BIOL 220 Name: _____

Purpose: This study guide will help you identify the information you should know in order to discuss how cnidarians address the challenges of life in lecture and that you should study for the first Lecture Exam.

Learning objectives: By completing this study guide, students will be able to:

- Identify the Clades and Phylum to which cnidarians belong
- Answer the seven "Meet the Phylum" Questions
- Recognize distinctive features of cnidarians
- Identify the two body morphs (forms) of cnidarians
- Learn the number and names of the layers that make up the body walls of cnidarians
- Identify the Classes to which certain cnidarians belong
- Learn the distinctive features of two cnidarian classes
- Label diagrams of the anatomies of representative members of these two classes
- Study the life cycles of these two classes of cnidarians

CLADE METAZOA

CLADE EUMETAZOA

Phylum Cnidaria

<u>Distinctive characteristics</u> - answer the questions:

Level of organization:
Symmetry:
Diplo or Triploblastic:
Protostome or Deuterostome:
Acoelomate/Psudocoelomate/Coelomate: **Not applicable**
Schizo or Enterocoelous: **Not applicable**
Segmented?:

1. Name the distinctive cell type of cnidarians (page 261):

A. List the organelle that these cells contain (page 261):

2. List the two body forms (morphs) of cnidarians (page 262 and Figure 13.3 – page 263):

A.
B.

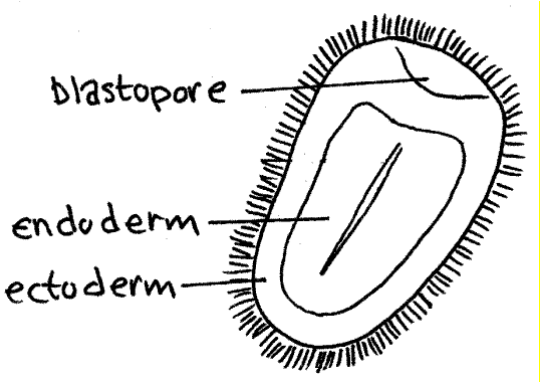
3. How many layers make up the body wall of cnidarians (page 264 and Figure 13.4 – page 264):

A. What are the names of the layers? (page 264):

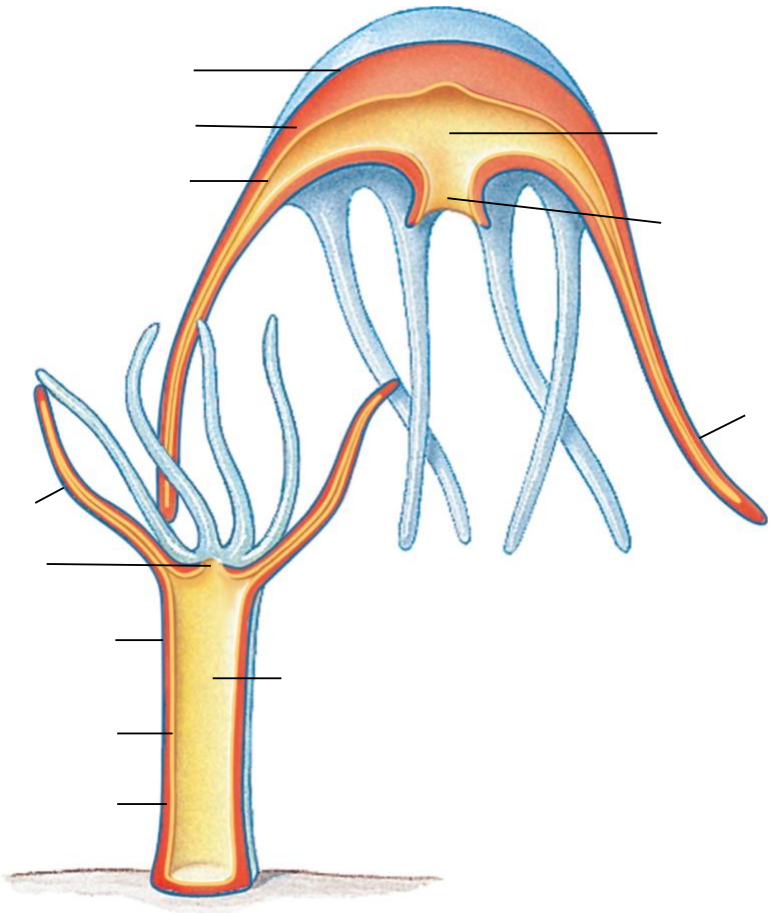
4. "Digestive System" (circle one) (page 263 – Characteristics of Phylum Cnidaria):

