

Important  
remarks

• No. of pages: 2 - No. of questions: 4

Answer the Following Questions (Total 50 degrees):

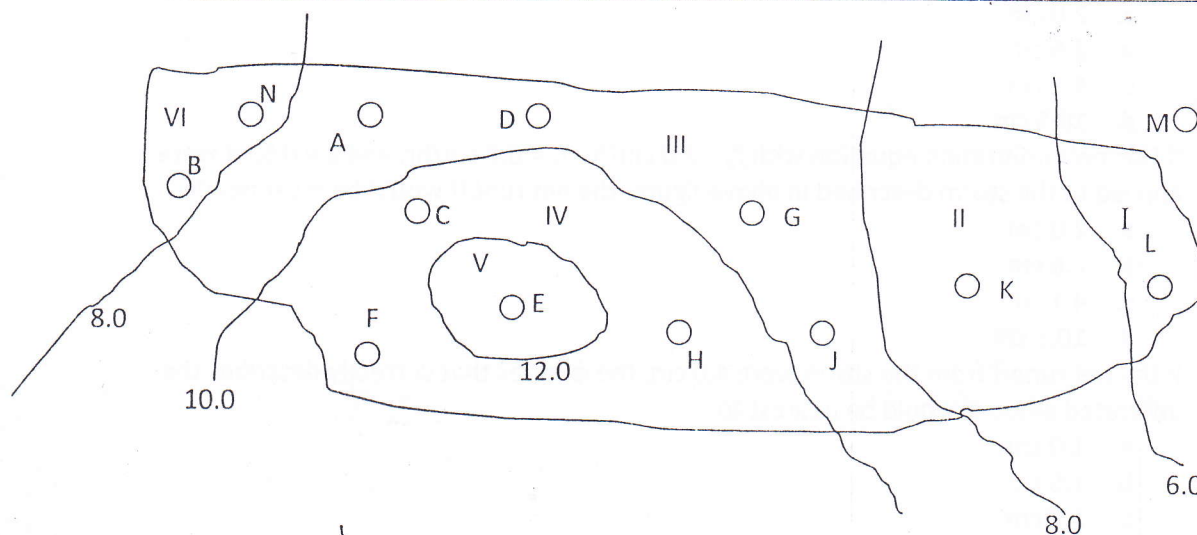
Q1. (15 marks) A small catchment of area 150 ha received a rainfall of 7.0 cm/hr in 90 min duration due to a storm. At the outlet of the catchment, the stream draining the catchment has an initially discharge equal to  $1.0 \text{ m}^3/\text{sec}$  before the storm. After the beginning of the storm, the stream discharge is increased to  $3.0 \text{ m}^3/\text{sec}$  for 10 hr period. The stream has again the same initially discharge after this period. What is the amount of water losses in centimeters? Also, compute the runoff coefficient.

Q2. (15 marks) Point rainfall due to a storm at several rain gauge stations in a basin are shown in Fig. below. Determine the average depth of rainfall over the basin by two methods.

Station	A	B	C	D	E	F	G	H	J	K	L	M	N
Rainfall (cm)	8.8	7.6	10.8	9.2	13.8	10.4	8.5	10.5	9.5	7.8	5.2	5.6	7.4

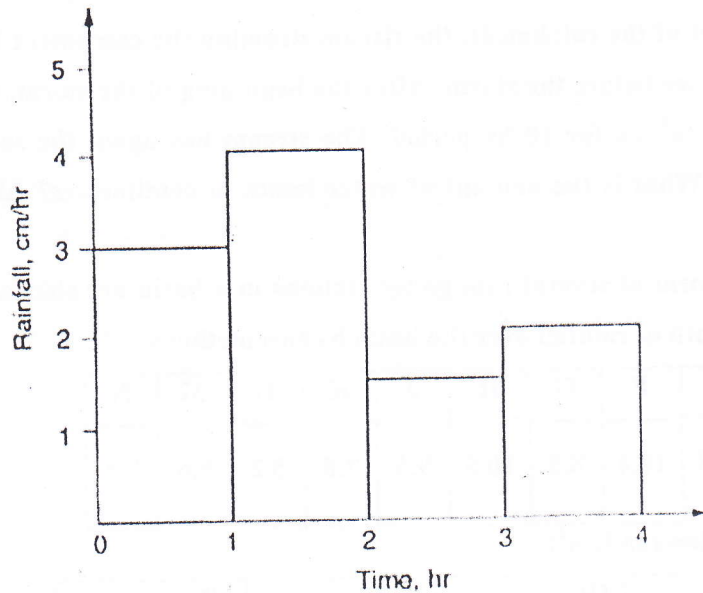
The areas between the isohyets are as follows in  $\text{Km}^2$ :

