



Benha University
Faculty of Science
Geology Department
2nd year Geology

Invertebrate Paleont. (215)
Final Ex. (48 marks)
Time Two Hours
Date: 28-12-2016

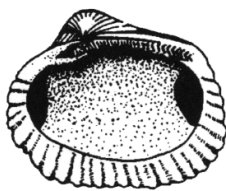
Answer of Paleontology

I- Write on the following (with drawing): (15 marks)

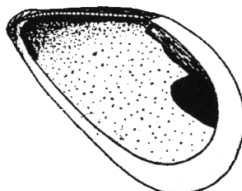
a- Evolution of the ammonoid primary suture

- **Three lobed; Goniatites**
- **Four lobed; Ceratites and heteromorph ammonites**
- **Five lobed; Jurassic-Cretaceous ammonites**
- **six lobed; Tetragonitids (group of Cretaceous ammonites)**

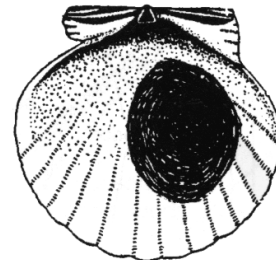
b- Dentition of bivalves.



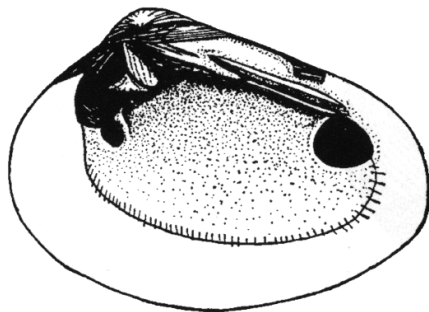
Taxodont



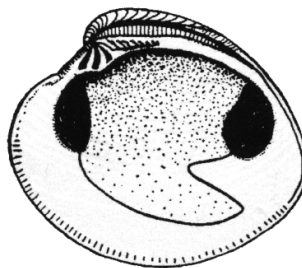
Dysodont



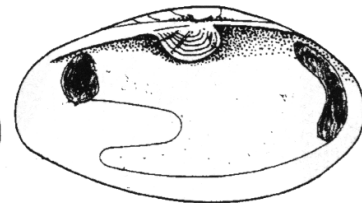
Dysodont



Schizodont



Heterodont



Desmodont




c- Sexual dimorphism in ammonites.

Sexual dimorphism: The expression of gender in body form
Microconch (male) & Macroconch (female)

ornamentation, lappets

- 1- Geological range
- 2- The two forms should be found together in the same bed.
- 3- No intermediate forms should exist
- 4- Sexual differences only develop at sexual maturity
- 5- The numerical ratio of one form to another should be approximately 1: 1

d- Types of apical disc in echinoids.

Monocyclic	Dicyclic	Hemicyclic
		

e- Torsion in gastropods.

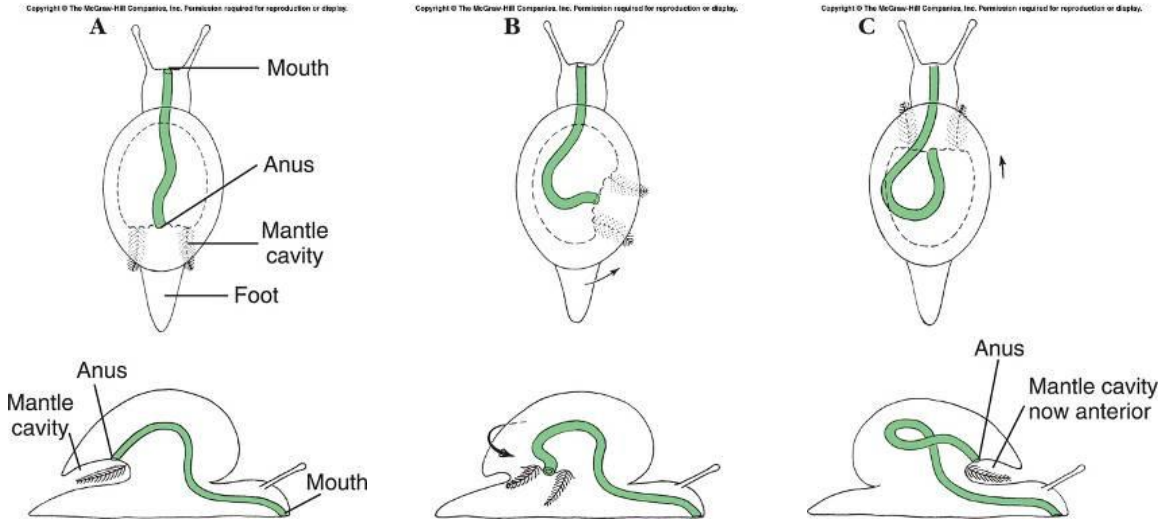
Mantle cavity moves to the front of the body.