Incomplete Complete

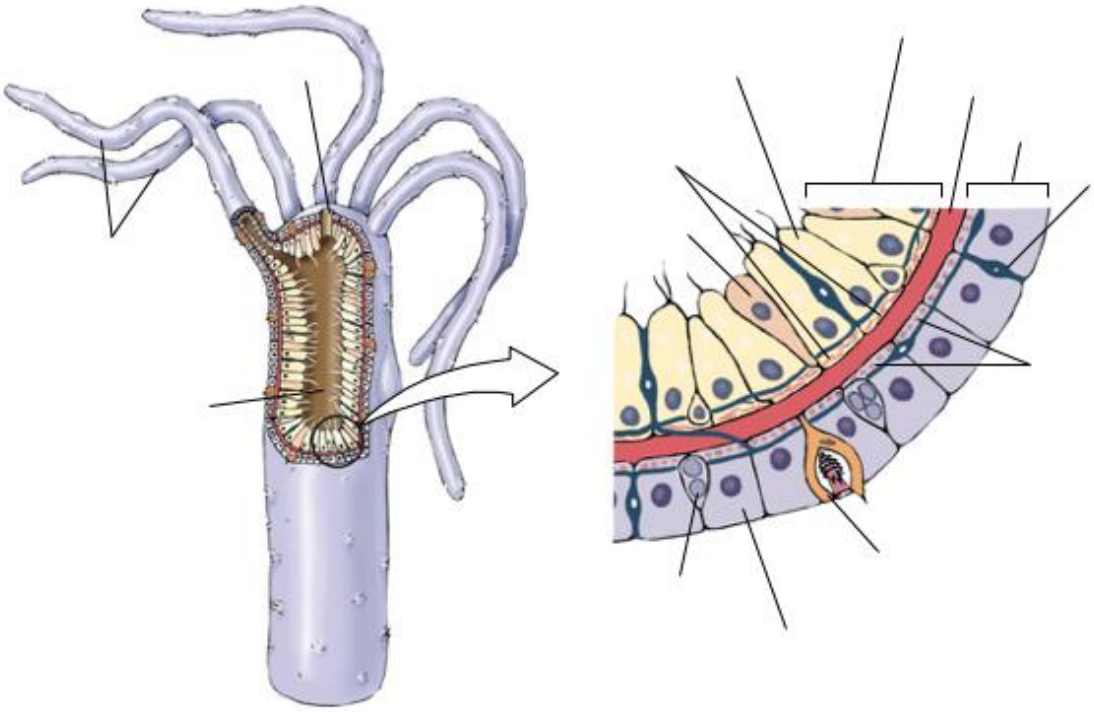
5. Name the larval type that is distinctive to cnidarians, which is diagrammed below (page 264):



6. Label the diagrams below using the following list of terms: epidermis (x2), gastrodermis (x2), gastrovascular cavity (x2), mesoglea (x2), mouth (x2), and tentacle (x2) (Figure 13.3 – page 263).



7. Label the diagrams below using the following list of terms: epidermis, epitheliomuscular cell, cnidocyte with nematocyst, gastrodermis, gastrovascular cavity, gland cell, interstitial cell, longitudinal myofibrils (x2), mesoglea, mouth, nutritive-muscular cell, sensory cell, and tentacles (Figure 13.4 – page 264).



Class Hydrozoa

<u>Habitat(s)</u> – Freshwater and Marine

8. <u>Body forms</u> – which form or forms exist in the life cycles of hydrozoans (page 266)?:

9. <u>Solitary or colonial?</u> – circle the state(s) in which hydrozoans exist (page 281 – Taxonomy of Phylum Cnidaria):