I	II	III	IV	V	VI
410	900	2850	1750	720	550



Q3. (10 marks) The average air temperature for a certain month above a lake surface is  $30^{\circ}\text{C}$ , actual vapor pressure,  $e_a$ , is 23.0 mb and the relative humidity is 60%. The average wind speed as measured at a nearby weather station at 20 meters elevation is 10m/s. estimate the average daily evaporation for the same month (assume  $a = 0$  and  $b = 0,015$ ). Where  $f(u) = a + b U_{20}$ .

Q4. (10 marks) A rainfall hyetograph is presented in the shown Figure.



a. The total storm precipitation is most nearly

- 2.0 cm
  - 2.6 cm
  - 4.1 cm
  - 10.5 cm
- b. If Horton's infiltration equation with  $f_o = 2.0$  cm/hr,  $f_c = 0.8$  cm/hr, and  $k = 0.5$ /hr were applied to the storm described in above figure, the net runoff would be most nearly
- 2.0 cm
  - 2.6 cm
  - 4.1 cm
  - 10.5 cm
- c. If the net runoff from the storm were 4.0 cm, the  $\phi$ -index that correctly describes the infiltrated amount would be nearest to
- 1.0 cm
  - 1.5 cm
  - 1.7 cm
  - 2.3 cm



قسم الجيولوجيا



48. This term is used to describe an impermeable layer that hinders or prevents the movement of groundwater.

- a) Aquifer      b) artesian      c) speleothem      d) aquitard

49. A measure of a material's ability to transmit groundwater through interconnected pore spaces is known as its \_\_\_\_\_.

- a) Permeability      b) transmission coefficient      c) artesian flow      d) porosity

50. What type of intrusive feature is this?

- a) dike      b) laccolith  
c) batholith      d) sill



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**GOOD LUCK!**

**Prof.Dr. Moustafa M., Youssef**

**39. A mechanical weathering process caused by pressure release or unloading**

**Is .....**

- a) ice wedging      b) hydrolysis      c) exfoliation      d) abrasion

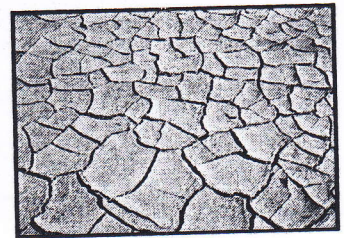
**40. A syncline:**

- a) has beds dipping away from its axis      b) has beds dipping towards its axis  
c) has limbs which converge towards the earth's surface  
d) has older rocks exposed along its axis      e) none of these

**41. Most folding results from:**

- a) fracturing      b) convection      c) compaction  
d) compression      e) rifting

**42. The feature shown in the opposite figure is known as.....**



**43. Which of these silicate minerals exhibits a sheet structure?**

- a) Quartz      b) olivine      c) feldspar      d) muscovite

**44. Below the water table, in the zone of \_\_\_\_\_, all the pore spaces in the sediments and rocks are filled with water.**

- a) Percolation      b) saturation      c) hydrology      d) aeration

**45. Which one of the following greatly affects both the size and arrangement of mineral crystals in an igneous rock?**

- a. specific gravity of the magma or lava  
b. rate of cooling of the magma or lava  
c. composition of the rock surrounding the magma  
d. rate of tectonic uplift

**46. Examine this fine-grained igneous rock which has a granitic (felsic) composition. The rock's name is \_\_\_\_\_.**

- a) basalt      b) rhyolite      c) granite      d) diorite

**47. Magmas that produce \_\_\_\_\_ rock contain about 50 percent silica and tend to be quite \_\_\_\_\_.**

- a) basaltic; viscous      b) basaltic; fluid      c) rhyolitic; fluid      d) rhyolitic; viscous



