Topic:- GEO MPHIL S2

1) Why do conjugate faults show opposite senses of slip?

Select the correct explanation from below:

[Question ID = 2153]

1. Orientation of stress axes (σ_1, σ_2, and σ_3) are opposite for the two conjugate fault planes

   [Option ID = 8606]
2. σ_2 becomes vertical for one of the two conjugate planes

   [Option ID = 8607]
3. both the fault planes are oriented symmetrically with respect to σ_1, but in opposite sense

   [Option ID = 8608]
4. σ_1 and σ_2 axes swap their position after some amount of deformation

   [Option ID = 8609]

Correct Answer :-

- both the fault planes are oriented symmetrically with respect to σ_1, but in opposite sense

  [Option ID = 8608]

2) In simple shear, the angle between the longest (λ_1) axis of the finite strain ellipsoid and the shear direction (θ) varies with the amount of shear strain (γ) according to which of the following relationships?

[Question ID = 2154]

1. θ increases as γ increases

   [Option ID = 8610]
2. θ decreases as γ increases

   [Option ID = 8611]
3. θ remains constant as γ increases

   [Option ID = 8612]
4. these two parameters have no predictable relationship

   [Option ID = 8613]

Correct Answer :-

- θ decreases as γ increases

  [Option ID = 8611]

3) In a multilayered rock, the viscosity ratio of the competent and incompetent layers (μ_1/μ_2) is high and the packing distance between layers (n) is low. What is the most likely structure that will develop in such a system under layer-parallel shortening?

[Question ID = 2155]

1. Kink fold

   [Option ID = 8614]
2. Cuspate-lobate fold

   [Option ID = 8615]
3. Ptygmatic fold

   [Option ID = 8616]
4. no folding - only homogeneous thickening of layers

   [Option ID = 8617]

Correct Answer :-

- Kink fold

  [Option ID = 8614]

4) Brittle deformation of rocks is favoured at a shallow depth, whereas ductile flow takes place at greater depth because

[Question ID = 2156]

1. brittle deformation of rocks leads to increase in volume [Option ID = 8618]
2. ductile deformation is favoured only in rocks with smaller grain size [Option ID = 8619]
3. ductile deformation can take place only in presence of a fluid phase [Option ID = 8620]

4. [illegible] deformation can occur only at high temperature [Option ID = 8621]

Answer :-

- brittle deformation of rocks leads to increase in volume [Option ID = 8621]

5) Which of the following shows a correct sequence of recrystallization mechanism in quartz with increasing temperature?

[Question ID = 2157]

1. Subgrain Rotation - Bulging - Grain Boundary Migration

   [Option ID = 8622]
2. Bulging - Grain Boundary Migration - Subgrain Rotation

   [Option ID = 8623]
3. Bulging - Subgrain Rotation - Grain Boundary Migration

   [Option ID = 8624]
4. None of these

   [Option ID = 8625]

Correct Answer :-

- Bulging - Subgrain Rotation - Grain Boundary Migration

  [Option ID = 8624]

6) Trapezoid shaped boudins are characteristically found in

[Question ID = 2158]

1. extension fracture boudinage [Option ID = 8626]
2. symmetric shear fracture boudinage [Option ID = 8627]
3. asymmetric shear fracture boudinage [Option ID = 8628]
4. post-boudinage deformation [Option ID = 8629]

Correct Answer :-

- symmetric shear fracture boudinage [Option ID = 8627]

7) If, in a folded layered sequence, thinner layers show smaller folds and thicker layers show larger folds, the fold structure will be called:

[Question ID = 2159]

1. disharmonic fold [Option ID = 8630]
2. arrowhead fold [Option ID = 8631]
3. polyclinal fold [Option ID = 8632]
4. fan fold [Option ID = 8633]

Correct Answer :-

- disharmonic fold [Option ID = 8630]

8) Geostrophic currents

[Question ID = 2160]

1. flow inside the mantle [Option ID = 8634]
2. are controlled by a balance between pressure gradient force and Coriolis deflection [Option ID = 8635]
3. are controlled by ocean's tropic levels [Option ID = 8636]
4. generated due to tidal action of moon [Option ID = 8637]

Correct Answer :-

- are controlled by a balance between pressure gradient force and Coriolis deflection [Option ID = 8635]

9) Porosity of a formation is summation of:

[Question ID = 2161]

