

DU MPhil PhD in Geology

Topic:- DU_J18_MPHIL_GEO_Topic01

1) If the angle of internal friction of a rock material is 32° , what should ideally be the angle between shear fractures formed in the rock and the maximum compressional stress axis? [Question ID = 5290]

1. 37.5° [Option ID = 21158]
2. 42.5° [Option ID = 21159]
3. 45° [Option ID = 21157]
4. 29° [Option ID = 21160]

Correct Answer :-

- 29° [Option ID = 21160]

2) In Froud No. (F)>1 we get [Question ID = 5301]

1. Out of phase flow [Option ID = 21201]
2. In-phase flow [Option ID = 21204]
3. Rapid flow [Option ID = 21202]
4. Sluggish flow [Option ID = 21203]

Correct Answer :-

- In-phase flow [Option ID = 21204]

3) Estimation of Storativity using Theis equation for unsteady state radial flow to a tubewell in confined aquifer can be done using: [Question ID = 5309]

1. Drawdown & time data of the observation well near pumping well [Option ID = 21233]
2. None of these [Option ID = 21236]
3. Both Drawdown & time data of the observation well near pumping well and Only after we estimate transmissivity value [Option ID = 21235]
4. Only after we estimate transmissivity value [Option ID = 21234]

Correct Answer :-

- Both Drawdown & time data of the observation well near pumping well and Only after we estimate transmissivity value [Option ID = 21235]

4) Which of the following represents an elevated geotherm?

[Question ID = 5334]

1. Obduction [Option ID = 21335]
2. Subduction zone [Option ID = 21333]
3. Continental sedimentary basins [Option ID = 21336]
4. Mid-Ocean ridge [Option ID = 21334]

Correct Answer :-

- Mid-Ocean ridge [Option ID = 21334]

5) Which of the following is the least time-consuming, non-destructive analytical technique to identify the Ca:Na ratio of a zoned plagioclase grain of $\sim 40 \mu\text{m}$ size:

[Question ID = 5287]

1. Wet Chemical Analysis of Mineral Separates [Option ID = 21148]
2. Atomic Absorption Spectrometry [Option ID = 21147]
3. Electron Micro Probe Analysis [Option ID = 21146]
4. Calorimetry [Option ID = 21145]

Correct Answer :-

- Electron Micro Probe Analysis [Option ID = 21146]

6) At 10 meters from sea the depth to fresh/saline interface in groundwater is 40 m below mean sea level. Assuming hydraulic conductivity to be 20 m/day, and given that the density of fresh water is 1.0 gram/cm^3 and density of saline water is 1.025 gram/cm^3 , the Darcy velocity can be estimated as: [Question ID = 5308]

1. 3 m/day [Option ID = 21231]
2. None of these [Option ID = 21232]
3. 1 m/day [Option ID = 21230]
4. 2 m/day [Option ID = 21229]

Correct Answer :-

- 2 m/day [Option ID = 21229]

7) Fusulinid larger foraminifera are excellent index fossils for [Question ID = 5315]

1. Lower Silurian-Upper Permian [Option ID = 21258]
2. Upper Miocene [Option ID = 21259]
3. Eocene-Oligocene [Option ID = 21257]
4. Middle Jurassic to upper Triassic [Option ID = 21260]

Correct Answer :-

- Lower Silurian-Upper Permian [Option ID = 21258]

8) Useful natural gamma borehole geophysical logging information can be obtained from: [Question ID = 5306]

1. Deep boreholes [Option ID = 21223]
2. All of these [Option ID = 21224]
3. Uncased boreholes [Option ID = 21222]
4. Cased boreholes [Option ID = 21221]

Correct Answer :-

- All of these [Option ID = 21224]

9) On reaching any geological province for the first time for field work, the first duty of a geologist is to [Question ID = 5297]

1. Orient the toposheet with geographic north [Option ID = 21185]
2. collection of rock samples [Option ID = 21188]
3. have a reconnaissance of the terrain [Option ID = 21187]
4. Marking location by taking bearing [Option ID = 21186]

Correct Answer :-

- Orient the toposheet with geographic north [Option ID = 21185]

10) Serpentine is a [Question ID = 5325]

1. Tectosilicate [Option ID = 21298]
2. Nesosilicate [Option ID = 21300]
3. Inosilicate [Option ID = 21297]
4. Phyllosilicate [Option ID = 21299]