30. A \_\_\_\_\_ is caused by wind erosion, whereas \_\_\_\_\_ is an example of wind deposition.

- |              |                    |               |
|--------------|--------------------|---------------|
| a) Bajadas   | b) Loess           | c) Dunes      |
| d) Deflation | e) Desert pavement | f) Ventifacts |

31. An oxbow lake .....

- |  |                                    |
|--|------------------------------------|
| a) is created by the cutoff of a meander | b) is formed by stream aggradation |
| c) is formed by flooding                 | d) none of the above               |

32. How does weathering differ from erosion?

- a) Weathering occurs slowly over time; erosion occurs rapidly.
- b) Weathering requires the presence of moisture; erosion requires moving water.
- c) Weathering is an external process; erosion is an internal one.
- d) Weathering is the breakdown of material in place; erosion is the removal of the weathered material.

33. The removal of loose particles from the ground by the wind is called...

- |             |              |             |              |
|-------------|--------------|-------------|--------------|
| a) Abrasion | b) corrosion | c) ablation | d) deflation |
|-------------|--------------|-------------|--------------|

35. The boundary between the saturated zone and the unsaturated zone is called the:

- |                |            |              |             |
|----------------|------------|--------------|-------------|
| a) Water table | b) Aquifer | c) Aquiclude | d) Porosity |
|----------------|------------|--------------|-------------|

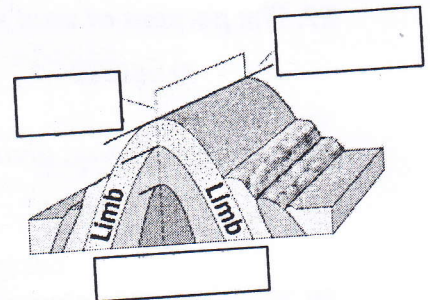
36. Permeability is:

- a) The ability of a solid to allow fluids to pass through
- b) The process by which plants release water vapor to the atmosphere
- c) The amount of water vapour in the air relative to the maximum amount of water vapour the air can hold
- d) The percentage of pore space in the rock

37. Barchans are:

- |  |  |
|--|--|
| a) crescent-shaped dunes                   | b) streamlined bedrock hills scoured by the wind |
| c) ridges transverse to the wind direction | d) ridges parallel to the wind direction         |

38. Insert the names in boxes and identify the type of the structure seen in the opposite figure



Answer the following questions

The First Question

(30 mark)

Write on

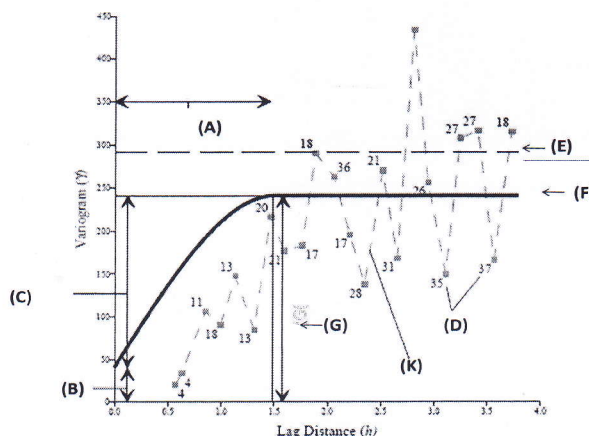
1. Interpolation
2. Inverse Distance Weighted (IDW)
3. Types of Kriging
4. Variogram Models
5. Types of statistics


The Second Question

(20 mark)

a) Complete the missing answer

- 1- Some "objects" have spatial distribution that is usually far from random, such as: 1).....2).....3).....
- 2- The minimum sample size is.....
- 3- Interpolation techniques can be classified in following **five main classes**:  
1).....2).....3).....4)..... 5).....
- 4- Representative Sample define as.....
- 5- This figure shows the Variogram model. **What** is the type of this model and the Capital letters (A, B, C, D, E, F, G and K)?



