



**Subject: Sedimentary basins and Sedimentary environments (335G)**  
**Students: 3<sup>rd</sup> level of Geology**

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**Answer only Ten questions out of the following (50 marks)**

**1. Which of the following features in a sedimentary rock can be used to interpret its depositional environment (5 marks):**

- a. sedimentary structures.
- b. types of fossils.
- c. the types of minerals (such as halite or gypsum).
- d. the size, shape and surface texture of the sedimentary grains.
- e. all of the above features can be used to interpret depositional environment.
- f. both (a) and (b).
- g. Actually, none of the above features can be used to interpret depositional environment.

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**2. Write short notes on the three defining parameters of a sedimentary environment (5 marks).**

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**3. True or False (5 marks):**

- a. a sedimentary basin is a low area in the Earth's crust, of tectonic origin, in which sediments accumulate.
- b. basin modeling is a term broadly applied to a group of geological disciplines that can be used to analyze the formation and evolution of sedimentary basins.
- c. back-stripping is a geophysical analysis technique used to quantitatively estimate the depth that the basement would be in the absence of sediment and water loading.
- d. in pre-depositional basins, rapid tectonic movements predate significant sediment accumulation and create a morphological basin, which is filled later by post tectonic sediments.
- e. sedimentary basins are separated from another by raised linear areas termed arches, paleohighs, schwelle, or positive areas.

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**4. Continental environments include all of the following except.....( 5 marks):**

- a. lake beds.
- b. river beds.
- c. glacial deposits.
- d. coral reefs.
- e. deltas.

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**5. Trace fossils (biogenic sedimentary structures) are used as facies diagnosis because (5 Marks):**

- a. trace fossils occur in situ and are not transported from outside the sedimentary basin.
- b. recent and ancient sediments show that various assemblages of trace fossils are specific to environments and have changed little through geological time.

- c. it is not always easy to be sure that a fossil lived in or on the sediment in which it was buried.
- d. both (a) and (b).
- e. None of the above.

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**6. Discuss in detail the environments of erosion, equilibrium, and deposition (5 marks).**

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**7. A sedimentary environment is defined as.....(5 marks)**

- a. a part of the earth's surface which could be distinguished from other parts by unique physical, chemical and biological parameters.
- b. a sedimentary environment is the product of a depositional facies, a special kind of sedimentary environment.
- c. a sedimentary environment is defined as any aerially restricted part of a designated stratigraphic unit which exhibits characters significantly different from those of other parts of the unit.
- d. all the above.
- e. both (b) and (c).
- f. none of the above.
- h. both (c) and (d).

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**8. Write on the characteristics of the sedimentary basins (5 marks).**

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**9. True or false (5 marks):**

- a. the essential element of the sedimentary basin is tectonic creation of relief, to provide both a source of sediment and a relatively low place for the deposition of that sediment.
- b. the sedimentary basin is a low area in the Earth's crust, of tectonic origin, in which sediments accumulate.
- c. embayments are basins that are not completely closed structurally, but which open out into a deeper area.
- d. the axis of a basin is a line connecting the lowest structural points of the basin, as in a synclinal axis.
- e. a geosyncline is large troughlike or basinlike downwarping of the crust in which thick sedimentary and volcanic rocks accumulated.

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**10. Aulacogens are (5 marks):**

- a. the second, failed arm of a three-armed rift, two of whose arms continued to open to form an ocean basin.
- b. aulacogens start at the passive continental margin.
- c. extending from the margins toward the open sea.
- d. both (a) and (c).
- e. all the above.
- f. none of the above.

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**11. Write briefly on the following (5 marks):**

- a. trenches.
- b. pull-apart basins.

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Good Luck

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Faculty of Science  
Department of Geology

3<sup>rd</sup> Level Examination for Geology students  
In Field Geology (306G)

Time: Two Hours

50 Marks

Summer Semester, 2018/2019

Answer the following questions

**First Question (15 Marks)**

1- Choose the correct answer:

- i- Which of the following is NOT a type of sedimentary structure?  
a- mud cracks b- graded bedding c- ripple marks d- visceles
  
  - ii- A short time break or a change in sediment type in a depositional environment results in the creation of .....between individual beds.  
a- an unconformity b- a graded bed  
c- a bedding plane d- an intrusive contact
  
  - iii- Which of the following descriptions is NOT correct when talking about graded bedding?  
a- graded beds can be formed on a river bed during floods.  
b- there is a gradual change in sediment size throughout a bed.  
c- small sediment grains are at the bottom and large grains are at the top.  
d- graded beds are often associated with turbidity currents on ocean slopes.
  
  - iv- Which of the following sedimentary structures is common in sand dunes?  
a- cross-bedding b- trace fossils c- graded bedding d- mudcracks
  
  - v- Which of the following statements about paleocurrents is FALSE?  
a- cross-bedding can be used to determine a paleocurrent  
b- cross-beds are inclined downwards in the direction of the paleocurrent  
c- a paleocurrent refers to an ancient wind or water flow direction  
d- ripple marks are indicators of paleocurrents
- 2- Write an essay on the criteria of unconformities

**Second Question (15 Marks)**

- 1- Summarize the applications of Brantun Compass.
- 2- Compare between biological and chemical structures in sedimentary rocks, discuss your answer by examples.

