leaving aside little room for misinterpretation, the senior politician offered clarifications about his role in the party elections.
- Leaving less room for
- Leaving little room for
- Leaving for little room to
- Having left less room for

Question No.25
Limestone and chalk beds are often derived from the shells of
  - foraminifera.
  - radiolarians
  - dinoflagellates
  - diatoms

Question No.26
The thickest coal seam in India is;
  - Jaharia
  - Raniganj
  - Bokaro
  - Singrauli

Question No.27
The tendency for variations in current velocity to segregate sediments based on particle size is called
  - metamorphism
  - compaction
  - sorting
  - lithification

Question No.28
Which is the fundamental step in image processing?
  - image enhancement
  - image acquisition
  - filtration
  - image restoration

Question No.29
The geochemical character of an element is governed by the----
  - number of proton in the nucleus
  - number of neutrons in the nucleus
  - number of isotopes in nucleus
  - electronic configuration of its atoms.

Question No.30
Folds with a pair of converging axial surfaces and having a square hinge zone are known as
  - Similar folds
  - Box folds
  - Parallel
  - Overturm folds
Question No.31
Which of the following sedimentary environments is characterized by sand, gravel and mud?
- deep marine
- alluvial fans
- active margin beach
- glacial

Question No.32
Which of the wavelength is useful for imaging from a satellite in cloud-covered condition?
- 4 cm
- 4mm
- 0.4nm
- 4nm

Question No.33
Incohesive rock containing angular rock fragments set in a fine grained matrix is referred as
- Cataclastics
- Breccia
- Gouges
- Mylonites

Question No.34
Batholiths are always associated with
- Folds and faults
- Earth zones
- Orogenic belt
- Island arcs

Question No.35
The altitude of LANDSAT satellite is
- 900Km
- 600Km
- 1200Km
- 800Km

Question No.36
If Road is coded as WTFI, what is the code for BEAT
- GJFY
- HIGZ
- DEFG
- ABCD

Question No.37
Which metals may be obtained from the stagnate ore mineral?
- Zinc and silver.
- Copper and Tin.
- Copper and zinc.
- Copper and Tungsten.

Question No.38
Compressibility can be described as reciprocal of
- Young's Modulus
Question No.39

Extremely large scale lithostratigraphic units bounded by transgressive-regressive unconformities are called
- facies
- cratonic sequences
- mobile belts
- Super groups

Question No.40

Identify the type of geophysical method.

- magnetic
- Schlumberger
- Gravity
- Wenner

Question No.41

Which of the following metamorphic rocks forms in the forearc of a subduction zone?
- Gneiss
- Amphibolite
- Quartzite
- Blueschist

Question No.42

The deposition of amorphous silica layer by layer produces
- Liesegang banding
- Cockade structure
- Comb structure
- Geodes

Question No.43

Exhausted: Tired
- Depressed: Sad
- Arrogant: Docile
- Considerate: Rude
- Progressive: Regressive

Question No.44

A man makes 150 pots per minute. If 30 pots are packed in a case how many cases will be made ready by the Man in one hour?
- 200
- 250
- 300
Question No.45

Melange deposits are associated with
- transform boundaries
- Convergent boundaries
- subduction margins
- divergent boundaries

Question No.46

On the following illustration identify the features A and B

- Mid-Atlantic Ridge
- Carls Ridge
- Mid Oceanic Ridge
- East Pacific Ridge

Question No.47

What may be the maximum angle of windward slope and leeward slope in a sand dune?
- 20° and 60°
- 5° and 30°
- 10° and 40°
- 15° and 50°
A dendritic drainage pattern will tend to develop in regions
- along the flanks of isolated volcanoes
- of flat-lying sedimentary rocks
- Underlain by regularly spaced joints
- Of folded rocks

**Question No.49**

In petroleum exploration, the Biosurfactant is ----------------
- variety of metabolic products
- Variety of Kerogen
- Types of sulfur
- Type of mud

**Question No.50**

During the Cambrian, most of the continents were-----------
- together in one landmass
- dispersed around polar regions
- dispersed in low latitude regions
- covered by ice

**Question No.51**

Choose the synonym of the italicized word. Many cities were *incinerated* during the war.
- attacked
- burnt
- destroyed
- bombed

**Question No.52**

Which type of geophysical prospecting method is used for direct exploration of chromite?
- Resistivity
- Magnetic
- Seismic
- Gravity

**Question No.53**

The isometric system is characterized by
- 3 axes of 4 fold symmetry
- 6 axes of 5 fold symmetry
- 2 axes of 4 fold symmetry
- 4 axes of 3 fold symmetry

**Question No.54**

_____ is an example of a shoreline/transitional depositional environment
- Littoral
- Lagoon
- Delta
- Shelf

**Question No.55**

_____ is a useful statistic to calculating goodness of fit
- Chi-square test
- Fourier analysis
Question No.56
Why do Mercury and the Moon lack an atmosphere?
- They are cold that all their gases have frozen into deposits below their surface.
- They are small that their gravity is too weak to retain an atmosphere.
- They formed after all the gas had been used up.
- They formed before the solar nebula had captured any gas.

Question No.57
Statement: The Company has recently announced a series of incentives to the employees who are punctual and sincere.
Assumptions:
I. Those who are punctual will get motivated.
II. The productivity of the company may increase.
- If only assumption I is implicit
- If only assumption II is implicit
- If both I and II are implicit
- If neither I nor II is implicit

Question No.58
Find the odd one out?
- Flourish
- Renovate
- Thrive
- Blossom

Question No.59
The bauxite deposits of central and western India have been formed from
- Basalt.
- Syenite.
- Granite
- Nepheline syenite

Question No.60
Which of the option exhibits a distinctive texture called Spinifex texture?
- Spilites
- Tholeiites
- Picrites
- Komatiites

Question No.61
Ocean island Basalt magmas are characterized by____
- Enrichment in LREE and LILE
- Enrichment of LREE and LILE compared to continental crust
- Depletion in LILE and LREE compared to MORB
- Large scale contamination of continental crust

Question No.62
On the toposheet; 4 cm = 2Km. What is scale of the map?
- 1:50
- 1:05
- 0.3888
- 1:50,000

Question No.63

Statement: Warning: Cigarette smoking is injurious to Health
Assumptions:
I. Non-Smoking Promotes Health
II. This warning is not necessary
- If only assumption II is implicit
- If only assumption I is implicit
- If both I and II are implicit
- If neither I nor II is implicit

Question No.64

A vertical dyke showing transverse veins is known as
- Vug
- Ladder vein
- Saddle reef
- Stock work

Question No.65

Which color is having largest wavelength in visible spectrum?
- Yellow
- Red
- Green
- Blue

Question No.66

Select the Pair that best represents the relationship that is given in the question:
Slapstick:Laughter
- Mimicry:Laughter
- Clown: Comical
- Satire: Sarcasm
- Horror:Fear

Question No.67

Gossans is a
- ferruginous residue
- siliceous residue
- calcareous residue
- organic residue

Question No.68

Which of the following is released in large quantities from coal after it is burnt?
- Helium
- Hydrogen
- Nitrogen Dioxide
- Sulphur dioxide

Question No.69

Flood hazards along a stream may be greatly reduced by the use of
- Retention ponds
Question No.70

Igneous rocks owing their origin to the same parent magma are termed as
- Eutectic
- Paramagnetic
- Orthomagnetic
- Comagmatic

Question No.71

Quartz wedge is always cut
- Parallel to b-axis
- Perpendicular to c-axis
- Parallel to c-axis
- Perpendicular to b-axis

Question No.72

The zeolite facies occur in ______ pressure-temperature regime
- Area “D”
- Area “C”
- Area “A”
- Area “B”

Question No.73

Which of the following is NOT a type of silicate structure?
- sheet silicate
- double chain silicate
- single-chain silicate
- Mobyus strip silicate

Question No.74

The downward movement of wet soil along the slopes under the influence of gravity is __
- Solifluction
- Plastic outflows
- Rock slides
- Debris flow

Question No.75

In which of the following environments would you expect to find symmetrical ripples?
- Fluvial
- Glacial
- Beach
- Aeolian
### Question No.76

I don’t care if she comes to my house or not.

