WINDWARD COMMUNITY COLLEGE

Vin Nayyar Ph.D.            GENERAL BIOLOGY LAB (172L)            Spring, 2012

Office:  Imiloa-119            E-Mail:  virendra@hawaii.edu            Phone: 236-9107

Office Hours:

<table>
<thead>
<tr>
<th>Days</th>
<th>Time</th>
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<tbody>
<tr>
<td>Monday</td>
<td>7:30 A.M.- 8:30 A.M.</td>
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<tr>
<td>Tuesday</td>
<td>4:30 P.M.– 5:30 P.M.</td>
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<td>Wednesday</td>
<td>4:30 P.M.- 5:30 P.M.</td>
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<td>Thursday</td>
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WINDWARD COMMUNITY COLLEGE MISSION STATEMENT

Windward Community College is committed to excellence in the liberal arts and career development; we support and challenge individuals to develop skills, fulfill their potential, enrich their lives, and become contributing, culturally aware members of our community.

CATALOG DESCRIPTION

Laboratory to accompany BIOL 172. (3 hours laboratory)

Co-Requisite(s): BIOL 172.

Recommended Preparation: High school biology and college level reading and writing skills.

STUDENT LEARNING OUTCOMES

1. Use the scientific method of inquiry to investigate biological phenomena.
2. Apply the concepts learned in BIOL 172 to an experimental and hands-on observational setting.
3. Collect, reduce, and interpret biological data.
4. Prepare written objective reports describing and interpreting experimental and observational results.
5. Apply standard analytical procedures for the comparative study of plants and animals, such as the handling of living and preserved materials for study, dissection procedures, preparation of materials for microscopic examination, and use of dichotomous keys.
6. Identify the diagnostic anatomical features of organisms representing major groups of plants and animals.
7. Identify the major systematic groups to which specimens of plants and animals belong.
COURSE SYLLABUS AND SCHEDULE

Introduction:
The course is designed to introduce the students to observe the basic principle of general biology through experimentations. The course reinforces the basic concepts of biology being discussed in General Biology-172. Therefore, taking Biology-172 concurrently is strongly recommended. The students must come to the laboratory well prepared for the scheduled experiments. All experiments shall be done in a group of two, unless instructed otherwise. All laboratory exercises MUST be taken seriously any kind of disturbance could lead to serious consequences. The course fulfills the natural science requirements for the Liberal Arts curriculum at W.C.C. and Manoa.

Prerequisites:
General Biology-172 or concurrent enrollment

CONCEPTS OR TOPICS

- Biology, anatomy, diversity and systematics of algae and fungi
- Biology, anatomy, diversity and systematics of higher plants.
- Adaptations of plants to the terrestrial environment.
- Anatomy and micro-anatomy of tracheophyte structure (stems, roots & leaves), including monocot/dicot differences.
- Identification of some common native Hawaiian plant species.
- Animal body plans in relation to the higher systematics of animals
- Dichotomous keys.
- Biology, anatomy, diversity and systematics of mollusks, annelids, arthropods, echinoderms and chordates
- Mammalian anatomy.

LABORATORY NOTEBOOK. The student will maintain a laboratory notebook to record all notes, observations, and information gathered before and during laboratory activities. The notebook is to be submitted on the last day of the class as a part of extra credit. The type of notebook and the kind of information required will be explained during the introductory lab session.

LABORATORY SUMMARIES. The student will complete a total of 12 written laboratory summaries. Each summary must be completed and turned in no later than the beginning of the first laboratory meeting after the assignment was given. The production of laboratory summaries should be considered an individual student task. The sharing of data tables and graphs between students is considered a form of plagarism and is inappropriate. LATE SUMMARIES RECEIVED WITHIN ONE WEEK OF THE DUE DATE WILL BE ASSESSED AN AUTOMATIC PENALTY OF 1%. SUMMARIES WILL NOT BE ACCEPTED IF SUBMITTED MORE THAN ONE WEEK FOLLOWING THE DUE DATE.
PRE-LAB QUIZ. The student will take a pre-lab quiz **DURING THE FIRST FIFTEEN MINUTES** of each laboratory meetings. These quizzes will test the student's knowledge of and preparation for the laboratory exercise planned for that day, as well as the student's understanding of the previous laboratory activity. Of these quizzes, only the 10 best scores will be included in the student's point total of 20% **NO MAKE-UP QUIZZES FOR ANY ABSENCES (EVEN RESULTING FROM LEGITIMATE ILLNESS) WILL BE ADMINISTERED.**

