



قائمة الاسئلة

امتحان نهاية الفصل الدراسي الأول - للعام الجامعي 1446 هـ - كلية البترول والموارد الطبيعية :: صخور نارية و متحولة - (GEOS321) - الد. طارق هاشم الحبشي

- 1) What role does heat play in the metamorphic process of rocks?
ما هو دور الحرارة في عملية تحول الصخور؟
 - 1) - It only hardens the minerals without changing their structure.
 - 2) + It increases the energy in mineral bonds, allowing new minerals to form.
 - 3) - It causes minerals to melt and form magma.
 - 4) - It has no significant effect on rock formation.
- 2) Which type of metamorphism is primarily associated with high pressure and low temperature, often found in subduction zones?
مناطق في أعالي يوجد والذي، المنخفضة الحرارة ودرجة العالي بالضغط الأول المقام في المرتبط التحول نوع هو ما الاندساس؟
 - 1) - Contact metamorphism
 - 2) - Regional metamorphism
 - 3) + Hydrothermal metamorphism
 - 4) - Burial metamorphism
- 3) What distinguishes foliated metamorphic rocks from non-foliated metamorphic rocks?
ما الذي يميز الصخور المتحولة الورقية عن الصخور المتحولة غير الورقية؟
 - 1) - Foliated rocks form in high-temperature environments, while non-foliated rocks form in low-temperature environments.
 - 2) + Foliated rocks show a layered or banded appearance due to pressure, while non-foliated rocks lack this alignment.
 - 3) - Non-foliated rocks only form in regional metamorphism, while foliated rocks form in contact metamorphism.
 - 4) - Foliated rocks contain only one type of mineral, while non-foliated rocks contain multiple minerals.
- 4) Which type of metamorphism is most likely to produce foliated rocks due to the alignment of minerals under directional pressure?
أي نوع من التحولات هو الأكثر احتمالاً لإنتاج الصخور الورقية بسبب محاذاة المعادن تحت الضغط الاتجاهي؟
 - 1) - Contact metamorphism
 - 2) + Regional metamorphism
 - 3) - Hydrothermal metamorphism
 - 4) - Burial metamorphism
- 5) What is magma primarily composed of?
ما هي المكونات الأساسية للمagma؟
 - 1) - Solid rock fragments
 - 2) + Molten rock, gases, and mineral crystals
 - 3) - Layers of sediment
 - 4) - Fossilized organic material
- 6) How does magma differ from lava?
كيف تختلف الصهارة عن الحمم البركانية؟
 - 1) + Magma is found underground, while lava is magma that has reached the Earth's surface.
 - 2) - Magma is solid, while lava is liquid.
 - 3) - Magma contains no minerals, while lava is mineral-rich.
 - 4) - Magma is formed at the Earth's surface, while lava forms underground.
- 7) How would you classify a rock that is dark-colored, rich in iron and magnesium, and has low silica content?
كيف تصنف صخرة ذات لون داكن، غنية بالحديد والمغنيسيوم، ومحتوى منخفض من السيليكا؟
 - 1) - Felsic
 - 2) - Intermediate



- 3) Mafic
- 4) Ultramafic
- 8) Which of the following is considered an essential mineral commonly found in the Earth's crust?
أي مما يلي يعتبر من المعادن الأساسية الموجودة عادة في قشرة الأرض؟
- 1) Muscovite
- 2) Gypsum
- 3) Pyrite
- 4) Hyperthene
- 9) What is the name of the mineral that contains the percentage of plagioclase calcium An90- An70?
ما هو اسم المعدن الذي يحتوى على نسبة البلاجيوكليز الكلسي An90 – An70
- 1) anorthite
- 2) bytownite
- 3) labradorite
- 4) oligoclase
- 10) A rock consists of Plagioclase : 40-60% Pyroxene (mainly augite): 20-40% Olivine: 0-20%
يتكون الصخر من البلاجيوكليز : 40-60% والبيريوكسين (الأوجيت بشكل أساسي): 20-40% الأوليفين: 0-20%
- 1) Granite
- 2) Diorite
- 3) Dunite
- 4) Gabbro
- 11) In which of the following settings are cumulate rocks most commonly formed?
في أي من البيئات التالية تتكون الصخور التراكمية بشكل أكثر شيوعاً؟
- 1) In volcanic eruptions on the Earth's surface
- 2) Within magmatic intrusions in layered mafic complexes
- 3) In sedimentary basins subjected to tectonic forces
- 4) Within banded migmatite rocks
- 12) An igneous rock has Plagioclase Feldspar: 50-70%, Clinopyroxene (mainly augite): 30-50%, Accessory Minerals: 0-10%.
تحتوي صخر ناري على بلاجيوكليز: 50-70%، كلينوبيريوكسين (أوجيت بشكل أساسي): 30-50%، معادن إضافية: 0-10%
- 1) Pyroxenite
- 2) Olivinite
- 3) clinopyroxene norite
- 4) Norite
- 13) What is exsolution?
1) The process by which minerals dissolve in a solvent
- 2) The separation of different mineral phases from a solid solution upon cooling
- 3) The formation of new minerals through metamorphic processes
- 4) The chemical weathering of rocks in a humid environment
- 14) What characterizes the gneissose structure in metamorphic rocks?
ما الذي يميز نسيج النيسوز في الصخور المتحولة؟
- 1) A homogenous and uniform texture with no layering
- 2) A distinct banding or layering of light and dark minerals
- 3) A granular texture with rounded grains
- 4) A glassy texture with no visible crystals
- 15) How is hornfels typically formed in the geological environment?
كيف تتشكل الصخور الهورنفيلس عادة في البيئة الجيولوجية؟
- 1) intense pressure deep within subduction zones
- 2) Through contact metamorphism near a heat source, like magma
- 3) By rapid cooling of lava on the Earth's surface