The underlined word is a

- gerund
- conjunction
- verb
- pronoun

### Question No.77

The characteristic rocks of the Island-Arc Systems are

- Andesite
- Blue Schist
- Granodiorite
- Basalts

### Question No.78

Asphaltenes are molecular substances that are found in _______

- paraffin
- Resins
- Gas
- Crude Oil

### Question No.79

A potassic ultrabasic hybrid igneous rock containing macrocrysts of olivine, Cr-rich diopside, phlogopite and pyroxene in a groundmass of serpentine, carbonate and perovskite can be named as

- Kimberlite
- Harzburgite
- Melilitolite
- Ijolite

### Question No.80

Cross bedding is a ______ property

- Scalar
- Either scalar or vector
- Vector
- Linear

### Question No.81

Which of the following is NOT a primary contributor to the greenhouse effect?

- carbon monoxide
- chlorofluorocarbons
- carbon dioxide
- methane gas

### Question No.82

Where are melts likely to be produced by the adiabatic rise of mantle?

- East pacific Ridge
- Atlantic ridge
- mid-oceanic ridges and hot spots
Question No.83
Which planets have retrograde rotation?
- Jupiter and Neptune
- Venus and Uranus
- Mercury and Pluto
- Saturn and Mars

Question No.84
In India, Baryte deposits occurs in------- form
- vein type
- fissure type.
- stringer type
- bedded type

Question No.85
Ptilophyllum flora is the characteristic of?
- Hot and dry climate
- Desert climate
- Cold climate
- Marine climate

Question No.86
Cavities in lava formed by the evolution of volatiles are
- Amygdule
- Oolites
- Pumice
- Pisolites

Question No.87
In olivine structure the layers consisting of octahedral cross linked by independent SiO₄ tetrahedra, lie parallel to
- -10
- -101
- -100
- -1

Question No.88
When Uranium-238 emits α particles it decays in to
- Thorium-234
- Uranium-235
- Helium
- Carbon

Question No.89
Choose the best antonym of the italicized word.
There has always been a feeling of rancour between the two families.
- friendliness
- suspicion
- competition
- rivalry

Question No.90
Question No.90

The stress opposing a slope's shear stress is imparted by________
- gravity
- running water
- earthquakes
- frost wedging

Question No.91

Study the following information carefully and answer the question below it:

P, Q, R, S T went on a picnic. P is son of Q but Q is not the father of P. R is the son of S, who is the brother of P. T is the wife of S.

How is P related to S?
- Brother
- Father
- Nephew
- None of these

Question No.92

We’re late again for the test, _____?
- isn’t it?
- are we?
- aren’t we?
- is it?

Question No.93

Chromium is a straggly lithophile element in the earth’s crust, but it is found as Chalcophile in some meteorites because of __
- Oxygen rich
- Hydrogen deficiency
- Oxygen deficiency
- Carbon deficiency

Question No.94

Which of the following rocks is deposited only by non-biological, chemical precipitation?
- coal
- chert
- halite
- limestone

Question No.95

People in the age group of 40 to 50 years are more likely to purchase ice cream and are more likely to purchase it in large amounts than are members of any other age group. The general perception that teenagers eat more ice cream than adults must, therefore, be incorrect.

The argument is flawed primarily because the author
- does not specify the precise amount of ice cream purchased by any demographic group
- fails to distinguish between purchasing and consuming
- discusses ice cream rather than more nutritious and healthful foods
- depends on popular belief rather than on documented research findings

Question No.96

Horizontal access to ore body in the underground mines are---------
- Adit
- Stope
- Shaft
- Winze
type of logs used to measure the specific resistance of the geologic formation.
- Caliper
- Neutron
- Resistivity
- Gamma ray

Question No.98
Study the following information carefully and answer the question below it.

The Director of an MBA college has decided that six guest lectures on the topics of Motivation, Decision Making, Quality Circle, Assessment Centre, Leadership and Group Discussion are to be organised on each day from Monday to Sunday.
(i) One day there will be no lecture (Saturday is not that day), just before that day Group Discussion will be organised.
(ii) Motivation should be organised immediately after Assessment Centre.
(iii) Quality Circle should be organised on Wednesday and should not be followed by Group Discussion.
(iv) Decision Making should be organised on Friday and there should be a gap of two days between Leadership and Group Discussion.

On which day the lecture on Leadership will be organised?
- Saturday
- Tuesday
- Monday
- Thursday

Question No.99
The evaporation through plants and from the surrounding soil together is known as
- Both a and b
- Evapo-transpiration
- Evaporation
- Transpiration

Question No.100
Name the types of coals in X-Y-Z layers in an order.
- Lignite-Bituminous-Anthracite
- Bituminous-Lignite-Anthracite
- Anthracite-Lignite-Bituminous
- Lignite-Anthracite-Bituminous
<table>
<thead>
<tr>
<th>Sr No.</th>
<th>M Tech Exploration Geoscience</th>
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<tbody>
<tr>
<td>1</td>
<td>Which fraction comes next in the sequence</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Fraction Sequence" /></td>
</tr>
<tr>
<td>Alt1</td>
<td>9/32</td>
</tr>
<tr>
<td>Alt2</td>
<td>10/17</td>
</tr>
<tr>
<td>Alt3</td>
<td>11/34</td>
</tr>
<tr>
<td>Alt4</td>
<td>12/35</td>
</tr>
<tr>
<td>2</td>
<td>Choose the missing term out of the given options:</td>
</tr>
<tr>
<td></td>
<td>Ac__cab__baca__aba__acac</td>
</tr>
<tr>
<td>Alt1</td>
<td>aacb</td>
</tr>
<tr>
<td>Alt2</td>
<td>acbc</td>
</tr>
<tr>
<td>Alt3</td>
<td>babb</td>
</tr>
<tr>
<td>Alt4</td>
<td>bccb</td>
</tr>
<tr>
<td>3</td>
<td>Leaf is related to Sap in the same way as Bone is related.................?.............</td>
</tr>
<tr>
<td>Alt1</td>
<td>Fluid</td>
</tr>
<tr>
<td>Alt2</td>
<td>Blood</td>
</tr>
<tr>
<td>Alt3</td>
<td>Marrow</td>
</tr>
<tr>
<td>Alt4</td>
<td>Calcium</td>
</tr>
<tr>
<td>4</td>
<td>Select the lettered pair that has the same relationship as the original pair of words:</td>
</tr>
<tr>
<td></td>
<td>Rotate: Gyrate</td>
</tr>
<tr>
<td>Alt1</td>
<td>Putrefy: Reject</td>
</tr>
<tr>
<td>Alt2</td>
<td>Anachronism: Cubism</td>
</tr>
<tr>
<td>Alt3</td>
<td>Accolade: Criticism</td>
</tr>
<tr>
<td>Alt4</td>
<td>Absolve: Exonerate</td>
</tr>
<tr>
<td>5</td>
<td>Choose the alternative, which is similar to the given words:</td>
</tr>
<tr>
<td></td>
<td>Liver: Heart : Kidney</td>
</tr>
<tr>
<td>Alt1</td>
<td>Blood</td>
</tr>
<tr>
<td>Alt2</td>
<td>Nose</td>
</tr>
<tr>
<td>Alt3</td>
<td>Lung</td>
</tr>
<tr>
<td>Alt4</td>
<td>Urine</td>
</tr>
<tr>
<td>6</td>
<td>Spot the defective segment from the following:</td>
</tr>
<tr>
<td>Alt1</td>
<td>The more you read</td>
</tr>
<tr>
<td>Alt2</td>
<td>the more will you</td>
</tr>
<tr>
<td>Alt3</td>
<td>get to know</td>
</tr>
<tr>
<td>Alt4</td>
<td>about more things</td>
</tr>
</tbody>
</table>
7. Choose the meaning of the idiom/phrase from among the options given:

| Alt1 | a holiday               |
| Alt2 | a difficult time        |
| Alt3 | a fine day              |
| Alt4 | a wet day               |