Correct Answer :-

- Phyllosilicate [Option ID = 21299]

11) If competence contrast between a rock layer or vein and the surrounding host rock is low (e.g. less than 10:1), buckle folding of the layer is likely to produce [Question ID = 5318]

1. Chevron fold [Option ID = 21272]
2. Cuspate-lobate fold [Option ID = 21270]
3. Ptygmatic fold [Option ID = 21269]
4. Kink fold [Option ID = 21271]

Correct Answer :-

- Cuspate-lobate fold [Option ID = 21270]

12) An altered, light-coloured, igneous rock consisting of white mica and quartz with one or more F- and B-bearing minerals (like fluorite, topaz or tourmaline) is referred as _____. [Question ID = 5294]

1. Skarn [Option ID = 21173]
2. Wolfram [Option ID = 21174]
3. Greisen [Option ID = 21176]
4. Endo-skarn [Option ID = 21175]

Correct Answer :-

- Greisen [Option ID = 21176]

13) In a multistoreyed cross-stratification, if the cross-stratifications and their set boundaries dip in the same direction, we term it as

[Question ID = 5300]

1. Combined cross-stratification [Option ID = 21199]
2. Composite cross-stratification [Option ID = 21200]
3. Downdip cross-stratification [Option ID = 21197]
4. Downstream cross-stratification [Option ID = 21198]

Correct Answer :-

- Downdip cross-stratification [Option ID = 21197]

14) The two words in binomial nomenclature designate [Question ID = 5289]

1. Genus & Species [Option ID = 21154]
2. Family & Genus [Option ID = 21156]
3. Class & Order [Option ID = 21153]
4. Order & Family [Option ID = 21155]

Correct Answer :-

- Genus & Species [Option ID = 21154]

15) A flow with a velocity 1 cm/sec will turn turbulent if the flow depth is [Question ID = 5303]

1. 2000 cm [Option ID = 21212]
2. 200cm [Option ID = 21211]
3. 20cm [Option ID = 21210]
4. 2 cm [Option ID = 21209]

Correct Answer :-

- 20cm [Option ID = 21210]

16) In order to analyze paleo-environment/s of a sedimentary basin in geological rock record, we mainly depend on [Question ID = 5296]

1. Paleo-current analyses [Option ID = 21182]
2. Facies association analyses [Option ID = 21183]
3. Facies analyses [Option ID = 21181]
4. Lithological description [Option ID = 21184]

Correct Answer :-

- Facies association analyses [Option ID = 21183]

17) In order to carry microscope studies of ore samples at high magnification, say using 100x oil immersion objective lens - the process of _____ improves the optical resolution, as this enables chemical and crystallographic differences to be converted into topography. [Question ID = 5314]

1. Carbon coating [Option ID = 21254]
2. All of these [Option ID = 21256]
3. Gold Coating [Option ID = 21253]
4. Etching [Option ID = 21255]

Correct Answer :-

- Etching [Option ID = 21255]

18) Some oceanic sediments and sedimentary rocks are listed below. Which one of these is correct in the increasing order of depth of deposition? [Question ID = 5328]

1. Lepidocyclina limestone – Pteropod ooze – Globigerina ooze — Radiolarian cherts [Option ID = 21310]
2. Lepidocyclina limestone – Radiolarian cherts– Globigerina ooze – Pteropod ooze [Option ID = 21309]
3. Pteropod ooze – Globigerina ooze – Lepidocyclina limestone – Radiolarian cherts [Option ID = 21311]
4. Globigerina ooze – Pteropod ooze – Lepidocyclina limestone – Radiolarian cherts [Option ID = 21312]

Correct Answer :-

- Lepidocyclina limestone – Pteropod ooze – Globigerina ooze — Radiolarian cherts [Option ID = 21310]

19) Pick the odd one out: [Question ID = 5293]

1. Covellite [Option ID = 21169]
2. Chalcopyrite [Option ID = 21170]

3. Bornite [Option ID = 21172]
4. Cassiterite [Option ID = 21171]

Correct Answer :-

- Cassiterite [Option ID = 21171]

20) The major effect of Messinian Crisis event on the world ocean was the [Question ID = 5335]

1. Rise of global sea level [Option ID = 21337]
2. Lowering of global sea level [Option ID = 21339]
3. Significant reduction in salt budget of the global ocean [Option ID = 21338]
4. Increase of global sea surface temperature [Option ID = 21340]