Geology Department Faculty of Sciences Assiut University First level		First Term Examination Fundamental Geology(100 G) January, 2020 Two Hours
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**Part I : Internal processes**

**A. Complete the sentences with the correct answer between the brackets of the following: (7 pts)**

1. The inner of the earth is divided into layers based on (chemical – physical – chemical and physical) properties.
2. The earth crust is (solid – melt – vapor)
3. Continental crust is (higher – lower – equal) in density relative to oceanic crust.
4. Where the divergent boundary forms under the oceanic is called ( rift – ridge – subduction).
5. Within plate volcanoes can be formed via (subduction – rifting –hot spots)
6. Convergent boundary is caused where plates move (away-toward – slide past) each other.
7. Subduction is caused due to (transform fault- convergence – divergence) plates.

**B. What is the relation between volcanoes, earthquakes and plate tectonic?(3 pts)**



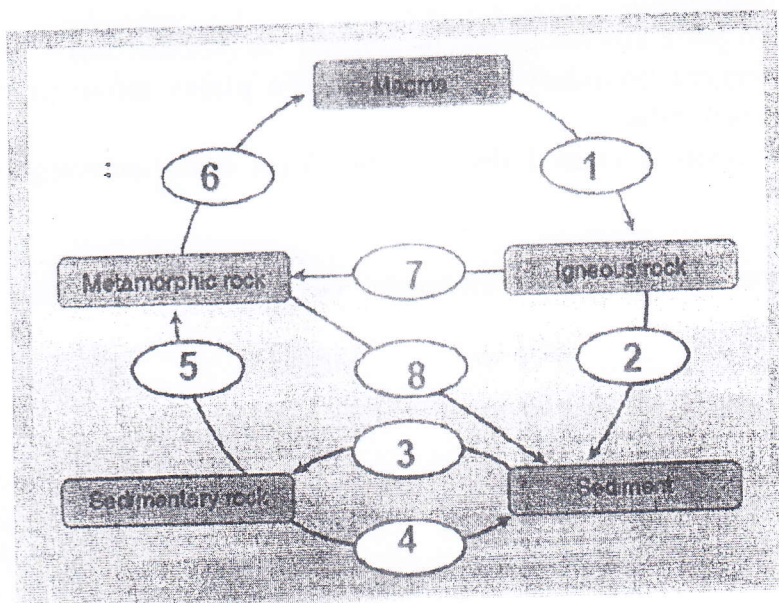
**C. Sing the true statement by ( ✓ ) and the false one by ( X )(3 pts)**

1. Cubic crystals have mutually perpendicular are of unequal lengths
2. Orthorhombic crystals are the crystals that contain only center of symmetry.
3. Six -fold axis of symmetry occurs only in tetragonal crystals

**D. Write the scientific nomenclature of the following characters:(4 pts)**

1. Minerals break along smooth, flat surfaces and every fragment has the same general shape
2. Resistance of minerals for scratches
3. Color of the fine powder of the mineral
4. The way a mineral reflects light from its surface

**E. Examine the diagram and then write the process occurs during steps: (4 pts)**



- |         |         |
|---------|---------|
| 1. .... | 2. .... |
| 2. .... | 4. .... |
| 4. .... | 6. .... |
| 7. .... | 8. .... |

**F. Complete the following: (4 pts)**

1. Basalt rock is an example of .....
2. Granite is an example of .....
3. Sandstone is a ..... sedimentary rock
4. Schist is an example of .....metamorphic rocks

21- In the following figure, what are the modes of fossil preservation?

A- Preservation of the hard body parts

B- Lack of oxygen and Carbonization

C- Replacement



22- Just mention the characteristics of Deserts.

.....

.....

.....

.....

23- The factors that can affect the Stream Velocity are.....

.....

.....

.....

.....

24- The processes involved in hydrologic cycle such as:

Evaporation, ....., ....., and .....

25- Factors affecting porosity include; .....

.....

.....

.....

26- Just mention the kinds of Cave deposits

.....

.....

-----GOOD LUCK انتهى الأسئلة-----  
Prof. Dr. Mamdouh F. Soliman Prof. Dr. Mahmoud A. Essa Dr. Abdelhamid Salman

10- Weathering is a group of processes responsible for .....

11- Thermal Expansion of granitic rocks results in

- A. Exfoliation of the rocks
- B. Change the minerals within the rocks
- C. Slow gradual movement of material down slope

12- Carbonic & sulfuric acid in groundwater produces caves, caverns, & sink holes in.....

- A. Granitic rocks
- B. Shales
- D. Limestone
- E. All of them

13- Alluvial deposits of roughly triangular shape that are deposited by major rivers at their mouths are called .....