8. The villagers plan to ------- the elections in protest.

| Alt1 | avoid          |
| Alt2 | ignore         |
| Alt3 | neglect        |
| Alt4 | boycott        |

9. Choose the option closest in meaning to the given word:

| Alt1 | vulgar     |
| Alt2 | perverse   |
| Alt3 | childish   |
| Alt4 | young      |

10. Choose the antonymous option you consider the best:

| Alt1 | fast      |
| Alt2 | sharp     |
| Alt3 | reliable  |
| Alt4 | lucid     |

11. In a Cricket tournament, each of the six teams will play every other team exactly once during the league phase. How many matches will be played during the league phase in total?

| Alt1 | 12  |
| Alt2 | 36  |
| Alt3 | 15  |
| Alt4 | 24  |

12. A walks 10 metres in front and 10 metres to the right. The every time turning to his left, he waks 5, 15 and 15 metres respectively. How far is he now from the starting point?

| Alt1 | 15 metres |
| Alt2 | 5 metres   |
| Alt3 | 10 metres  |
| Alt4 | 30 metres  |

13. The sum of the income of A and B is more than that of C and D taken together. The sum of the income of A and C is the same as that of b and D taken together. Moreover, A earns half as much as the sum of the income of b and D. Whose income is he highest?

| Alt1 | A   |
| Alt2 | B   |
14 Five boys A, B, C, D and E are seated on a bench. A is to the left of C. B is to the immediate right of D and there are two people between C and D. E is to the extreme right of the row. Who is exactly at the middle of this group?

Alt1 A
Alt2 B
Alt3 C
Alt4 D

15 A man is facing south. He turns 1350 in the anticlockwise direction and then 1800 in the clockwise direction. Which direction is he facing now?

Alt1 North East
Alt2 North West
Alt3 South East
Alt4 South West

16 Find the number which when added to itself 17 times becomes 126.

Alt1 13
Alt2 7
Alt3 9
Alt4 18

17 Ravi is exactly 9999 days old today. How old is he?

Alt1 27
Alt2 28
Alt3 26
Alt4 29

18 A Maths teacher usually has 21 students in his class. A, B & C are asleep. D & E are in the bathroom and the teacher has sent F & G to the principal’s office. How many students are left in the classroom?

Alt1 18
Alt2 19
Alt3 15
Alt4 17

19 JIPMER is coded as 589142; AIPMT is coded as 78910; Then JEE is coded as

Alt1 910
Alt2 544
Alt3 789
Alt4 914
20. Mr. Arvind drove 90 km at 30 kmph and then an additional 90 km at 45 kmph. What is his average speed over his 180 km?

| Alt1  | 37.5 kmph |
| Alt2  | 35 kmph   |
| Alt3  | 36 kmph   |
| Alt4  | 38 kmph   |

21. The region in a fold where the dip of the folded surface changes over small distance is

| Alt1  | Hinge zone |
| Alt2  | Limb       |
| Alt3  | Axial plane |
| Alt4  | Trough     |

22. Vein crustification is an example of

| Alt1  | Replacement type |
| Alt2  | Cavity type      |
| Alt3  | Metamorphic type |
| Alt4  | Sedimentary type |

23. Large bauxite deposits in India occur along

| Alt1  | Western ghats |
| Alt2  | Eastern ghats |
| Alt3  | West coast    |
| Alt4  | Indogangetic plains |

24. Sensitive High Resolution ion probe (SHRIP) is

| Alt1  | Age determining method by Zircon crystal |
| Alt2  | Type of remote sensing survey         |
| Alt3  | Type of film used for remote sensing survey |
| Alt4  | Type of mineral exploration method     |

25. Which one is the main constituent of gaseous formations of petroleum?

| Alt1  | Methane |
| Alt2  | Ethane  |
| Alt3  | Propane |
| Alt4  | Butane  |

26. Secondary extraction of petroleum

| Alt1  | occurs immediately after primary extraction |
| Alt2  | is less expensive than primary extraction  |
| Alt3  | uses solvents, water, or steam              |
| Alt4  | allows oil to be extracted to the last drop |

27. Mark the correct statement:

| Alt1  | Anticlinal folds produce inlier and synclinal folds produce outlier |
| Alt2  | Anticlinal folds produce outlier and synclinal folds produce inlier |
| Alt3  | Inlier can be produced by both synclinal and anticlinal fold       |
28. In a stress-strain binary diagram where the ordinate represents the increasing stress and the abscissa represents the increasing strain, a line almost parallel to the abscissa is characteristic of:

- Alt1 Plastic material.
- Alt2 Brittle material.
- Alt3 Elastoplastic material.
- Alt4 Ductile material.

29. The plunge and pitch are equal when the beds are:

- Alt1 Horizontal
- Alt2 Inclined
- Alt3 Inclined at 45°.
- Alt4 Vertical

30. When Uranium-238 emits α particles it decays in to:

- Alt1 Helium
- Alt2 Carbon
- Alt3 Thorium-234
- Alt4 Uranium-235

31. A good lubricant should have:

- Alt1 Pour point
- Alt2 Volatility
- Alt3 Viscosity index
- Alt4 Cloud point

32. Gamma ray log measurements are used to quantify:

- Alt1 Hydrocarbon saturation
- Alt2 Porosity of formation
- Alt3 Volume of shale in the formation
- Alt4 Density of the formation

33. Which of the following isotopes is most useful for dating very young wood and charcoal?

- Alt1 Rb-87
- Alt2 K-40
- Alt3 C-14
- Alt4 U-238

34. Which of the following mineral deposit is formed exclusively by surface geological processes?

- Alt1 Asbestos
- Alt2 Bauxite
- Alt3 Corundum
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
</table>
| 35. We know that the outer core is liquid because | Alt1 P waves pass through it  
Alt2 S waves pass through it  
Alt3 P waves cannot pass through it  
Alt4 S waves cannot pass through it |
| 36. Non systematic method of sampling is | Alt1 Grab  
Alt2 Chip  
Alt3 Muck  
Alt4 Channel |
| 37. The refractive index of ocean water | Alt1 Increases with salinity  
Alt2 Increases with salinity, Decreases with salinity  
Alt3 Increases with temperature  
Alt4 Decreases with temperature |
| 38. The spectral region of the electromagnetic radiation which passes through the atmosphere without much attenuation is known as | Alt1 Ozone hole  
Alt2 Atmospheric window  
Alt3 Ozone window  
Alt4 Black hole |
| 39. Corrections for diurnal variation in magnetic field is related to | Alt1 Temperature effect on magnetic system  
Alt2 Rotation of the earth  
Alt3 Changes in latitude and longitude  
Alt4 Weather effects |
| 40. Gravity corrections applied for differences in elevation of observation points is .......... correction. | Alt1 Latitudinal  
Alt2 Bouger  
Alt3 Terrain  
Alt4 Free air |
| 41. The formula for estimation of ore reserves is | Alt1 Volume X Density  
Alt2 Area X Thickness  
Alt3 Volume X Thickness |
42. An analytical concept where the analyzed data is either too high or too low compared to the expected composition is referred to as