LABORATORY PRACTICAL EXAMS. The student will take two laboratory practical examinations (30% each) to demonstrate acquisition of laboratory skills and a understanding of information presented during laboratories.

LABORATORY ATTENDANCE. Regular attendance is expected. Because laboratories involve considerable set-up/take-down time and supervision, students will **NOT** be able to make up missed laboratory activities. A student missing a scheduled laboratory activity because of an illness or legitimate emergency may be given an alternative activity to make up lost lab summary points. In such a circumstance, the student is still responsible for the information presented during the missed laboratory session. Regardless of the reason, **A STUDENT MISSING MORE THAN TWO SCHEDULED LABORATORY SESSIONS WILL NOT RECEIVE CREDIT FOR THE COURSE.**

LAB ATTIRE, CONDUCT AND HYGIENE. Because biology labs often involve working with hazardous materials and living organisms, students must dress appropriately. Students must wear (lab coats and) closed-toe shoes in the lab. Students may purchase (a lab coat at the college bookstore. In addition, some lab activities will require students to wear gloves and safety glasses (provided by the college). Students failing to dress appropriately for lab will not be permitted into the laboratory and will be considered to be absent for the missed lab activity. Students engaged in conduct that threatens the safety of themselves and others in the lab will be refused access to the lab for the remainder of the semester and will receive an “F” for the course. Students are also expected to clean up their workstations following the lab activities. Failing to do so will lead to a 5-10 point penalty depending upon the seriousness of the infraction.

**Evaluation:**
The student evaluation will be based on quizzes, examinations, class attendance and active participation during class periods. There will **NOT BE A RETEST** under any circumstances. Make up tests will not be given without a valid reason (medical certificate) and must be taken on the day the student returns to the class. Though unexpected and extremely unpleasant to mention, but any unfair practices (cheating, plagiarism) during the course activities would automatically lead to a final grade of “F”, without any compromises. In case of a missed class, student alone shall be responsible for the material covered or any announcements made during that class period.
ALL QUIZZES AND EXAMINATIONS WILL BE ANSWERED ON SCANTRON FORMS ONLY AND STUDENTS SHALL BE RESPONSIBLE FOR PROVIDING THEIR OWN SCANTRONS. SCANTRONS ARE AVAILABLE AT THE BOOKSTORE.

ALL ASSIGNMENTS ARE TO BE HANDED OVER IN PERSON ON OR BEFORE THE DUE DATE. LATE ASSIGNMENTS, ASSIGNMENTS LEFT IN MY MAILBOX, OR E-MAILED WOULD BE SUBJECT TO PENALTY.

Grading Policy:
Then distribution of points for the final grade shall be as follows:

<table>
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<th>Type</th>
<th>Percentage</th>
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<tr>
<td>First and Second Exams</td>
<td>60 %</td>
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<tr>
<td>Laboratory Reports (10)</td>
<td>20 %</td>
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<td>Quizzes (10)</td>
<td>20%</td>
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<td>Extra Credit, Notebook, Drawings</td>
<td>5 %</td>
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</table>

The final grade will be determined by the following range:

<table>
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<tr>
<th>Grade</th>
<th>Range</th>
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<tr>
<td>A</td>
<td>90 % and above</td>
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<td>B</td>
<td>80-89 %</td>
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<td>C</td>
<td>70-79 %</td>
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<td>D</td>
<td>60-69 %</td>
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<td>F</td>
<td>59 % and less</td>
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LEARNING RESOURCES

Additional Information:
Any further detailed information can be obtained from the WCC general catalog.
INHERENTLY DANGEROUS ACTIVITIES IN THE BIOLOGY LABORATORY

Students may be exposed to chemicals (e.g., formaldehyde, organic solvents, acids, and other caustic chemicals), chemical fumes, laboratory equipment and supplies (e.g., scalpels, razor blades, glass slides, coverslips, and electrical equipment), toxic or irritating properties of living and dead animals, human organic matter (e.g., saliva and blood), and other materials necessary to laboratory activities of this or other laboratory classes. Other possible hazards include broken glass on the floor or counters, combustible materials (e.g., bunsen burner gas), and slippery spills.