- A. Deltas
- B. Playas
- C. Lakes
- D. Streams

14- A River is a ground water finding its way over land from a higher elevation to a lower elevation (Yes Or No)

15 - During the Young stage of a Stream

- A. It generally flows in a V-shaped valley in a highland or mountainous area
- B. It slows down and begins to meander
- C. Its velocity is low, it has lost its ability to erode downward.

16- Oxbow lakes are marked the stream in its .....

- A. Young stage
- B. Mature stage
- C. Old stage

17-An aquifer is:

- A. Impermeable strata that prevent flow
- B. Porous and permeable strata that store and transmit water freely
- C. Typically clays and shale and many igneous rocks

18- Pumping of water from wells creates .....

- A. elevation of water table
- B. cone of depression.
- C. water rises above surface

19- A fossil is an impression, or track of any animal that is found on wet agricultural lands (Yes Or No)

20- What are the fossil types?





## Final Exam of fundamental Geology (100G)

For 1<sup>st</sup> year students – 29<sup>th</sup> December -2019

Part II

Time: 1H (One hour)

Total Marks: 25

الامتحان في ثلاثة صفحاتأكتب أجابتك في نفس ورق الأسئلةWrite your answers in the same sheets

Select the letter (A, B, C or D) of the choice that BEST answers the question.  
Each question has ONLY one correct answer (One mark for each question)

1-What are the fractures along which there has been relative movement of blocks called?

- A. Folds                      B. Joints                      C. Faults                      D. Intrusions

2-The effect of tensional forces on the crustal rock materials causes

- A. Rock bodies to shorten horizontally and thicken vertically  
B. Rock bodies to lengthen horizontally and thin vertically  
C. Folding of the rock bodies

3. Which type of deformation is folding?

- A. Brittle                      B. Ductile                      C. Tensile                      D. Malleable

4- In a Symmetrical fold, the axial plane must be .....

5- The primary joints in rocks such as .....

6- The secondary joints in rocks result from

- A. Cooling  
B. Loss of water  
C. Tensional or compressive forces

7- In a normal fault

- A. Hanging wall block moves down relative to the footwall block  
B. Dips must be less than 45°  
C. Hanging wall block moves up relative to the footwall block

8- In the strike-slip faults

- A. Hanging wall block moves down relative to the footwall block  
B. Dips must be less than 45°  
C. Dominant displacement is horizontal and parallel to the strike of the fault

9-A non-conformity is

- A. a rock unit that is different than units above or below it  
B. a series of sedimentary layers deposited over an eroded surface of igneous rocks  
C. a rock unit that does not contain fossils

18. This detrital sedimentary rock consists primarily of rounded gravel-size particles.

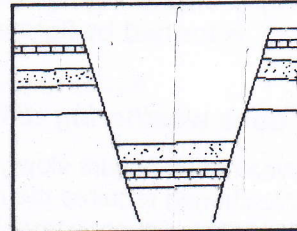
- a) Coquina    b) shale    c) conglomerate    d) breccias

19. Limestone is composed chiefly of the mineral:

- a) Halite    b) quartz    c) feldspar    d) calcite

20. This feature (seen in cross-section) is:

- a) an anticline    b) a graben  
c) a monocline    d) a syncline



21. Rocks formed from the cooling and hardening of hot liquid magma are called \_\_\_\_\_ rocks.

- a) igneous    b) metamorphic    c) sedimentary    d) move sideways

22. The gradual breaking of rocks into smaller pieces is called \_\_\_\_\_.

- a) weathering    b) erosion

23. A giant sea wave caused by earthquakes is called a \_\_\_\_\_.

- a) tsunami    b) mountain    c) tornado

24. Volcanoes can occur \_\_\_\_\_.

- a) on land only    b) only in the ocean    c) both on land and in the ocean

25. In deserts, wind erodes by:.....

- a) Solution and hydrolysis    b) Traction and plucking  
c) Solution and traction    d) Deflation and abrasion