Alt 1. Sensitivity
Alt 2. Drift
Alt 3. Noise
Alt 4. Bias

43. In the electromagnetic spectrum, .......... lies between ultraviolet and gamma ray

Alt 1. Infra-red
Alt 2. Visible rays
Alt 3. X-ray
Alt 4. Microwave

44. Analysis involving chemical analysis of select areas of samples is done by

Alt 1. XRF
Alt 2. DTA
Alt 3. EPMA
Alt 4. Mass spectrometer

45. A group of geostatistical techniques to interpolate value of a random field is

Alt 1. Simulation
Alt 2. Krigging
Alt 3. Ranging
Alt 4. Annealing

46. Beta particles produced during radioactive decay consists of

Alt 1. Neutrons
Alt 2. Protons
Alt 3. Electrons
Alt 4. Electromagnetic radiation

47. In a normal distribution, the distribution curve is

Alt 1. Bell shaped
Alt 2. Positively skewed
Alt 3. Negatively skewed
Alt 4. Straight line

48. What is the most Appropriate Form of the measured value of the speed of an object given as 6051.78 ± 30 m/s?

Alt 1. 6051.78 ± 30.00
Alt 2. (605178 × 10⁻²) ± (3×10⁻¹)
Alt 3. 6051.8 ± 30.0
Alt 4. 6052 ± 30
49. Everybody in the room shakes hand with everybody else. The total number of handshakes is 66. The total number of persons in the room is

<table>
<thead>
<tr>
<th>Alt1</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>12</td>
</tr>
<tr>
<td>Alt3</td>
<td>13</td>
</tr>
<tr>
<td>Alt4</td>
<td>14</td>
</tr>
</tbody>
</table>

50. Most of the Earth's bio-mass is provided by:

<table>
<thead>
<tr>
<th>Alt1</th>
<th>Mammals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>Plants</td>
</tr>
<tr>
<td>Alt3</td>
<td>Planktons</td>
</tr>
<tr>
<td>Alt4</td>
<td>Fish</td>
</tr>
</tbody>
</table>

51. Which of these is a scale for measuring moisture in the atmosphere?

<table>
<thead>
<tr>
<th>Alt1</th>
<th>Lactometer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>Barometer</td>
</tr>
<tr>
<td>Alt3</td>
<td>Hydrometer</td>
</tr>
<tr>
<td>Alt4</td>
<td>Hygrometer</td>
</tr>
</tbody>
</table>

52. The Earth’s lithosphere is made up of

<table>
<thead>
<tr>
<th>Alt1</th>
<th>Core and Mantle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>Crust and parts of Upper Mantle</td>
</tr>
<tr>
<td>Alt3</td>
<td>Entire Mantle</td>
</tr>
<tr>
<td>Alt4</td>
<td>Lower Mantle</td>
</tr>
</tbody>
</table>

53. What is the name given to the point on the Earth’s surface directly above the focus of an earthquake?

<table>
<thead>
<tr>
<th>Alt1</th>
<th>Hypocentre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>Ground Zero</td>
</tr>
<tr>
<td>Alt3</td>
<td>Epicentre</td>
</tr>
<tr>
<td>Alt4</td>
<td>Crust</td>
</tr>
</tbody>
</table>

54. When referring to earthquakes, what is a “Fault”?

<table>
<thead>
<tr>
<th>Alt1</th>
<th>An existing weakness in the Earth's crust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>An area of the earth's crust least likely to be affected by an earthquake</td>
</tr>
<tr>
<td>Alt3</td>
<td>A large highly visible crack in the earth's crust</td>
</tr>
<tr>
<td>Alt4</td>
<td>A crater in the earth's crust caused by a previous earthquake</td>
</tr>
</tbody>
</table>

55. What is the name of India’s only active volcano?

<table>
<thead>
<tr>
<th>Alt1</th>
<th>Narcondum Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt2</td>
<td>Deccan Traps</td>
</tr>
<tr>
<td>Alt3</td>
<td>Barren Island</td>
</tr>
<tr>
<td>Alt4</td>
<td>Reunion Island</td>
</tr>
</tbody>
</table>

56. An iceberg of density 0.9 g/cm³ and weighing 6.4 ton is freely floating in the water with density 1g/cm³. Approximately how much of the mass of iceberg will be above the water surface?
57 If the earthquake A has a Richter magnitude of 7.0 as compared with earthquake B's 6.0, then which of the following statements is true?

Alt1 A has a 10 times larger shaking amplitude than B
Alt2 A has a 1000 times larger shaking amplitude than B
Alt3 B is 0.01 times as intense than A
Alt4 A has a deeper focus

58 Two important processes in the accumulation of free oxygen in the early atmosphere were:

Alt1 Photosynthesis and degassing
Alt2 Photochemical dissolution and phototropism
Alt3 Photochemical dissociation and photosynthesis
Alt4 Phototropism and photographic dissolution

59 Water lowers the melting point of rocks because:

Alt1 It generates heat from radioactive isotopes
Alt2 Its polar nature breaks bonds in mineral crystals
Alt3 It increases low-pressure effects
Alt4 It heats the rocks to melting

60 Seasons on Earth occur because of:

Alt1 Disproportionate distribution of land mass in northern and southern hemispheres
Alt2 Tilt of the Earth's axis of rotation
Alt3 Changes in the specific heat of water and land mass and the wind circulation that is a consequence of the changes in the temperature
Alt4 Changes in the circulation of Green house gases

61 Which of the following best describes the origin of ocean tides on Earth?

Alt1 Tides are caused on the side of the Earth nearest to the Moon because the Moon's gravity attracts water and so water (than the land) is pulled up as it is less dense than rock.
Alt2 Tides are caused by the 23.5° tilt of the rotation axis to the ecliptic plane
Alt3 Tides are caused by the difference in the force of gravity exerted by the Moon across the sphere of the Earth.
Alt4 Tides are caused primarily by the gravitational force of the Sun

62 Volcanic Island Arcs are associated with:

Alt1 Transform plate boundaries
Alt2 Divergent plate boundaries
Alt3 Ocean-continent convergent plate boundaries
Alt4 Ocean-ocean convergent plate boundaries

63 North Atlantic waters are warmer than South Atlantic because:

Alt1 Northern hemisphere gets more of Sun's energy than southern hemisphere
Alt2 Part of warm water Brazil Current gets deflected towards the northern hemisphere
<table>
<thead>
<tr>
<th>Alt</th>
<th>Of western intensification of North Atlantic sub-tropical gyre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt4</td>
<td>Most industrial nations are located around North Atlantic</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>64</th>
<th>The oldest continental crust found on Earth is about 3.8 Ga old, whereas the oldest oceanic crust found in the present day oceans is only 200 Ma old. Why is this so?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt1</td>
<td>Oceanic crust did not form prior to 200 Ma</td>
</tr>
<tr>
<td>Alt2</td>
<td>Older oceanic crust amalgamated with continental crust</td>
</tr>
<tr>
<td>Alt3</td>
<td>Older oceanic crust has subducted back into mantle</td>
</tr>
<tr>
<td>Alt4</td>
<td>A giant meteor impact in the ocean destroyed all the older crust</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>65</th>
<th>Carbonatites are rocks made up of more than 50% by volume of carbonate minerals. They are believed to have formed by</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt1</td>
<td>Anatexis of marble</td>
</tr>
<tr>
<td>Alt2</td>
<td>Hydrothermal activity</td>
</tr>
<tr>
<td>Alt3</td>
<td>Metamorphism of limestone</td>
</tr>
<tr>
<td>Alt4</td>
<td>Melting of carbonate bearing mantle rocks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>66</th>
<th>Which one the following combination of rocks is the best source and reservoir rocks for petroleum?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt1</td>
<td>Marl-Sandstone</td>
</tr>
<tr>
<td>Alt2</td>
<td>Shale-Carbonate</td>
</tr>
<tr>
<td>Alt3</td>
<td>Shale-Fractured basalt</td>
</tr>
<tr>
<td>Alt4</td>
<td>Shale-Sandstone</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>67</th>
<th>Although Zr and Mn have similar ionic radii, they do not replace each other in minerals. Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt1</td>
<td>Zr is divalent while Mn is trivalent</td>
</tr>
<tr>
<td>Alt2</td>
<td>Zr is tetravalent while Mn is divalent</td>
</tr>
<tr>
<td>Alt3</td>
<td>Zr is a non-metal whereas Mn is a metal</td>
</tr>
<tr>
<td>Alt4</td>
<td>Zr and Mn are not equally abundant in nature</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>68</th>
<th>Why does in a gneissic complex anatexis begin first in those layers with the higher albite content compared to those with higher anorthite content?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt1</td>
<td>Albite contains less water compared to anorthite</td>
</tr>
<tr>
<td>Alt2</td>
<td>Anorthite has higher silica content than albite</td>
</tr>
<tr>
<td>Alt3</td>
<td>Aorthite has a lower melting point than albite</td>
</tr>
<tr>
<td>Alt4</td>
<td>Albite has a lower melting point than anorthite</td>
</tr>
</tbody>
</table>