- 4) - Through chemical sedimentation in shallow marine environments
- 16) What is the primary difference between greenschist and greenstone?
ما هو الفرق الأساسي بين الشيبست الأخضر والحجر الأخضر؟
- 1) - Greenschist forms from sedimentary rocks, while greenstone forms from igneous rocks.
 - 2) - Greenschist is high-grade metamorphic rock, while greenstone is low-grade.
 - 3) - Greenschist is formed by contact metamorphism, while greenstone is formed by volcanic activity.
 - 4) Greenschist is foliated due to regional metamorphism, while greenstone is non-foliated and forms under low-grade metamorphism.
- 17) What does the term "protolith" refer to in geology?
ماذا يشير مصطلح "البروتوليث" في الجيولوجيا؟
- 1) The original, unmetamorphosed rock from which a metamorphic rock forms
 - 2) - The chemical weathering process of rocks
 - 3) - The mineral composition of igneous rocks
 - 4) - The layering of minerals in sedimentary rocks
- 18) What is blueschist in the metamorphic rocks?
ما هو البلوشيبست في الصخور المتحولة؟
- 1) - A metamorphic rock that forms under high pressure and low temperature, typically in obduction zones
 - 2) - A metamorphic rock that forms under high pressure and high temperature, typically in subduction zones
 - 3) - A metamorphic rock that forms under low pressure and low temperature, typically in subduction zones
 - 4) A metamorphic rock that forms under high pressure and low temperature, typically in subduction zones
- 19) How do migmatites form in relation to metamorphic rocks?
كيف تتشكل الميجماتيت بالنسبة للصخور المتحولة؟
- 1) - By intense pressure transforming sedimentary rocks directly into igneous rocks
 - 2) - From the crystallization of minerals in low-grade metamorphic rocks
 - 3) Through the partial melting of high-grade metamorphic rocks under extreme temperature conditions
 - 4) - By the layering of minerals during regional metamorphism without melting
- 20) What is a solid solution in minerals?
- 1) - The complete melting of minerals to form magma
 - 2) - The layering of minerals in a sedimentary rock
 - 3) The ability of different elements to replace for each other in a mineral's crystal structure
 - 4) - The physical mixing of two minerals without chemical bonding
- 21) In which geological environment does the mineral sanidine typically form?
في أي بيئة جيولوجية يتشكل معدن الساندين عادة؟
- 1) In rapidly cooled volcanic rocks, such as rhyolite, at high temperatures
 - 2) - Deep within high-pressure metamorphic rocks
 - 3) - In oceanic crust at mid-ocean ridges
 - 4) - In sedimentary basins during low-temperature diagenesis
- 22) What does the term "granitization" refer to in geology?
ماذا يشير مصطلح "الجرانيتية" في الجيولوجيا؟
- 1) - The melting of granite to form magma
 - 2) - The erosion and weathering of granite into sediment
 - 3) The transforming existing rocks into granite
 - 4) - The crystallization of magma into granite at the Earth's surface



23) What is pegmatite in the context of igneous rocks?

ما هو البيغماتيت في سياق الصخور النارية؟

- 1) - Fine-grained volcanic rock formed from rapid cooling of lava
- 2) + A coarse-grained igneous rock characterized by large crystals, typically forming from the slow cooling of magma
- 3) - An intrusive rock with a glassy texture formed during volcanic eruptions
- 4) - A sedimentary rock formed from compacted sand and gravel

24) What is the main difference between fault breccia and fault gouge?

- 1) + Fault breccia is composed of angular rock fragments, while fault gouge consists of fine, clay-rich material.
- 2) - Fault breccia forms from volcanic activity, while fault gouge forms from sedimentation.
- 3) - Fault breccia is always found in mountainous regions, while fault gouge is found in flat plains.
- 4) - Fault breccia is a type of sedimentary rock, while fault gouge is an igneous rock.

25) How do ophiolites typically form in geological processes?

كيف تتشكل الأوفيوليتات عادة في العمليات الجيولوجية؟

- 1) - By the accumulation of sediments in a continental basin
- 2) - From volcanic eruptions that produce large lava flows
- 3) - By the erosion of mountains over millions of years
- 4) + Through the obduction of oceanic crust onto continental crust