**Third Question (20 Marks)**

- 1- Discuss in detail the contacts between the rocks, illustrate your answer by drawing.
- 2- Write on three ONLY of the following terms:  
i- Flute mark ii- Type of rocks iii- Stratigraphic cross section iv- Total station

----- **GOOD LUCK** -----

Prof. Dr. Nageh A. Obaidalla



### Part One: Sedimentology (25 Marks)

Answer Only Five of the following questions: (Each question with 5 marks)

- 1) Compare between Graded bedding and ripple marks.
- 2) Write on chemical sedimentary rocks.
- 3) Discuss in details allogenic minerals.
- 4) Write on Extraformational conglomerate.
- 5) Write briefly on Classification of Sandstones.
- 6) Discuss in briefly Dunham Classification of carbonate rocks.

### Part Two: Depositional Systems (25 Marks)

Answer Only Five of the following questions: (Each question with 5 marks)

- 1) The physical parameters of sedimentary environments.
- 2) Compare between geometry and paleocurrents of environmental diagnosis.
- 3) Write on fluvial sedimentary environment.
- 4) Characteristics of deltaic sediments.
- 5) Write on only one example of marine sedimentary environments.
- 6) Write on lacustrine sedimentary environment.

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*With my best wishes*

*Dr. Abdelhamid M. Salman*

بسم الله الرحمن الرحيم

جامعة أسيوط  
كلية العلوم - قسم الجيولوجيا

امتحان التحريري للمستوى الرابع بكلية العلوم شعبة جيولوجيا البترول

المادة: طباقية زمنية وحياتية (316 ج ب)  
(Chrono- and Bio-stratigraphy, 316GP)

الزمن: ساعتان

الفصل الدراسي الصيفي ٢٠١٨/٢٠١٩ م

الدرجة: ٥٠ درجة

(الامتحان في صفتين)

Answer the following questions:

السؤال الأول: (15 درجات)

- 1- Explain two only of the following concepts: (٥ Marks)  
i- extinction ii- evolution iii- ichnofacies
- 2- Compare between of the following terms: (٥ Marks)  
i- Taxon and concurrent-range zones. ii- Introduced and reworked fossils.
- 3- Write the biostratigraphic events for two only of the following chronostratigraphic boundaries: (٥ Marks)  
i- Cenomanian/Turonian ii- Cretaceous/Paleogene iii- Paleogene/Neogene

السؤال الثاني: (10 درجات)

- 1- In a geologic time table tabulate the Paleozoic chronostratigraphic units and write one example of the rock-forming index fossils of each unit. (7 Marks)
- 2- Define three only of the following concepts: (3 Marks)  
i- Interzone ii- biofacies iii- biohorizon iv- index fossil

السؤال الثالث: (15 درجات)

- 1- Write on two only of the following events: (9 Marks)  
i- Diachronous events ii- History of Iapetus Ocean  
iii- Mediterranean Salinity Crisis iv- Formation of the Red Sea
- 2- Write the drivation of four only of the following: (6 Marks)  
Permian - Devonian - Cretaceous - Triassic - Eocene

السؤال الرابع: (10 درجات)

Choose the correct answer: (one Mark for each)

- 1- The smallest formal unit of geologic time is...  
a) an eon b) a period c) an era d) an epoch
- 2- The first form of life reach land is.....  
a) plant b) dinosaurs c) humans d) mammals
- 3- Which of these organisms existed first on Earth?  
a) reptiles b) birds c) amphibians d) fishes

- 4- What characterizes of an index fossil?  
a) abundant b- easily recognized  
c) widely distributed geographically d) all of these
- 5- In the order of their occurrence, the following geologic time units from oldest to youngest are:  
a) Proterozoic, Mesozoic, Paleozoic b) Paleozoic, Mesozoic, Proterozoic  
c) Mesozoic, Paleozoic, Proterozoic c) Proterozoic, Paleozoic, Mesozoic
- 6- Of the following interval of geologic time, the most recent is the:  
a) Miocene b) Eocene c) Cretaceous d) Pliocene
- 7- All of the following are periods of the Paleozoic, except.....  
a) Cambrian b) Paleogene c) Permian d) Devonian
- 8- The collision of Gondwanaland with Laurasia caused the ..... Orogeny during the Carboniferous Period.  
a) Laramide b) Caledonian c) Nevadian d) Hercynian
- 9- Dinosaurs became abundant during the .....Era.  
a) Paleozoic b) Mesozoic c) Proterozoic d) Cenozoic
- 10- The longest section of Earth's History was .....  
a) Paleozoic b) Neogene c) Mesozoic d) Precambrian

تمت الأسئلة مع أطيب الأمنيات بالتوفيق

أ.د / ناجح عبد الرحمن عبيد الله