Correct Answer :-

- Significant reduction in salt budget of the global ocean [Option ID = 21338]

21) Rhombic shaped boudins are characteristically found in [Question ID = 5320]

1. Post-boudinage deformation [Option ID = 21280]
2. Extension fracture boudinage [Option ID = 21277]
3. Symmetric shear fracture boudinage [Option ID = 21278]
4. Asymmetric shear fracture boudinage [Option ID = 21279]

Correct Answer :-

- Asymmetric shear fracture boudinage [Option ID = 21279]

22) When Sea level rises, the Sea invades a river valley, producing a nearshore body of water with mixed and variable salinity, termed as _____. [Question ID = 5304]

1. an atoll [Option ID = 21213]
2. an estuary [Option ID = 21216]
3. a lagoon [Option ID = 21214]
4. a jetty [Option ID = 21215]

Correct Answer :-

- an estuary [Option ID = 21216]

23) Bijli rhyolite is associated with [Question ID = 5316]

1. Singhbhum craton [Option ID = 21261]
2. Aravalli craton [Option ID = 21264]
3. Bastar craton [Option ID = 21262]
4. Dharwar craton [Option ID = 21263]

Correct Answer :-

- Bastar craton [Option ID = 21262]

24) The significant water level fluctuation is generally: [Question ID = 5307]

1. Inversely related to change of atmospheric pressure in confined aquifers [Option ID = 21225]
2. Both Inversely related to change of atmospheric pressure in confined aquifers and Directly related to change of Tidal amplitude in unconfined and confined aquifers [Option ID = 21227]
3. None of these [Option ID = 21228]
4. Directly related to change of Tidal amplitude in unconfined and confined aquifers [Option ID = 21226]

Correct Answer :-

- Both Inversely related to change of atmospheric pressure in confined aquifers and Directly related to change of Tidal amplitude in unconfined and confined aquifers [Option ID = 21227]

25) Steinmann's trinity refers to [Question ID = 5310]

1. Sub-alkaline volcanism [Option ID = 21240]
2. Mid-oceanic ridge volcanism [Option ID = 21238]
3. A fossilised oceanic crust [Option ID = 21237]
4. Subduction volcanism [Option ID = 21239]

Correct Answer :-

- A fossilised oceanic crust [Option ID = 21237]

26) The ediacaran fossils are characterized by [Question ID = 5312]

1. Metazoans [Option ID = 21247]
2. Colony of unicellular organism [Option ID = 21245]
3. First reported higher plants [Option ID = 21248]
4. Small Shelly fauna [Option ID = 21246]

Correct Answer :-

- Metazoans [Option ID = 21247]

27) Well loss in pumping well leads to : [Question ID = 5305]

1. Decrease in drawdown [Option ID = 21218]
2. Loss in recovery of pumping well [Option ID = 21220]
3. Increase in drawdown [Option ID = 21217]
4. Full loss of drawdown [Option ID = 21219]

Correct Answer :-

- Increase in drawdown [Option ID = 21217]

28) The reaction $Qtz + Kfs + Pl + H_2O = liquid$ is an example of ,,,,,, [Question ID = 5331]

1. None of these [Option ID = 21324]
2. Congruent melting [Option ID = 21322]
3. Ultra High Temperature (UHT) metamorphism [Option ID = 21321]
4. Ultra High Pressure (UHP) metamorphism [Option ID = 21323]

Correct Answer :-

- Congruent melting [Option ID = 21322]

29) A well-sorted sandstone will plot in a probability paper as: [Question ID = 5302]

1. Bell-shaped curve [Option ID = 21205]
2. A skewed curve [Option ID = 21208]
3. Sigmoidal curve [Option ID = 21206]
4. Straight line [Option ID = 21207]

Correct Answer :-

- Straight line [Option ID = 21207]

30) If you are working on a paleoplacer deposit of diamond to understand the mantle processes associated with kimberlite magmatism, which of the following analytical techniques would NOT be of any significance for your research:

[Question ID = 5313]

1. Laser-ablated mass spectrometric quantitative chemical analysis [Option ID = 21252]
2. Stable isotope studies [Option ID = 21249]
3. Fluid inclusion studies [Option ID = 21250]
4. Microscope-based petrographic studies [Option ID = 21251]

Correct Answer :-

- Fluid inclusion studies [Option ID = 21250]