26. When a river meets an ocean or sea which depositional feature is often formed?

- a) Alluvial fan    b) Delta    c) Sand bar

27. The percent of void space in a sandstone bed is known as.....

- a) Cement    b) Porosity    c) Permeability

28. The surface that divides a fold into two symmetrical halves is called the.....

- a) Axial plane    b) Fold axis    c) Fault    d) Limb

29. Weathering is classified into which of the following categories?

- a) Chemical and mechanical    b) Physical and mechanical    c) Organic and inorganic  
d) Clastic and nonclastic    e) Mechanistic and compositional



9. Most of the largest plates \_\_\_\_\_.

- a) consist primarily of oceanic crust
- b) contain large amounts of both oceanic and continental crust
- c) are dominated by continental crust

10. At divergent plate boundaries, two plates \_\_\_\_\_.

- a) grind past each other
- b) join to produce a larger plate
- c) move apart
- d) move together

11. Subduction occurs because:

- a) the lithosphere is warm and weak
- b) the subducting lithosphere has a greater density than the underlying asthenosphere
- c) forces created at spreading centers are causing plates to move together
- d) the sediment that caps the oceanic crust acts as a lubricant to aid subduction

12. Transform faults occur where plates slide past one another and generate new lithosphere.

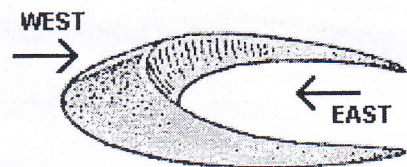
True - False

13. Which type of earthquake wave travels by pushing (compressing) and pulling (expanding) in the direction the wave is traveling?

- S wave - b) P wave - c) surface wave - d) tertiary wave

14. Which arrow on the diagram is the correct wind direction to form Barchan sand dunes?

- a) East b) West



15. The most common group of rock-forming minerals is the \_\_\_\_\_.

- Oxides - b) sulfides - c) carbonates - d) silicates

16. Sedimentary rocks form when the products of \_\_\_\_\_ are transported to a new location where they are deposited and eventually \_\_\_\_\_ into solid rock.

- a) weathering; lithified
- b) crystallization; metamorphosed
- c) deposition; eroded
- d) tectonism; weathered
- e) melting; crystallized

17. Precipitation of dissolved material by the life processes of water-dwelling organisms produces material called \_\_\_\_\_ sediment

- a) clastic
- b) secondary
- c) biochemical
- d) detrital





كلية العلوم - قسم الجيولوجيا



جامعة أسيوط

امتحان طلاب المستوى الأول (برنامج الكيمياء الصناعية)  
مقرر ( ١٠٠ ج ) أساسيات الجيولوجيا

الزمن : ساعتان

الدرجة الكلية ( ٥٠ درجة )

يناير ٢٠٢٠

**Choose the correct answer for the following questions :**

1. At convergent plate boundaries \_\_\_\_\_.

- a) new lithosphere is forming  
c) neither a or b

- b) old lithosphere is being destroyed  
d) both a and b

2. Which of the following represents a process of chemical weathering?

- a. Thermal expansion and contraction  
c. Hydration and Hydrolysis

- b. Mass exfoliation  
d. Frost action and crystal growth

3. Normal graded bedding is characterized by:

- a) an increase in sediment size from bottom to top  
b) a decrease in sediment size from bottom to top  
c) an unsorted mixture of many different sediment sizes

4. Carbonic acid is particularly effective in the solution weathering of .....

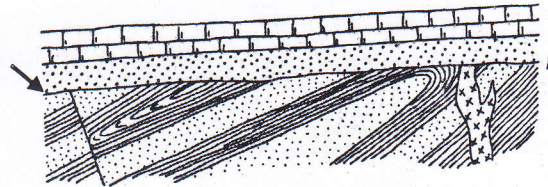
- a- Limestone      b- Sandstone      c- Granite      d- Rhyolite      e- Shale

5. Which one of the following is NOT a possible product of a volcanic eruption?

- Cinders      -      b) pyroclastic debris      -      c) ash      -      d) marble

6. The surface that separates older series from younger sedimentary rocks in this figure is called .....

- a) angular unconformity  
b) disconformity  
c) nonconformity



7. Which of Earth's major divisions is thought to be the source of the magnetic field?

- crust      -      b) outer core      -      c) inner core      -      d) mantle

8. What layer permits movement of Earth's rigid outer shell (plates)?

- Asthenosphere      -      b) lithosphere      -      c) mesosphere      -      d) bathosphere