1. Hydraulic conductivity and Transimissivity [Option ID = 8638]
2. Specific storage and Specific retention [Option ID = 8639]
3. Specific retention and Specific yield [Option ID = 8640]
4. Hydraulic conductivity & Transmissivity [Option ID = 8641]

Correct Answer :-

- Specific retention and Specific yield [Option ID = 8640]

10) Conodonts are useful microfossils in the biostratigraphic subdivision of

[Question ID = 2162]

1. Archean [Option ID = 8642]
2. Cenozoic [Option ID = 8643]
3. Cretaceous [Option ID = 8644]
4. Paleozoic [Option ID = 8645]

Correct Answer :-

- Paleozoic [Option ID = 8645]

$\delta^{18}O$ of Mixed layer planktic foraminiferal test formed during a glacial period would be

[Question ID = 2163]

1. Higher compared to that formed during interglacial period

   [Option ID = 8646]
2. Equal to that of formed during interglacial period

   [Option ID = 8647]
3. Lower compared to that formed during interglacial period

   [Option ID = 8648]
4. None of these

   [Option ID = 8649]

Correct Answer :-

- Higher compared to that formed during interglacial period

  [Option ID = 8646]

12) Why was Paleomagnetism so important in discovering plate tectonics?

[Question ID = 2164]

1. it illustrated the location of the North Pole [Option ID = 8650]
2. It illustrated sea floor spreading [Option ID = 8651]
3. it allowed measurement of mountain building rates [Option ID = 8652]
4. It allowed the depth of the oceans to be measured [Option ID = 8653]

Correct Answer :-

- It illustrated sea floor spreading [Option ID = 8651]

13) A polar wandering curve:

[Question ID = 2165]

1. shows that the magnetic poles wandered relative to fixed continents [Option ID = 8654]
2. shows that the rotational poles wandered to fixed continents [Option ID = 8655]
3. shows that the continents wandered relative to generally-fixed pole positions [Option ID = 8656]
4. is a graph of the Mercalli Index [Option ID = 8657]

Correct Answer :-

- shows that the continents wandered relative to generally-fixed pole positions [Option ID = 8656]

14) The 'Lehmann discontinuity' in the Earth is identified by

[Question ID = 2166]

1. 5-6% decrease in P and S wave velocity [Option ID = 8658]
2. 3-4% increase in P and S wave velocity [Option ID = 8659]
3. 5% decrease in density [Option ID = 8660]
4. 5% increase in S wave velocity [Option ID = 8661]

Correct Answer :-

- 3-4% increase in P and S wave velocity [Option ID = 8659]

15) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A : Assemblage zones are not good for intercontinental correlation.
Reason R : They are very much environmentally controlled.

In light of the above statements, choose the correct answer from the options given below

[Question ID = 2167]

1. R explains A [Option ID = 8662]
2. R does not explain A [Option ID = 8663]
3. A and R are false [Option ID = 8664]
4. R is false [Option ID = 8665]

Correct Answer :-

- R does not explain A [Option ID = 8663]

16) In steady state/equilibrium groundwater flow situation, the water table head during pumping:

[Question ID = 2168]

1. Does not change with time [Option ID = 8666]
2. Changes with time [Option ID = 8667]
3. Changes without time [Option ID = 8668]
4. Remains constant [Option ID = 8669]

Correct Answer :-

- Does not change with time [Option ID = 8666]

u. In unconfined aquifer Storage coefficient is approximately equal to:
[Question ID = 2169]
[illegible] [Option ID = 8670]
2. Intrinsic permeability [Option ID = 8671]
3. Specific retention [Option ID = 8672]
4. Specific yield [Option ID = 8673]

Correct Answer :-
- Specific yield [Option ID = 8673]

18) Preservation of fossils represent
[Question ID = 2170]
1. Stagnation deposits [Option ID = 8674]
2. Obrution deposits [Option ID = 8675]
3. Concentration deposits [Option ID = 8676]
4. Conservation traps [Option ID = 8677]

Correct Answer :-
- Conservation traps [Option ID = 8677]

19) Which of this typically represents elastic scattering?
[Question ID = 2171]
1. Backscattered electrons [Option ID = 8678]
2. Auger electrons [Option ID = 8679]
3. Secondary electrons [Option ID = 8680]
4. Heating caused by electron beam-matter interaction [Option ID = 8681]

Correct Answer :-
- Backscattered electrons [Option ID = 8678]