31) Hauy's (1784) law in crystallography is also known as [Question ID = 5321]

1. Law of simple rational indices [Option ID = 21281]
2. Law of constancy of angles [Option ID = 21282]
3. First law of crystallography [Option ID = 21283]
4. Both Law of simple rational indices and Law of constancy of angles [Option ID = 21284]

Correct Answer :-

- Law of simple rational indices [Option ID = 21281]

32) $^{18}O/^{16}O$ ratio of Mixed layer planktic foraminiferal test precipitated during a glacial period would be [Question ID = 5329]

1. Higher compared to that of carbonate precipitated during interglacial period [Option ID = 21313]
2. Lower compared to that of carbonate precipitated during interglacial period [Option ID = 21315]
3. Lower compared to that of coexisting ocean water [Option ID = 21316]
4. Equal to that of carbonate precipitated during interglacial period [Option ID = 21314]

Correct Answer :-

- Higher compared to that of carbonate precipitated during interglacial period [Option ID = 21313]

33) The main difference in chemical characterization between Energy Dispersive Spectrometry (EDS) and Wavelength Dispersive Spectrometry (WDS) is in [Question ID = 5295]

1. The cathodoluminescence effect in WDS [Option ID = 21177]
2. better resolution of characteristic X-rays by WDS [Option ID = 21180]
3. Better resolution of characteristic X-rays by EDS [Option ID = 21178]
4. Better background resolution in EDS [Option ID = 21179]

Correct Answer :-

- better resolution of characteristic X-rays by WDS [Option ID = 21180]

34) What is the difference between the *armoured beds* and the *paved beds*?

[Question ID = 5327]

1. In armoured beds the surface layer is usually one grain thick, and has the same texture as subsurface materials whereas in paved beds the coarsest size at the surface is greater than in the sub-surface fraction [Option ID = 21305]
2. There is no difference; both are same [Option ID = 21307]
3. In paved beds the surface layer is usually one grain thick, and has the same texture as subsurface materials whereas in armoured beds the coarsest size at the surface is greater than in the sub-surface fraction [Option ID = 21306]
4. None of these [Option ID = 21308]

Correct Answer :-

- In armoured beds the surface layer is usually one grain thick, and has the same texture as subsurface materials whereas in paved beds the coarsest size at the surface is greater than in the sub-surface fraction [Option ID = 21305]

35) Which of the following method is useful in dating the bedrock surfaces? [Question ID = 5322]

1. Thermoluminescence dating [Option ID = 21286]
2. Paleomagnetic dating [Option ID = 21288]
3. Cosmogenic Radionuclides dating [Option ID = 21287]
4. C-14 dating [Option ID = 21285]

Correct Answer :-

- Paleomagnetic dating [Option ID = 21288]

36) Which of the following is not an erosional landform? [Question ID = 5324]

1. Eskers [Option ID = 21296]
2. Fjords [Option ID = 21295]
3. Aretes [Option ID = 21293]
4. Cirques [Option ID = 21294]

Correct Answer :-

- Eskers [Option ID = 21296]

37) Which of the following deformations is characterized by non-rectangular hyperbolic pattern of particle path with two flow apophyses inclined at an angle with each other? [Question ID = 5291]

1. Simple shear [Option ID = 21161]
2. General Shear [Option ID = 21164]
3. Pure shear [Option ID = 21163]
4. Uniaxial extension [Option ID = 21162]

Correct Answer :-

- General Shear [Option ID = 21164]

38) In a sandstone-shale heterolithic sequence, if sandstone beds show presence of gutter and prod marks at their soles and is internally constituted of convex laminations having centripetal dip, the sequence can be interpreted as [Question ID = 5299]

1. Tempestite [Option ID = 21196]
2. lacustrine deposit [Option ID = 21195]
3. Fluvial deposit [Option ID = 21194]
4. Tidal deposit [Option ID = 21193]

Correct Answer :-

- Tempestite [Option ID = 21196]

39) In biostratigraphy, graphic correlation method uses [Question ID = 5292]

1. Abundance zones [Option ID = 21167]
2. Assemblage zones [Option ID = 21165]
3. Concurrent range zones [Option ID = 21168]
4. Ranges of all species [Option ID = 21166]

Correct Answer :-

- Ranges of all species [Option ID = 21166]

40) The occurrence of cyclothem in Gondwana coal fields is due to [Question ID = 5311]