Torsion occurs during veliger stage

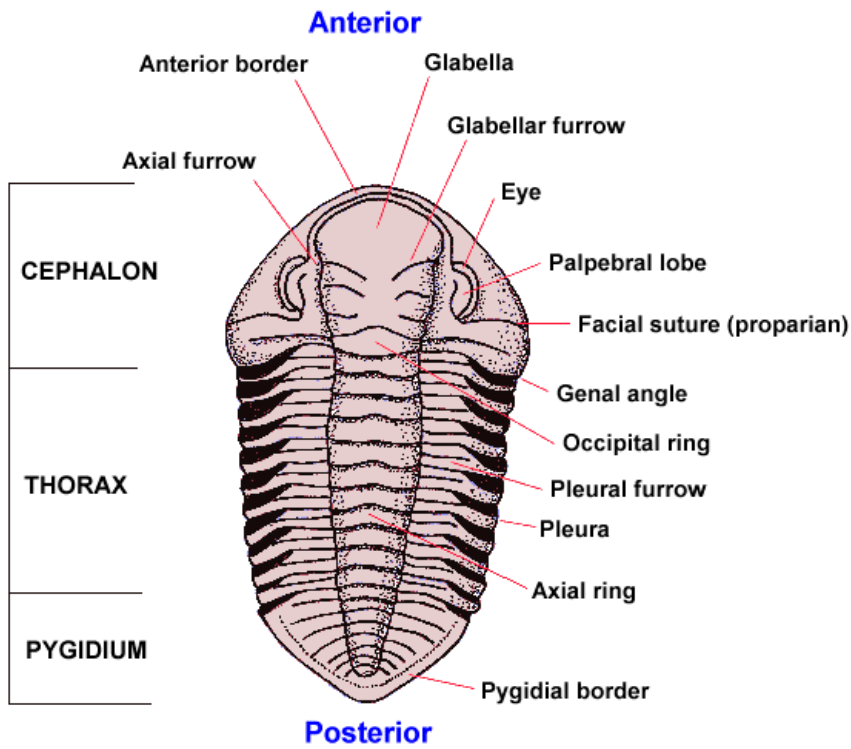
Anus and mantle cavity is anterior and open near mouth and head.

“Fouling” of waste washed back over gills

Advantage? May be position of osphradia, head retracts in M.C.



f- Trilobites shell morphology.



II- Complete the following:

(10 marks)

- a- The cnidaria are classified into Hydrozoa, Scyphozoa, Anthozoa, Cubozoa.
- b- The belemnites are characterized by having internal shell, and composed of calcite while ammonites have external shell and composed of aragonite
- c- The calyx in crinoidea is described as monocyclic or dicyclic according to the presence or absence of infrabasal plates
- d- Sponges are classified into Demospongiae, Hexactinellida (Hyalospongiae), Calcarea (Calcispongiae), and Sclerospongiae

III- Choose the correct answer: (5 marks)

- a- The Archaeocyathids were extinct nearly before (500 M. Y., 250 M.Y., 65 M. Y.) ago.
- b- The ammonoids are firstly appeared nearly at the Middle of the (Cenozoic Era, Mesozoic Era, Paleozoic Era).
- c- The sutures that dividing the ambulacra are called (periradial, adradial, interradial).
- d- The graptolites were extinct in (Early Paleozoic Era, Mesozoic Era, Late Paleozoic Era).
- e- The inoceramids are firstly appeared nearly at the Middle of the (Cambrian, Triassic, Jurassic).

IV- Correct the following sentences: (6 marks)

- a- The ammonites are usually preserved as internal moulds

- b- The presence of phyllodes are considered a diagnostic feature for some iregular echinoids.
- c- The torsion in gastropods occurs during valiger stage.
- d- Inarticulate brachiopods are characterized by having an phosphatic shell.