20) In-phase diffraction of any electromagnetic wave by a regularly spaced grating is
[Question ID = 2172]
1. Reciprocal and normal [Option ID = 8682]
2. Only reciprocal [Option ID = 8683]
3. Only normal [Option ID = 8684]
4. Destructive interference [Option ID = 8685]

Correct Answer :-
- Reciprocal and normal [Option ID = 8682]

21) Relationship between energy of characteristic X-ray and atomic number is defined by
[Question ID = 2173]
1. Mosely's Law [Option ID = 8686]
2. Steno's Law [Option ID = 8687]
3. Beers Law [Option ID = 8688]
4. Harper's Index [Option ID = 8689]

Correct Answer :-
- Mosely's Law [Option ID = 8686]

22) This cannot provide the width of distribution around a central tendency of any dataset
[Question ID = 2174]
1. Arithmetic average [Option ID = 8690]
2. Standard deviation [Option ID = 8691]
3. Variance [Option ID = 8692]
4. Both Arithmetic average and variance [Option ID = 8693]

Correct Answer :-
- Arithmetic average [Option ID = 8690]

23) The value of "Hue" in the Munsell notations used for colour estimations refers to

[Question ID = 2175]
1. Red, yellow, blue colours
[Option ID = 8694]
2. Lightness of the colours
[Option ID = 8695]
3. Strength of the colours
[Option ID = 8696]
4. All of these
[Option ID = 8697]

Correct Answer :-

yellow-blue colour
on ID = 8694]

24) Which of the following in petrographic criteria suggests the advanced stage of pedogenic carbonate development?
[Question ID = 2176]
1. Few calcans and micrite [Option ID = 8698]
2. Nodules and calcans [Option ID = 8699]
3. Recrystallised nodules and microspars [Option ID = 8700]
4. Micrite in the groundmass [Option ID = 8701]

Correct Answer :-
- Recrystallised nodules and microspars [Option ID = 8700]

25) Removal of organic matter, carbonate, and free iron is required for ..... of the particles during grain size.
[Question ID = 2177]
1. Flocculation [Option ID = 8702]
2. Lithification [Option ID = 8703]
3. Dispersal [Option ID = 8704]
4. Cementation [Option ID = 8705]

Correct Answer :-
- Dispersal [Option ID = 8704]

26) Which of the following sediment size refers to fine clay fraction?

[Question ID = 2178]
1. < 2 mm

   [Option ID = 8706]
2. <0.2 mm

   [Option ID = 8707]
3. <0.2 µm

   [Option ID = 8708]
4. <2 µm

   [Option ID = 8709]

Correct Answer :-
- <0.2 µm

  [Option ID = 8708]

27) If a marker bed cut by a fault does not show any displacement across the fault line, the most likely reason is:
[Question ID = 2179]
1. the marker bed is later than the fault [Option ID = 8710]
2. the fault is a reverse fault [Option ID = 8711]
3. the fault is a trace-slip fault [Option ID = 8712]
4. the fault slip is seismic in nature [Option ID = 8713]

Correct Answer :-
- the fault is a trace-slip fault [Option ID = 8712]

28) To assess dislocation density in a deformed crystal, which of the following instruments is best suited?
[Question ID = 2180]
1. Electron Probe Micro-Analyzer (EPMA) [Option ID = 8714]
2. Scanning Electron Microscope (SEM) [Option ID = 8715]
3. X-ray Fluorescence (XRF) [Option ID = 8716]
4. Transmission Electron Microscope (TEM) [Option ID = 8717]

Correct Answer :-
- Transmission Electron Microscope (TEM) [Option ID = 8717]

29) For dating a Precambrian porcellanite bed the most suitable geochronological method is
[Question ID = 2181]
1. C-14 method [Option ID = 8718]
2. Rb-Sr method [Option ID = 8719]
3. Sm-Nd method [Option ID = 8720]
4. U-Pb method [Option ID = 8721]

Correct Answer :-
- U-Pb method [Option ID = 8721]

30) Marine carbonate cement precipitated during glacial period will show
[Question ID = 2182]

4. Low ^{18}O signature [Option ID = 8725]

Correct Answer :-

- High ^{18}O signature [Option ID = 8724]

31) Wavelengths of electron beam in SEM is typically

[Question ID = 2183]

1. Few picometers to few tens of picometers [Option ID = 8726]
2. Few nanometers [Option ID = 8727]
3. Few hundreds of nanometers [Option ID = 8728]
4. Few tens of nanometers [Option ID = 8729]