1. Channel shift in meandering river [Option ID = 21242]
2. Cyclic nature of relative sea-level fluctuations [Option ID = 21241]
3. Rift related tectonic pulses [Option ID = 21243]
4. Braided fluvial deposits [Option ID = 21244]

Correct Answer :-

- Channel shift in meandering river [Option ID = 21242]

41) Formation of core-and-mantle microstructure in quartz within a sheared rock characterizes [Question ID = 5319]

1. Recrystallization [Option ID = 21273]
2. Superplastic flow [Option ID = 21276]
3. Grain Boundary Area Reduction [Option ID = 21275]
4. Recovery [Option ID = 21274]

Correct Answer :-

- Recrystallization [Option ID = 21273]

42) According to Glen's flow law [Question ID = 5323]

1. the shear stress and the strain rate is not linear [Option ID = 21289]
2. the shear stress and strain rate are independent [Option ID = 21291]
3. none of these [Option ID = 21292]
4. the shear stress and the strain rate is linear [Option ID = 21290]

Correct Answer :-

- the shear stress and the strain rate is not linear [Option ID = 21289]

43) The Quaternary sedimentary record shows Ice-rafted debris-rich layer in the North Atlantic which are associated with [Question ID = 5332]

1. monsoonal events [Option ID = 21326]
2. ENSO events [Option ID = 21325]
3. Heinrich events [Option ID = 21327]
4. Interstadial events [Option ID = 21328]

Correct Answer :-

- Heinrich events [Option ID = 21327]

44) The mean temperature of London is higher than that of Toronto, though located at the same latitude. This is because of [Question ID = 5333]

1. ENSO phenomenon [Option ID = 21331]
2. Higher greenhouse gas emission [Option ID = 21329]
3. Insolation [Option ID = 21332]
4. Presence of Gulf stream [Option ID = 21330]

Correct Answer :-

- Presence of Gulf stream [Option ID = 21330]

45) For Nickel investigation in a soil profile above a ultramafic terrain, one needs to collect sample from [Question ID = 5298]

1. A horizon [Option ID = 21189]

2. Any part of soil profile [Option ID = 21192]
3. Bedrock [Option ID = 21191]
4. C horizon [Option ID = 21190]

Correct Answer :-

- C horizon [Option ID = 21190]

46) A measure of the force of flow per unit bed area is called as [Question ID = 5326]

1. mean boundary shear stress [Option ID = 21302]
2. specific stream power [Option ID = 21303]
3. critical shear stress [Option ID = 21301]
4. critical stream power [Option ID = 21304]

Correct Answer :-

- mean boundary shear stress [Option ID = 21302]

47) Pressure at the base of a 40km crust having a specific gravity of 2.8 is approximately [Question ID = 5330]

1. 1 kbar [Option ID = 21317]
2. 20 kbar [Option ID = 21319]
3. 11 kbar [Option ID = 21318]
4. 100 kbar [Option ID = 21320]

Correct Answer :-

- 11 kbar [Option ID = 21318]

48) If a pseudotachylyte vein is formed by local flash melting of the host granitic rock along a seismic fault, the matrix of the pseudotachylyte is likely to be [Question ID = 5288]

1. more mafic in composition than the host granite, [Option ID = 21150]
2. none of these [Option ID = 21152]
3. More felsic in composition than the host granite; [Option ID = 21149]
4. similar in composition to the host granite, [Option ID = 21151]

Correct Answer :-

- more mafic in composition than the host granite, [Option ID = 21150]

49) Peristerite gap refers to [Question ID = 5317]

1. Solvus in plagioclase composition [Option ID = 21267]
2. Seismic gap [Option ID = 21265]
3. None of these [Option ID = 21268]
4. Crystal defect [Option ID = 21266]

Correct Answer :-

- Solvus in plagioclase composition [Option ID = 21267]

50) Mineral assemblage in garnet zone for a model bulk composition $K_2O-Al_2O_3-SiO_2-H_2O$ will be

[Question ID = 5336]

1. Garnet-muscovite-quartz [Option ID = 21341]
2. Garnet-muscovite-biotite-quartz [Option ID = 21343]
3. Garnet-muscovite-kyanite-quartz [Option ID = 21342]
4. Kyanite-muscovite-quartz [Option ID = 21344]

Correct Answer :-

- Kyanite-muscovite-quartz [Option ID = 21344]