<p>| 69 | Match the geologic/topographic features of column A with the tectonic regimes given in column B. |</p>
<table>
<thead>
<tr>
<th>COLUMN A</th>
<th>COLUMN B</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) The Himalaya</td>
<td>a) Accretionary Prism</td>
</tr>
<tr>
<td>b) Barren Island</td>
<td>b) Hot Spot Track</td>
</tr>
<tr>
<td>c) Hawaiian Islands</td>
<td>c) Strike-slip Fault</td>
</tr>
<tr>
<td>d) Andaman and Nicobar Islands</td>
<td>d) Island Arc</td>
</tr>
<tr>
<td>e) The San Andreas Fault</td>
<td>e) Collision zone</td>
</tr>
</tbody>
</table>

| Alt1                                          | a – a, b – b, c – c, d – d, e – e            |
| Alt2                                          | a – e, b – d, c – b, d – a, e – c            |
| Alt3                                          | a – c, b – a, c – d, d – e, e – b            |
| Alt4                                          | a – a, b – d, c – b, d – c, e – e            |

70 P-waves travel through solid, liquid and gas media, whereas S-waves do not travel through liquid and gas because of these media have

| Alt1                                          | Infinite compressibility                     |
| Alt2                                          | Zero shear modulus                           |
| Alt3                                          | Zero compressibility                         |
| Alt4                                          | Very high shear modulus                      |

71 A basaltic melt completely crystallizes to become solid rock at about 800°C. Just immediately after its crystallization, the polarity of the Earth’s magnetic field changed. In what way would that affect the magnetization of the minerals like magnetite and hematite?

| Alt1                                          | They will record the old polarity            |
| Alt2                                          | They will record the new polarity            |
| Alt3                                          | They will have a mixed signature             |
| Alt4                                          | They will not get magnetized                 |

72 Magnetic measurements have been made on a basalt flow at present at 47°N, 20°E. The angle of inclination of the remanent magnetization of this basalt is 30°. What can we infer about the site with respect to its magnetic paleo-latitude? (Hint: Tangent of magnetic inclination is equal to twice of the Tangent of magnetic latitude)

| Alt1                                          | The site has not moved since the formation of the basalt. |
| Alt2                                          | The site has moved 31° southward to its present position |
| Alt3                                          | The site has moved 31° northward to its present position  |
| Alt4                                          | The above information is not sufficient         |

73 You are hiking east across a sequence of rock layers that are tilted 45° to the east. At some point you cross a small linear depression and notice that there is a repetition of the layers that you just walked over. This repetition of rock layers provides evidence that you have crossed a:

| Alt1                                          | Strike-slip fault.                           |
| Alt2                                          | Normal fault                                |
74 The following figure is a schematic topographic profile of the Indian Ocean from South Africa to the mid-ocean ridge. The area labeled "Y" is called the:

- **Alternate 1**: Ocean trough
- **Alternate 2**: Ocean trench
- **Alternate 3**: Continental slope
- **Alternate 4**: Continental rise

75 The cross-section below depicts magnetized oceanic crust at a spreading center. The "+" symbol indicates normal magnetic bands; the "-" symbol indicates reversed magnetic bands. How fast are points C and D spreading apart from each other?

- **Alternate 1**: 2.27 centimeters/year
- **Alternate 2**: 4.54 centimeters/year
- **Alternate 3**: 9.09 centimeters/year
- **Alternate 4**: 18.18 centimeters/year

76 The following figure is a schematic illustration of three subduction zones A, B and C. Which of these subduction zones will have the widest arc-trench gap?
After examination of the geological cross-section below, give the chronological order, from oldest to youngest, of the events indicated by letters A through F. The events are: Sedimentary Rock Unit A; Sedimentary Rock Unit B; Granite Intrusion C; Dike D; Sedimentary Rock Unit E; Fault F; Sedimentary Rock Unit G. The inset depicts an enlarged portion of rock unit B showing graded beds.

Oldest © Youngest

Flat-topped types of seamounts are called as

Submarine volcanoes

Guyots

Groynes
79. The specific gravity of a powdered mineral can be determined with the help of:
   - [Alt1] Chemical balance
   - [Alt2] Pycnometer
   - [Alt3] Jolly’s spring balance
   - [Alt4] Walker’s Steel Yard

80. Find the odd man out:
   - [Alt1] Lamination
   - [Alt2] Slaty cleavage
   - [Alt3] Schistosity
   - [Alt4] Foliation

81. Stromatolites are:
   - [Alt1] Green algae
   - [Alt2] Blue algae
   - [Alt3] Organo-sedimentary structures
   - [Alt4] Sedimentary structure

82. The most distributed sedimentary rock seen in the crust is:
   - [Alt1] Shale
   - [Alt2] Sandstone
   - [Alt3] Limestone
   - [Alt4] Conglomerate

83. The average gravitational force of the earth is:
   - [Alt1] 98 cm/s^2
   - [Alt2] 980 cm/s^2
   - [Alt3] 9800 cm/s^2
   - [Alt4] 980 cm/s

84. The total magnetic field strength is weakest at:
   - [Alt1] 0° latitude
   - [Alt2] 90° latitude
   - [Alt3] 30° N – 30°S latitude
   - [Alt4] 60° N – 60°S latitude

85. Which of the following listed instruments is NOT used in geochemical prospecting:
   - [Alt1] Atomic Absorption Spectrophotometer
   - [Alt2] Emission Spectrograph
   - [Alt3] Flame photometer
   - [Alt4] Optical microscope