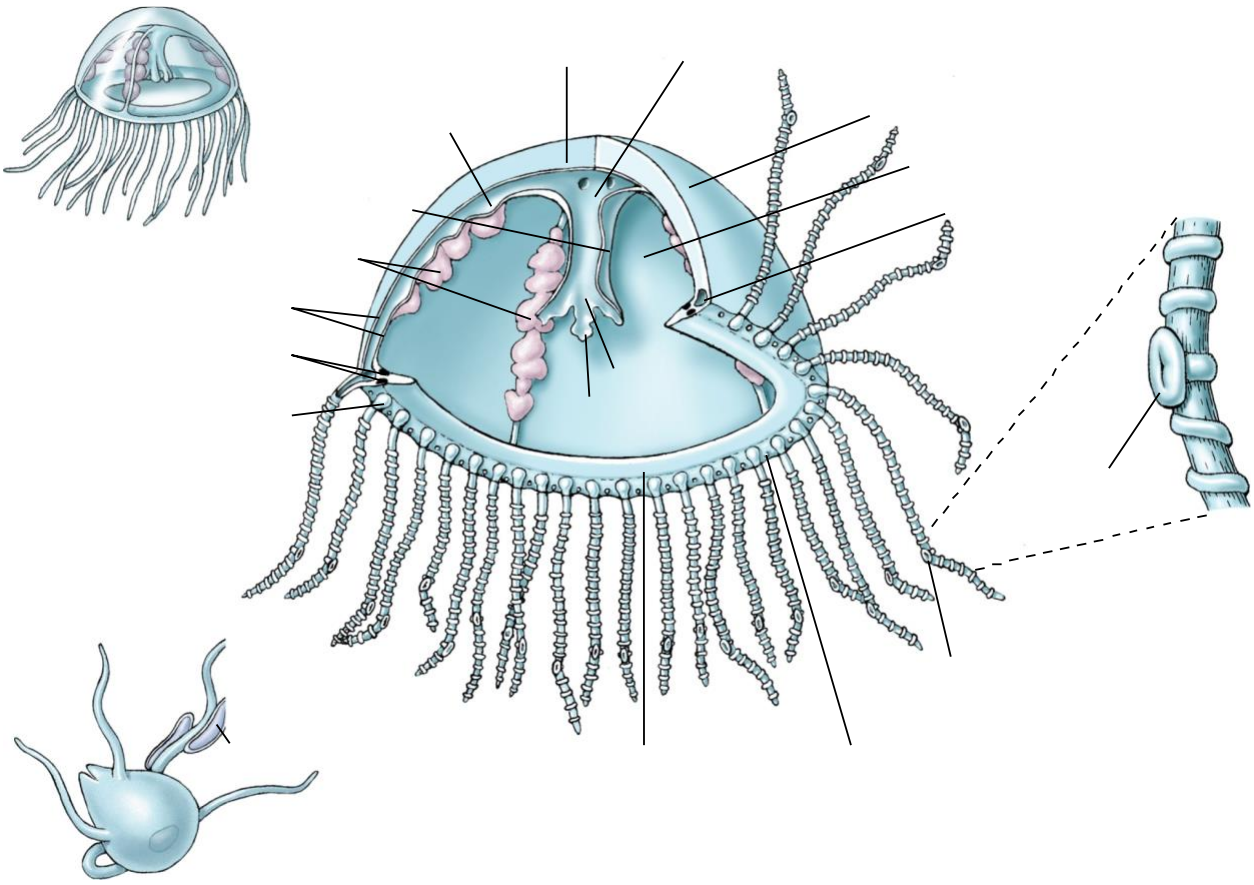
Solitary Colonial

10. <u>Distinctive characteristics (vs. other cnidarians)</u> - circle the answer:

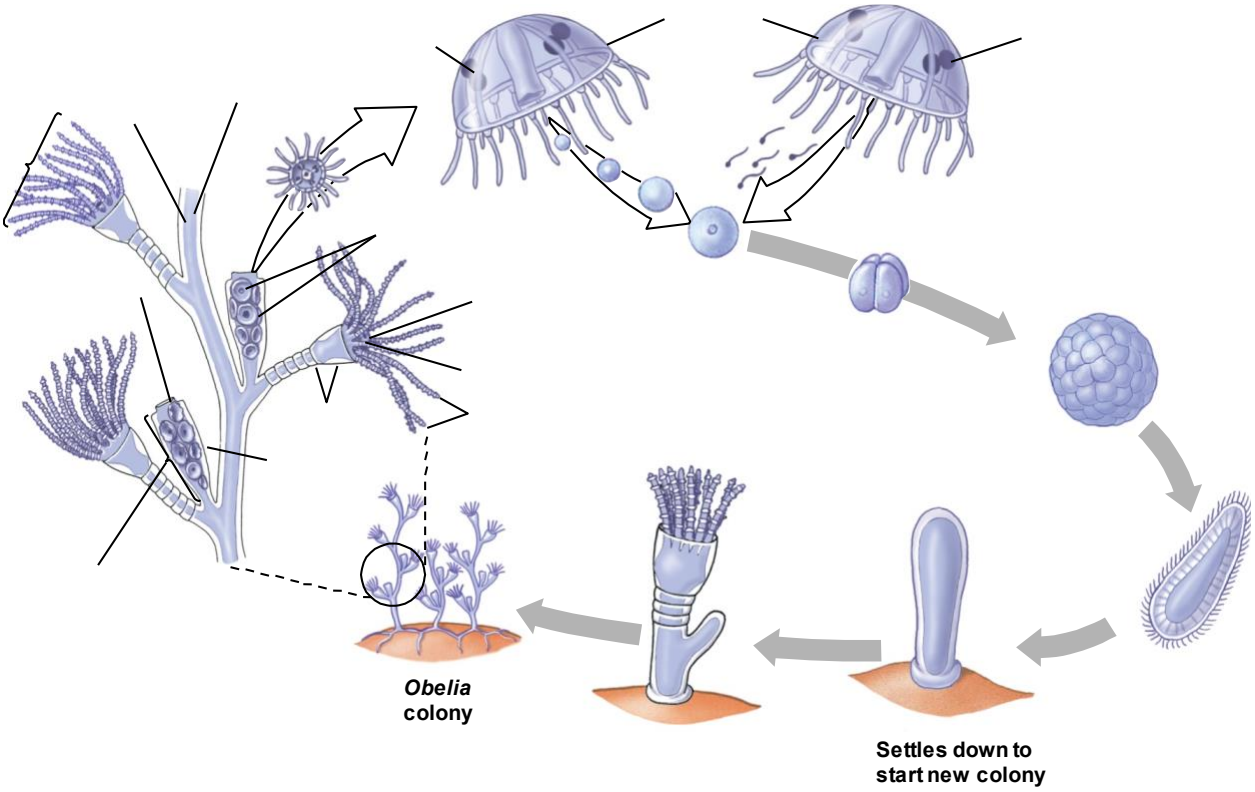
A.	Gonads (Lecture):	Ectodermal	Endodermal
B.	Cnidocytes (Figure 13.4 – page 264):	Epidermis	Gastrodermis
C.	Velum (page 268):	Present	Absent

D. Radial canals (page 268): Four More than four

11. Label the diagrams below, using the following list of terms: adhesive pad (x2), exumbrella, frustule, gastrodermis, gastrovascular cavity, gonads, manubrium, mesoglea, mouth, nerve rings, oral lobe, radial canal, ring canal, statocyst, subumbrella, tentacular bulb, and velum (Figure 13.11 – page 269).



12. Label the diagram of the life cycle of *Obelia* sp., which is a typical hydrozoan, using the following list of terms: blastula, coenosarc, eggs, free-swimming planula larva, gonangium, gonopore, gonotheca, hydranth, hydrotheca, hypostome, medusa buds, medusae, mouth, ovary, perisarc, sperm, tentacles, testis, and zygote (Figure 13.7 – page 267).



<u>Examples include:</u> *Hydra* sp., *Obelia* sp., *Gonionemus* sp., *Physalia* sp., Portuguese man-of-war

Class Scyphozoa – "cup animal"

<u>Habitat(s)</u> – Marine

13. <u>Body forms</u> – which form or forms exist in the life cycles of scyphozoans? (Figure 13.19 – page 273):

14. <u>Solitary or colonial?</u> – circle the state(s) in which scyphozoans exist (page 281 – Taxonomy of Phylum Cnidaria):

Solitary Colonial

5. <u>Distinctive characteristics (vs. other cnidarians)</u> - circle the answer or answer the question:

A. Gonads (Lecture):	Ectodermal	Endodermal
B. Cnidocytes (page 273):	Epidermis	Gastrodermis
C. Velum (page 271):	Present	Absent
D. Radial canals (Lab Manual – page 33):	Four	More than four
E. Gastric pouches (page 273):	Four	More than four