Correct Answer :-

- Few picometers to few tens of picometers [Option ID = 8726]

32) ZAF correction in EPMA refers to

[Question ID = 2184]

1. Fluorescence, atomic number and absorption correction

   [Option ID = 8730]
2. Atomic number, thickness and fluorescence correction

   [Option ID = 8731]
3. Atomic number, absorption and frequency correction

   [Option ID = 8732]
4. None of these

   [Option ID = 8733]

Correct Answer :-

- Fluorescence, atomic number and absorption correction

  [Option ID = 8730]

33) Relationship between the incident angle and the diffraction angle in an X-ray diffraction instrument is

[Question ID = 2185]

1. Incident angle is twice the diffraction angle [Option ID = 8734]
2. Both are equal [Option ID = 8735]
3. Incident angle is half of the diffraction angle [Option ID = 8736]
4. Diffraction angle is half of incident angle [Option ID = 8737]

Correct Answer :-

- Incident angle is half of the diffraction angle [Option ID = 8736]

34) Halophytes are the plants that are indicative of

[Question ID = 2186]

1. Saline deposits [Option ID = 8738]
2. Fresh water deposits [Option ID = 8739]
3. Hydrocarbons [Option ID = 8740]
4. Non-metallic ores [Option ID = 8741]

Correct Answer :-

- Saline deposits [Option ID = 8738]

35) Which of the following parameters is considered to determine the reflectance of a vegetation canopy?

[Question ID = 2187]

1. Chlorophyll content

   [Option ID = 8742]
2. Azimuth angle

   [Option ID = 8743]
3. Solar Zenith angle

   [Option ID = 8744]
4. All of these

   [Option ID = 8745]

Correct Answer :-

- All of these

[Option ID = 8745]

a continental orogen, overthrust belts occur:
ion ID = 2188]
1. along the margins of the orogen, where rocks undergo thrusting above a detachment [Option ID = 8746]
2. in the internal part where rocks have been squeezed up from great depth [Option ID = 8747]
3. in the grabens [Option ID = 8748]
4. in the horsts [Option ID = 8749]

Correct Answer :-
- along the margins of the orogen, where rocks undergo thrusting above a detachment [Option ID = 8746]

37) In XRD studies, persistence of the 14.4 A° peak at 550°C of the K saturated clays confirms the presence of
[Question ID = 2189]
1. Illite [Option ID = 8750]
2. Kaolinite [Option ID = 8751]
3. Smectite [Option ID = 8752]
4. Chlorite [Option ID = 8753]

Correct Answer :-
- Chlorite [Option ID = 8753]

38) A rapid and progressive increase of the smectite in the in the clay mineral assemblage indicates
[Question ID = 2190]
1. Change of the source rock with dominance of Feldspar [Option ID = 8754]
2. Change of the source rock with dominance of Mica [Option ID = 8755]
3. Change of the source rock with dominance of Quartz [Option ID = 8756]
4. Change of the source rock with dominance of Carbonates [Option ID = 8757]

Correct Answer :-
- Change of the source rock with dominance of Feldspar [Option ID = 8754]

39) The Middle-Miocene Climatic Optima at about 15 Ma is marked by
[Question ID = 2191]
1. Warming [Option ID = 8758]
2. Cooling [Option ID = 8759]
3. Extreme warming [Option ID = 8760]
4. Extreme cooling [Option ID = 8761]

Correct Answer :-
- Warming [Option ID = 8758]

40) The values of 50-60 for the chemical index of alteration (CIA) to assess weathering of silicate rock suggest
[Question ID = 2192]
1. Advanced stage of weathering [Option ID = 8762]
2. Incipient stage of weathering [Option ID = 8763]
3. Moderate stage of weathering [Option ID = 8764]
4. Very strong weathering [Option ID = 8765]

Correct Answer :-
- Incipient stage of weathering [Option ID = 8763]

41) Which of the following is true during deep burial?
[Question ID = 2193]
1. Possible addition and re-distribution of K [Option ID = 8766]
2. Possible addition and re-distribution of Ti [Option ID = 8767]
3. Possible addition and re-distribution of Al [Option ID = 8768]
4. Possible addition and re-distribution of Na [Option ID = 8769]

Correct Answer :-
- Possible addition and re-distribution of K [Option ID = 8766]