86. The Geological Mapping undertaken by GSI is on the scale of:
   - [Alt1] 1:50,000
   - [Alt2] 1:40,000
<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>87.</td>
<td>Minerals in which a country has total inadequacy and depend upon foreign sources for its needs are described as:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Strategic minerals</td>
</tr>
<tr>
<td></td>
<td>Alt2: Critical minerals</td>
</tr>
<tr>
<td></td>
<td>Alt3: Essential minerals</td>
</tr>
<tr>
<td></td>
<td>Alt4: Expendable minerals</td>
</tr>
<tr>
<td>88.</td>
<td>The type of dam preferred where the river section is wide and the foundation is unsound is:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Gravity dam</td>
</tr>
<tr>
<td></td>
<td>Alt2: Embankment dam</td>
</tr>
<tr>
<td></td>
<td>Alt3: Arch dam</td>
</tr>
<tr>
<td></td>
<td>Alt4: Multiple arch dam</td>
</tr>
<tr>
<td>89.</td>
<td>Exfoliation is a form of:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Physical weathering</td>
</tr>
<tr>
<td></td>
<td>Alt2: Chemical weathering</td>
</tr>
<tr>
<td></td>
<td>Alt3: Biochemical weathering</td>
</tr>
<tr>
<td></td>
<td>Alt4: Mass wasting</td>
</tr>
<tr>
<td>90.</td>
<td>The most suitable environment for the preservation of fossils is described as:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Terrestrial</td>
</tr>
<tr>
<td></td>
<td>Alt2: Lacustrine</td>
</tr>
<tr>
<td></td>
<td>Alt3: Fluvial</td>
</tr>
<tr>
<td></td>
<td>Alt4: Marine</td>
</tr>
<tr>
<td>91.</td>
<td>Andalusite and sillimanite crystallise in:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Monoclinic system</td>
</tr>
<tr>
<td></td>
<td>Alt2: Triclinic system</td>
</tr>
<tr>
<td></td>
<td>Alt3: Orthorhombic system</td>
</tr>
<tr>
<td></td>
<td>Alt4: Hexagonal system</td>
</tr>
<tr>
<td>92.</td>
<td>What are the most significant indicator of ancient climate:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Radioactivity of the deposits.</td>
</tr>
<tr>
<td></td>
<td>Alt2: Type of cementing material.</td>
</tr>
<tr>
<td></td>
<td>Alt3: Order of superposition of beds.</td>
</tr>
<tr>
<td></td>
<td>Alt4: Type and distribution of fossils.</td>
</tr>
<tr>
<td>93.</td>
<td>Metamorphism is described as:</td>
</tr>
<tr>
<td></td>
<td>Alt1: Solid - State reconstitution</td>
</tr>
<tr>
<td></td>
<td>Alt2: Solid - liquid state reconstitution</td>
</tr>
<tr>
<td></td>
<td>Alt4: Liquid - state reconstitution</td>
</tr>
</tbody>
</table>
94. Mineralogical rearrangement of high temperature assemblage to a low temperature one takes place then the metamorphism is known as

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>Puro metamorphism</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>Contact metamorphism</td>
</tr>
<tr>
<td>Alt 3</td>
<td>Retrograde metamorphism</td>
</tr>
<tr>
<td>Alt 4</td>
<td>Plutonic metamorphism</td>
</tr>
</tbody>
</table>

95. In geological studies, a dome shaped intrusion is called a

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>volcanic neck</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>laccolith</td>
</tr>
<tr>
<td>Alt 3</td>
<td>nueeardente</td>
</tr>
<tr>
<td>Alt 4</td>
<td>caldera</td>
</tr>
</tbody>
</table>

96. Cirrus clouds are:

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>rain clouds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>thick and fleecy</td>
</tr>
<tr>
<td>Alt 3</td>
<td>made of ice crystals</td>
</tr>
<tr>
<td>Alt 4</td>
<td>low cloud layers</td>
</tr>
</tbody>
</table>

97. In studies of the surface of the earth, a reverse fault having a dip between 10 and 45 degrees is known as a:

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>thrust fault</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>normal fault</td>
</tr>
<tr>
<td>Alt 3</td>
<td>strike-slip fault</td>
</tr>
<tr>
<td>Alt 4</td>
<td>neither of these</td>
</tr>
</tbody>
</table>

98. The B-horizon of a pedalfer soil is noted for its accumulation of

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>carbonate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>nitrogen</td>
</tr>
<tr>
<td>Alt 3</td>
<td>humus</td>
</tr>
<tr>
<td>Alt 4</td>
<td>oxides</td>
</tr>
</tbody>
</table>

99. Which of the following is the most important chemically-active fluid involved in the formation of rocks?

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>hydrochloric acid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>sulfuric acid</td>
</tr>
<tr>
<td>Alt 3</td>
<td>water</td>
</tr>
<tr>
<td>Alt 4</td>
<td>methane</td>
</tr>
</tbody>
</table>

100. On the Phanerozoic time scale, which of the following geologic periods occurred approximately 65 to 136 million years ago?

<table>
<thead>
<tr>
<th>Alt 1</th>
<th>Cambrian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alt 2</td>
<td>Ordovician</td>
</tr>
<tr>
<td>Alt 3</td>
<td>Carboniferous</td>
</tr>
<tr>
<td>Alt 4</td>
<td>Cretaceous</td>
</tr>
</tbody>
</table>
Dimension of a boudin measured in transverse section and parallel to the layering is referred as:

- Thickness
- Separation
- Width
- Length

A tonalite formed 2600 Ma ago is made up of quartz, plagioclase and biotite. $^{87}\text{Sr} / ^{86}\text{Sr}$ 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

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

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

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

Shadow zone for seismic $S$ wave is:

- $90^\circ - 180^\circ$
- $103^\circ - 180^\circ$
- $90^\circ - 120^\circ$
6 of 100
173 PU-2016-306_E
Which of the following seismic waves has highest velocity:-
- S-wave
- P-wave
- Rayleigh waves
- Love waves

7 of 100
125 PU-2016-306_E
Ganitic igneous rocks are generally characterized with following texture:-
- Allotriomorphic
- Hypidimorphic
- Ophitic
- 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?
- Fractional crystallization of plagioclase
- Addition of plagioclase into dacite magma
- Fractional crystallization of pyroxene
- 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:-
- Neoproterozoic
- Mesozoic
- Permo-carboniferous
- 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 _________.
- sidelaping photos
- panoramic photos
11 of 100
215 PU-2016-306_E
The minerals glaucophane and jadeite are indicative of:
- high-P and high-T
- low-P and high-T
- high-P and low-T
- low-P and low-T

12 of 100
153 PU-2016-306_E
Chennai fall in seismic zone _________.
- IV
- II
- III
- 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 $^{14}$C decay is 5560 years. $^{14}$C 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
Which of the following meteorite would more clearly show abundances of elements varying according to the condensation temperature?

- martian meteorites
- pallasites
- chondrites
- lunar meteorites

The First type of remote sensing were:

- sketches from a French Map Maker
- aerial photos
- paintings from an air balloon
- TV remote controls

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

- Finite difference method
- Finite element method
- Mesh centered method
- Node centered method

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

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

The flow with large viscous forces and with small velocities and momentum where no eddies are developed is termed as:
Stream flow
Viscous flow
Laminar flow
Turbulent flow

Visibility of joint surface features increases with:
- Decreasing abundance of phyllosilicate
- Increasing grain size
- Increasing abundance of phyllosilicate
- Decreasing grain size

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

Which one of the following mineral is uniaxial negative in optical properties?
- Zircon
- Quartz
- Nepheline
- Rutile

The presence of 85 East ridge in the bay of Bengal region is first identified based on the study of:
- bathymetry
- magnetic
- gravity
- seismic
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
- Island arc

27 of 100

162 PU-2016-306_E

The water that has been out of contact with the atmosphere is known as:

- 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
- The upper crust has higher concentrations of K, Rb, U and Th
- 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.

- 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
- 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?

- 12
- 224
- 32
- 24

35 of 100
Radar is very beneficial because it can penetrate thick:

- sand and very dry objects
- clouds and moisture
- walls and concrete
- steel and wood

36 of 100

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

- melt of its composition
- melt of different composition and forsterite
- melt of different composition and quartz
- melt of different composition and periclase

37 of 100

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

- 2
- 3
- 6
- 4

38 of 100

Hydrothermal vents formed due to:

- wind driven circulation
- ocean upwelling
- thermo haline circulation
- hydrothermal circulation

39 of 100

Hardness of water is due to the presence of which pair of ions.

- Cl and SO$_4$
- Ca and Mg
- Na and K
- NO$_3$ and PO$_4$

40 of 100
During partial melting of mantle which one of the following elements behave as incompatible element?

- Cr
- Ni
- Zr
- Co

Which of the following rocks is completely unfoliated?

- Schist
- Mylonite
- Slate
- granofels

Which one of the following mineral is optically biaxial?