16. Name for the structures extending from the manubrium (page 273):

17. List the two structures associated with the gastric pouches (page 273):

A.
B.

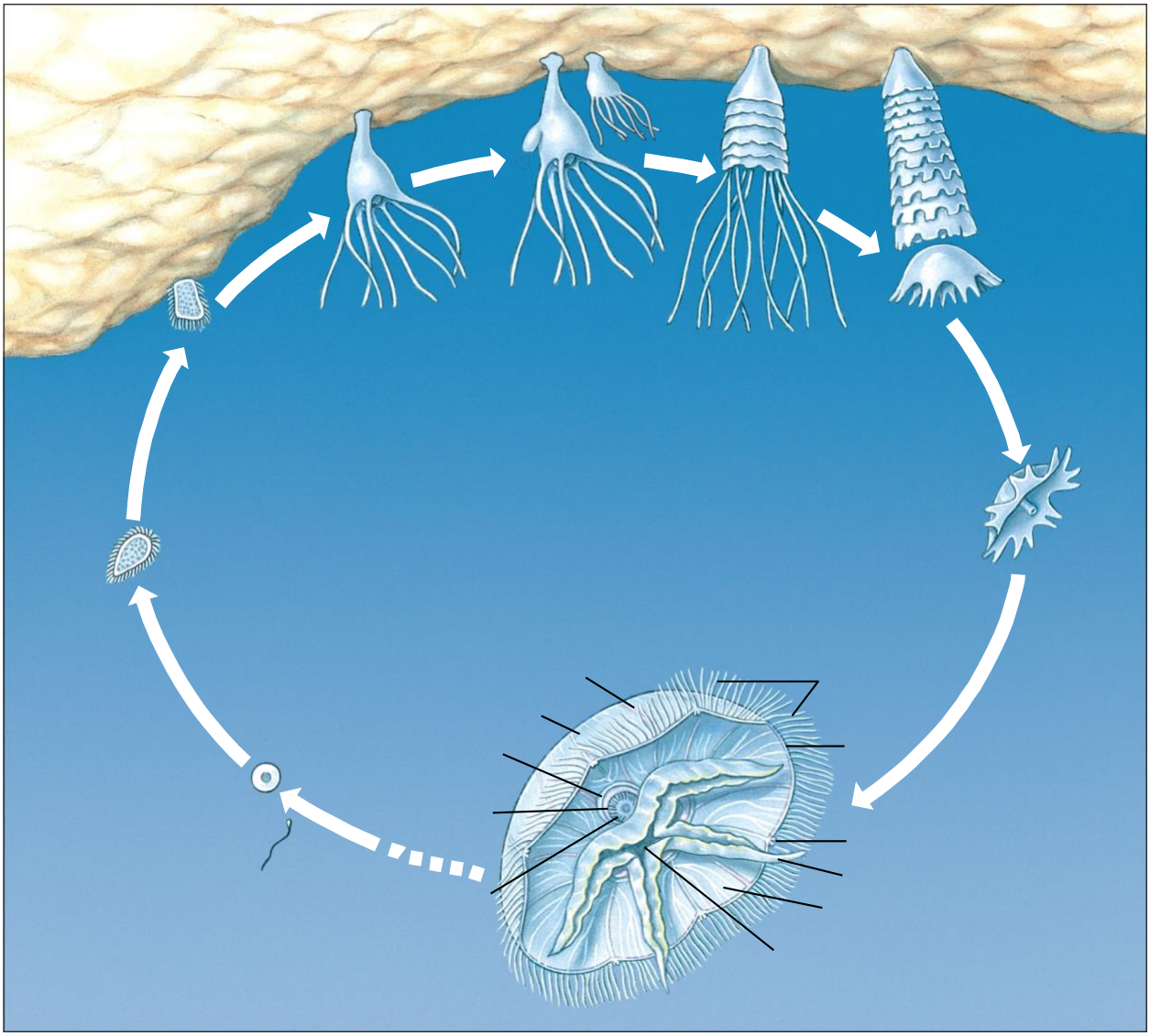
18. Name of the sense organs of scyphozoans (page 272):

A. List the types of sensors contained within this sense organ (Lab Manual – page 36):

1.
2.
3.

B. Name the structures that flank the sense organ (page 272):

19. Label the diagram of the life cycle of *Aurelia* sp., which is a typical scyphozoan, using the following list of terms: ciliated planula larva, early stroblia, ephyra, exumbrella, gastric filament, gastric pouch, gonad, medusa, mouth, oral arm, planula settles, rhopalium and lappets, radial canal, ring canal, scyphistoma, sperm, stroblia, subumbrella, tentacles, and zygote (Figure 13.19 (page 273).



Examples include: *Aurelia* sp., *Cyanea* sp., jellyfish, jellies, moon jellyfish, "cup animals"

Hickman Chapter 13

A Fearsome Tiny Weapon
Phylum Cnidaria
Figure 13.2 (page 261)
- Form and Function
  - Dimorphism and Polymorphism in Cnidarians
    - Figure 13.3 (page 262)
    - Characteristics of Phylum Cnidaria (page 263)
    - Polyps
    - Medusae
  - Life Cycles
  - Body Wall
    - Figure 13.4 (page 264)
  - Cnidocytes
  - Feeding and Digestion
  - Nerve net
- Class Hydrozoa
  - Hydroid Colonies
  - Figure 13.7 (page 267)
  - Figure 13.11 (page 269)
  - Other Hydrozoans (page 271)
- Class Scyphozoa
  - Figure 13.9 (page 273)