42) The meandering rivers are marked by
[Question ID = 2194]
1. Shallowest section at crossovers and the deepest section at bends [Option ID = 8770]
2. Deepest section at crossovers and the shallowest section at bends [Option ID = 8771]
3. Uniform depth at crossovers and at the bends [Option ID = 8772]
4. Deep sections both at crossovers and the bends [Option ID = 8773]

Correct Answer :-
- Shallowest section at crossovers and the deepest section at bends [Option ID = 8770]

43) Facies analysis of the gravel dominated braided rivers shows
[Question ID = 2195]

1. St as the main facies [Option ID = 8774]
2. Gm as the main facies [Option ID = 8775]

3. [illegible] the main facies [Option ID = 8776]
4. [illegible] the main facies [Option ID = 8777]

Correct Answer :-

- Gm as the main facies [Option ID = 8775]

44) The meandering rivers are characterized by

[Question ID = 2196]

1. Sinuosity >1.3 and bed load <11%

   [Option ID = 8778]
2. Sinuosity <1.3 and bed load >11%

   [Option ID = 8779]
3. Sinuosity >1.3 and bed load >11%

   [Option ID = 8780]
4. Sinuosity <1.3 and bed load <11%

   [Option ID = 8781]

Correct Answer :-

- Sinuosity >1.3 and bed load <11%

  [Option ID = 8778]

45) In braided rivers, the width/depth ratio is ….. and the bed load is ……..

[Question ID = 2197]

1. Width/Depth ratio <40 and bead load <11%

   [Option ID = 8782]
2. Width/Depth ration >40 and bead load >11%

   [Option ID = 8783]
3. Width/Depth ratio <40 and bead load >11%

   [Option ID = 8784]
4. Width/Depth ratio > 40 and bead load <11%

   [Option ID = 8785]

Correct Answer :-

- Width/Depth ration >40 and bead load >11%

  [Option ID = 8783]

46) The longitudinal/medial bars in braided rivers occur as

[Question ID = 2198]

1. Bar deposits elongated transvers to the flow direction [Option ID = 8786]
2. Bar deposits elongated parallel to the flow directions [Option ID = 8787]
3. Bar deposits along the convex side of the of the banks [Option ID = 8788]
4. Bar deposits along the concave side of the banks [Option ID = 8789]

Correct Answer :-

- Bar deposits elongated parallel to the flow directions [Option ID = 8787]

47) Which of the following geophysical method is most suitable for groundwater exploration?

[Question ID = 2199]

1. Resistivity

   [Option ID = 8790]
2. Magnetic

   [Option ID = 8791]
3. Sonic

   [Option ID = 8792]
4. Gravity

   [Option ID = 8793]

Correct Answer :-

- Resistivity

  [Option ID = 8790]

48) Theim's equation for steady state radial flow to a tubewell in confined aquifer can be used to estimate:

[Question ID = 2200]

1. [illegible] only [Option ID = 8794]
2. [illegible] only [Option ID = 8795]
3. [illegible]ific yield only [Option ID = 8796]
4. Both Transmissivity and Storativity [Option ID = 8797]

Correct Answer :-

- Transmissivity only [Option ID = 8794]

49) The major ions considered for hydrochemical facies analysis using trilinear plot are [Question ID = 2201]

1. Sodium, Potassium, Phosphorus, Magnesium, Chloride, Sulphate, Carbonate and Nitrate [Option ID = 8798]
2. Sodium, Potassium, Calcium, Magnesium, Chloride, Sulphate, Carbonate and Bicarbonate [Option ID = 8799]
3. Arsenic, Potassium, Calcium, Lead, Fluoride, Sulphate, Carbonate and Bicarbonate [Option ID = 8800]
4. Zinc, Mercury, Calcium, Magnesium, Aluminium , Sulphate, Carbonate and Bicarbonate [Option ID = 8801]

Correct Answer :-

- Sodium, Potassium, Calcium, Magnesium, Chloride, Sulphate, Carbonate and Bicarbonate [Option ID = 8799]

50) Rainwater harvesting and artificial recharge to groundwater is generally done in [Question ID = 2202]

1. Shallow groundwater level areas [Option ID = 8802]
2. In wetlands [Option ID = 8803]
3. In areas with deeper water levels, where water table is declining heavily [Option ID = 8804]
4. In areas along and close to water bodies [Option ID = 8805]

Correct Answer :-

- In areas with deeper water levels, where water table is declining heavily [Option ID = 8804]