- Dolomite
- Calcite
- Aragonite
- Siderite

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%
- 3%
- 0.007%

Incongruent melting behavior is shown by:

- albite
- enstatite
- nepheline
- olivine
Aulacogen type of sedimentary basins form due to:
- Strike slip faulting along the margin of continent
- Subsidence due to normal faulting
- Thrusting in a collision related mountain building process
- Failing of one of the rifts of triple-rift junction

Bouma type beds are commonly associated with:
- Shallow sea deposit
- Deep sea deposits
- Lacustrine deposits
- Fluvial deposits

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

The volume of voids in a formation when interconnected and transmits flow is defined as:
- Hydraulic conductivity
- Effective porosity
- Permeability
- Total porosity

What causes ice ages?
- 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
50 of 100
185 PU-2016-306_E
The number of space lattices and point groups present in all types of crystals are ________ and ________ respectively.
☐ 14 & 32
☐ 30 & 232
☐ 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 = ΔH/ΔV
☐ T = ΔS/ΔV
☐ T = ΔG/ΔS
☐ T = ΔH/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:
☐ Strain and time
☐ Stress rate and time
☐ Strain rate and time
☐ Stress and time

54 of 100
145 PU-2016-306_E
If axial plane thickness ratio (T/45°) of a fold is 2, then the corresponding orthogonal thickness ratio (t/45°) will be:
☐ 1.6
☐ 1.4
☐ 1
Diamond deposits are associated with:
- Granitic intrusions
- Conglomerate
- Ultramafic lava flows
- Kimberlite pipes

GIS Maps can:
- Help us visualize information
- Help us compare information
- Tell us where something is
- All of the above

Both temperature and deviatoric stress are important agents in case of __________ metamorphism.
- Dynamic
- Dynamo-thermal
- Thermal
- Burial

A mineral gives X-ray diffraction peak at 2θ=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

What are the major minerals present in peridotte?
- pyroxene, biotite and quartz
- pyroxene, plagioclase and garnet
amphibole, biotite and plagioclase
olivine, pyroxene and spinel

60 of 100
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
- Cyprus-type copper-zinc
- Sudbury copper-nickel
- 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
- 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
- Rhenium
Lithification is the **primary** process in the formation of one of the following rocks.
- conglomerate
- gneiss
- schist
- marble

One of the following is not a silicate ore mineral.
- lepidolite
- braunite
- beryl
- leucoxene

Which of the following is a local base level?
- lake
- point bar
- ocean
- floodplain

Bays and headlands are generally found in shoreline of:-
- emergence
- submergence
- neutral
- faulted

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

Which type of coiling is rare in gastropoda?
- trochospiral
- dextral
- armestral
- sinistral

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

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

Flat topped sea mounts are termed as:-
- monodnock
- inselberg
- guyots
- guyots

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
224 PU-2016-306_M
Most limestones have a large component of calcite that was originally extracted from seawater by:-
lithification
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:-
deposition of ore from a hydrothermal fluid
dispersion of metal in a rock
leaching 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
Rainfall decreased and then increased again
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:-
invasion
regression
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%
- 0.001%

81 of 100

276 PU-2016-306_D

Which of the following magmas contain high water content?

- granite and granodiorite
- andesite and komatiite
- basalt and andesite
- 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
- 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
- optimal liberation of ore minerals from gangue minerals
- 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
- 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 \( \varepsilon = 1.685 \) and \( \omega = 1.670 \) and path difference = 1500 nm.
- 0.10 mm
- 0.075 mm
- 0.03 mm
- 0.15 mm

87 of 100

265 PU-2016-306_D
Jigging is a process in which minerals are separated according to their:-
- magnetic susceptibility
- 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.
- Sudbury nickel
- Podiform chromite
- Unconformity type uranium
- Titaniferous magnetite deposit in gabbro
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

One of the following is NOT a Kimberlite field.

- Lattavaram
- Lambapur
- Panna
- Wajrakarur

Geothermal gradient is lowest in following tectonic setting:

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

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:

- Alluvial fan deposit
- Braided river deposit
- Meandering river deposit
- Anastomosed river deposit

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

- Chiastolite
- Cristobalite
- Chrysotile
94 of 100
273 PU-2016-306_D
K⁺ ions occupy which site in K-rich amphibole?
- A site
- M2 site
- M1 site
- M3 site

95 of 100
296 PU-2016-306_D
The average thickness of the continental crust is about:
- 35-40 km
- 100-200 km
- 1000-2000 km
- 5-10 km

96 of 100
261 PU-2016-306_D
"Green marble" mined from Rishabdev area of Aravalli fold belt is:
- serpentinised peridotite
- actinolite-bearing dolomitic marble
- diopside-bearing dolomitic marble
- epidote-bearing dolomitic marble

97 of 100
269 PU-2016-306_D
Dolostone hosted uranium deposit occurs at:
- Tummalapalle
- Gogi
- Jaduguda
- 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?
- plagioclase
- pyroxene
What would be the pressure at the base of 35 km thick granitic crust of a constant density of 2.8 g/cm³?

- 1 GPa
- 3.5 GPa
- 0.96 GPa
- 9.6 GPa

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

- Cu-Pb-Zn
- Wollastonite
- Cr-Ni-Ti
- Fe-Sn-W
Khondalites are characteristic rocks of:-
- Greenschist facies
- Amphibolite facies
- Granulite facies
- Eclogite facies

According to Richter scale of magnitude, an increase of 2 in magnitude of earthquake causes the increase in release of energy by:-
- 1000 times
- 10,000 times
- 10 times
- 100 times

Epicentral distance of 180° equals to approximately how many kilometers on the surface of the earth. (radius of the earth is 6371 km)
- 18000 km
- 40010 km
- 20005 km
- 180 km

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 )?
- 97.336
- 31.1
- 21.16
- 62.3

Glacial striations on an outcrop trend NE-SW. The direction of ice movement was:-
- NW to SE
- NE to SW
- SW to NE
- could be either NE or SW
Suture Zone present in an orogenic belt is characterized by:
- Normal faults
- Horst and graben structures
- Oceanic crustal rocks and arc-trench sediments
- Molasse sediments

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%
- 10%
- 1%
- 0.1%

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

The isostatic gravity anomaly over a topographic high is positive. It means:
- Isostatic overcompensation
- Isostatic undercompensation
- Presence of deep root zone
- Complete isostatic compensation

An example of a Pyroxene in which more than two thirds of the M2 sites are occupied by Ca cations:
- Jadeite
- Diopside
- Aegirine
- Enstatite
Lithification is the primary process in the formation of one of the following rocks.

- schist
- marble
- conglomerate
- gneiss

Glaucophane is:

- a calcic amphibole
- an alkali amphibole
- a magnesium amphibole
- a white mica

The interfacial angle between the faces of tetrahedron is:

- 90°
- 109° 28' 16"
- 54° 44' 8"
- 45°

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

- Zircon
- Nepheline
- Rutile
- Quartz

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

- Sillimanite
- Garnet
- Cordierite
- Kyanite
16 of 100
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.
- 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
- 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:-
- Illite
- Smectite
- Kaolinite
- Vermiculite
21 of 100
105 PU_2015_306_New
Seismic stations around the world have recorded a 'push' as the first motion. It means:
- a double-couple source
- an underground explosion
- strong P-wave arrival
- 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.
- 30 & 232
- 32 & 230
- 14 & 32
- 16 & 30

23 of 100
111 PU_2015_306_New
Aulacogen type of sedimentary basins form due to:-
- Thrusting in a collision related mountain building process
- Subsidence due to normal faulting
- Strike slip faulting along the margin of continent
- Failing of one of the rifts of triple-rift junction

24 of 100
121 PU_2015_306_New
Refractive indices of olivine increase:-
- with increase in Fayalite content
- with increase in size
- 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
- superposition
- regression
- transgression
Out of the three polymorphs of aluminum silicates:

- Sillimanite is the high temperature polymorph while andalusite is high pressure
- Kyanite is the high temperature polymorph while sillimanite is high pressure
- Andalusite is the high temperature polymorph while sillimanite is high pressure
- Sillimanite is the high temperature polymorph, while Kyanite is high pressure

What are the major minerals present in peridotite?