V- Compare between the following:

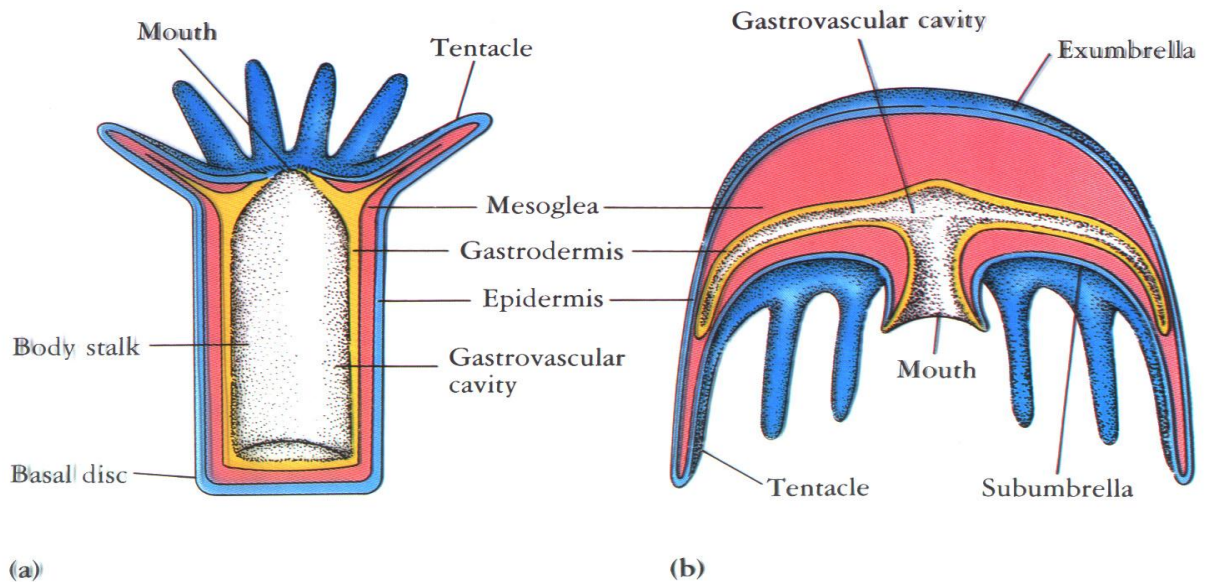
(12 marks)

a- Polyp and medusa

- Tubular body, with the mouth directed upward.
- Around the mouth are a whorl of feeding tentacles.
- Only have a small amount of mesoglea
- Sessile

Medusa form:

- Bell-shaped or umbrella shaped body, with the mouth is directed downward.
- Small tentacles, directed downward.
- Possess a large amount of mesoglea
- Mobile, move by weak contractions of body

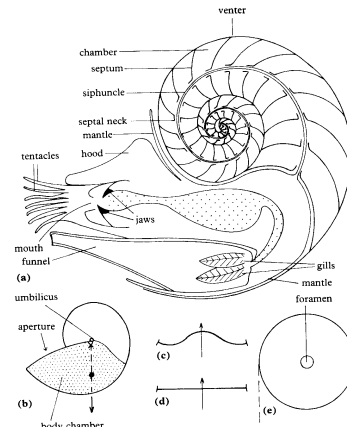
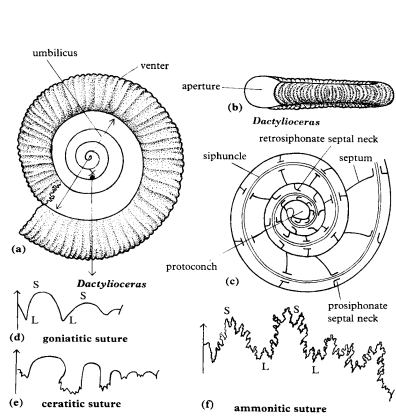


b- Brachiopods and bivalves.

Bivalves	Brachiopods
Left & Wright	Dorsal & Ventral
Teeth & sockets in the Same valve	teeth in pedicle valve & sockets in brachial
The plane of symmetry between the two valves	through the two valves
No Pedicle	With Pedicle

c- Ammonoid and nautiloid shell morphology:

Ammonites	Nautiloids
- More complex suture line as they evolved.	Simple suture line.
- Siphuncle starts central and then moves to the outer edge (venter).	Siphuncle is central.
- Septal neck starts retrosiphonate, becomes both and then prosiphonate.	Septal necks retrosiphonate
- Last chamber small.	Last chamber large.
- More ornamentation as they evolved.	Smooth shell



d- Regular and irregular echinoids

Regular	Irregular
Symetry: pentaradial	bilateral
Mouth: Central	central or anterior
Anus: endocyclic	exocyclic
Ambulacra: simple (non-petalloid)	simple to petalloid
Mode of life: epifaunal	infaunal to semi infaunal
Substrate: hard substrate	soft sediments

Dr. Gamal El Qot