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

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

- chemical weathering
- inorganic chemical reactions
- evaporation
- lithification

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

- 700°C
- 900°C
- 1200°C
- 1700°C

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

- tetrahedron
- diploid
- octahedron
- pyramid
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 advanced and then retreated again
- The sea retreated and then advanced again
- The climate changed from warm to cold and back
- Rainfall decreased and then increased again

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

- Mudrocks
- Black shale
- Dolomite
- Red sandstone

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:-

- 0.03%
- 0.007%
- 1%
- 3%

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

- melt of different composition and periclase
- melt of its composition
- melt of different composition and forsterite
- melt of different composition and quartz

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

- 0.75 Å
- 3.0 Å
- 0.5 Å
- 1.5 Å
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A mature sedimentary rock would exhibit which of these features?

- A wide variety of particle sizes
- Angular mineral fragments
- Stable mineral fragments
- Unstable mineral fragments

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

- subduction of Atlantic oceanic plate
- movement of Atlantic oceanic plate over a hot-spot
- subduction of Pacific plate
- movement of Pacific oceanic plate over a hot-spot

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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)

- $T = \frac{\Delta H}{\Delta V}$
- $T = \frac{\Delta G}{\Delta S}$
- $T = \frac{\Delta S}{\Delta V}$
- $T = \frac{\Delta H}{\Delta S}$

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

- Pyroxene and plagioclase
- Hornblende and plagioclase
- Hornblende and garnet
- Pyroxene and quartz

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What causes ice ages?

- no definite cause has been conclusively proven
- variations in sun’s heat output
- variations in the earth’s orbit
- variations in sunlight reflected by the earth
What is the appropriate crystal section to determine the extinction angle of a monoclinic crystal?

- (110)
- (111)
- (010)
- (100)

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

- Less viscous magma with high volatile content
- Less viscous magma low with volatile content
- Viscous magma and poor in volatile content
- Viscous magma with high % of volatile content

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

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

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

- Chlorite zone-Biotite zone-Cordierite zone-Andalusite zone-Sillimanite zone
- Chlorite zone-Biotite zone-Garnet zone-Staurolite zone-Kyanite zone-Sillimanite zone
- Chlorite zone- Cordierite zone-Biotite zone- Andalusite zone-Sillimanite zone
- Chlorite zone-Biotite zone-Staurolite zone-Garnet zone-Kyanite zone-Sillimanite zone

Well-sorted sediments contain:-

- a wide size range of particles
- abundant clay minerals
- a limited size range of particles
- only pebbles
Which of the following seismic waves has highest velocity?

- S-wave
- P-wave
- Love waves
- Rayleigh waves

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

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

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
- a axis which is less in orthorhombic than in monoclinic

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.

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

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

- Out wash sands
- Till
- Varved clay
- Loess
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

The minerals glaucophane and jadeite are indicative of:

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

Which of the following rocks is completely unfoliated?

- Slate
- Schist
- Mylonite
- Granofels

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

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

- Ni
- Co
- Cr
- Zr
Which one of the following rocks is made up of > 90% of cummulate minerals?

- harzburgite
- tonalite
- lherzolite
- dunite

Kimberlite magmas are generated below:

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

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

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

- tholeiitic
- carbonatites
- calc-alkline
- peralkaline

Which one of the following mineral is optically biaxial?

- Siderite
- Dolomite
- Aragonite
- Calcite
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
- Unconformity-type uranium
- Redbed-type copper

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

- strength and height of tides
- volume of sediment carried by the river
- intensity of wave action on the shore
- none of the above

Which of the following is a local base level?

- point bar
- floodplain
- lake
- ocean

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

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

- mature
- youthful
- meandering
- braided
PGE refers to a group of six precious metals including:
- Pt-Pd-Ru-Ir-Os
- Pt-Pd-Re-Os-Au-Ag
- Pt-Pd-Rh-Ru-Re-Os
- Pt-Pd-Re-Os-Rh-Ru

Magmatic sulphide deposits are hosted by:
- anorthosite
- nepheline syenite-carbonatite
- granite-granodiorite
- mafic-ultramafic rocks

The Ordovician period is known as the age of:
- corals
- brachiopoda
- crinoids
- graptolites

One of the following group is called as rare metals:
- Ce-Nd-Sm
- Sn-W-Mo
- Cu-Pb-Zn
- Li-Be-Nb

When did the Trilobite disappear from the Earth?
- End of Permian
- Devonian
- End of Cretaceous
- Carboniferous
Which of the following controls flow velocity in streams?
- gradient
- depth
- channel shape
- all of these

Trellis drainage is most likely to develop on:
- horizontal layers of volcanic rocks
- granite
- natural levees
- tilted sedimentary rock layers

One of the following is not a silicate ore mineral:
- leucoxene
- lepidolite
- braunite
- beryl

Which type of coiling is rare in gastropoda?
- sinistral
- trochosiral
- dextral
- armestral

Flat topped sea mounts are termed as:
- guyots
- mesa
- monodnock
- inselberg
The 3 domains involved in all the ore forming processes are:

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

A stream can lengthen its channel by:

- hydraulic action
- headward erosion
- downcutting
- runoff

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.

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

One of the following is a magmatic sulphide deposit:

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

Bays and headlands are generally found in shoreline of:

- neutral
- faulted
- emergence
- submergence
A basic assumption in the interpretation of fluid inclusions is that these are:

- isobaric
- isothermal
- isochoric
- isochemical

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

- Cerium
- Platinum
- Niobium
- Rhenium

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

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

One of the following is a hydrothermal deposit:

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

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
- QPC - Unconformity - Sandstone
- Sandstone - Unconformity - QPC
Degree of fill of a fluid inclusion refers to the relative proportion of:
- liquid + vapour phases to the total volume of fluid inclusion
- vapour phase to the total volume of fluid inclusion
- liquid phase to the total volume of fluid inclusion
- daughter crystal to the total volume of fluid inclusion

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

Boiling of fluid, mixing of fluids and fluid-rock interaction are the important processes responsible for:
- transport of metal by a fluid phase
- leaching of metal from source rock
- deposition of ore from a hydrothermal fluid
- dispersion of metal in a rock

One of the following is the characteristic mineral assemblage of greisen:
- Quartz-muscovite-topaz-fluorite
- Quartz-microcline-sodic plagioclase
- Quartz-orthoclase-sodic plagioclase
- Quartz-microcline-sodic plagioclase-fluorite

Jigging is a process in which minerals are separated according to their:
- density
- size
- water-adhering or air-adhering character
- magnetic susceptibility
Apart from lode gold deposits, gold is produced in India from:

- copper concentrate
- lead concentrate
- chromite
- uranium ore

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

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

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

- chiastolite
- chrysolite
- chrysotile
- cristobalite

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

- rutile
- chromite
- ilmenite
- monazite

Asbestos deposits in Pulivendla area of Cuddapah basin occur:

- within dolostone
- at the contact zone between shale and basic dyke
- at the contact zone between dolostone and basic dyke
- within shale
In mineral processing plants, run-off mine is reduced in size by crushing and grinding for:
- classification of run-off mine according to size
- optimal liberation of ore minerals from gangue minerals
- separation of gangue minerals
- concentration of ore minerals

Typical profile of a lateritic bauxite deposit consists of:
- 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

“Green marble” mined from Rishabdev area of Aravalli fold belt is:
- serpentinised peridotite
- diopside-bearing dolomitic marble
- actinolite-bearing dolomitic marble
- epidote-bearing dolomitic marble

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

Dolostone hosted uranium deposit occurs at:
- Gogi
- Jaduguda
- Tummalapalle
- Domiasiat