LABORATORY SAFETY RULES

1. Students should be familiar with safety procedures and take appropriate precautions at all times to insure the safety of every student in the lab.
2. Students should follow instructions carefully, especially when hazardous conditions occur or hazardous materials are being used.
3. Students should locate the placement of safety equipment and supplies in the laboratory: safety shower, eye wash station, fire extinguisher, and first aid kit. Students should understand the use of this equipment. Also note the locations of exits.
4. Anyone injured in the lab, should inform the instructor immediately and take immediate action to reduce the risk of further injury.
5. Students should familiarize themselves with the fire procedures. Extinguish small fires, but leave the building immediately should a major fire occur. Notify the appropriate authorities -- don't assume someone else remembered to do it. Meet with other students and your instructor outside the building before leaving so that an accurate headcount may be made.
6. Students should dress appropriately in the lab. Students may elect to supply their own gloves and protective aprons or laboratory coats. Some lab activities may require protective eyewear (provided for the activity by WCC).
7. Students should report all hazardous conditions to the instructor immediately.
8. Chemicals may be poisonous, corrosive, or flammable. No chemicals, even chemicals known to be safe, should be ingested, inhaled, or touched unless specifically directed to do so by your instructor.
9. All organisms, living or dead, should be treated with care and respect. Avoid direct handling when possible.
10. The safe use of specific equipment and tools (e.g., microscopes, slides, scalpels, and
pipettes) will be demonstrated by the instructor during the laboratory sessions. Students should be sure they understand this usage.

11. Students should clean up any supplies used and should return materials where they belong as instructed. Any material spilled should be cleaned appropriately. Report and hazardous spills or breakages.

12. Broken glass and sharp metal waste should be placed only in those receptacles marked for such disposal -- do not put these materials in normal trash receptacles.

13. Some chemical wastes may not be dumped into laboratory sinks. In such circumstances an appropriate container will be provided for this waste in the lab.

14. Organic waste resulting from animal dissection activities should be disposed of in the appropriate receptacle, not the ordinary trash receptacles.

15. Human organic materials (e.g., saliva and blood) must be disposed of in such a way as to eliminate any possibility for contamination and the spread of disease. Appropriate handling and disposal procedures will be explained when human materials are involved in the laboratory exercise.

16. Clean up the laboratory area: remove and dispose of all trash; return supplies and equipment to appropriate locations; and disinfect bench area.

17. After completing laboratory activities and clean up, students should wash their hands in the restroom to avoid spreading contamination and hazardous chemicals.

18. The laboratory is a place for learning. Therefore, eating, drinking, and playing around is prohibited during the laboratory session. Students exhibiting unsafe or inappropriate behavior in the lab may be asked to leave and may be given an "F" grade for the course.

DISABILITIES ACCOMMODATION STATEMENT
If you have a physical, sensory, health, cognitive, or mental health disability that could limit your ability to fully participate in this class, you are encouraged to contact the Disability Specialist Counselor to discuss reasonable accommodations that will help you succeed in this class. Ann Lemke can be reached at 235-7448, lemke@hawaii.edu, or you may stop by Hale ‘Akoakoa 213 for more information.
**TENTATIVE SCHEDULE: WEDNESDAY: 5:30 P.M, IMILOA-106**

<table>
<thead>
<tr>
<th>Lab #</th>
<th>Date</th>
<th>Topic</th>
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<tbody>
<tr>
<td></td>
<td>Jan, 11</td>
<td>Introduction, Lab safety</td>
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<tr>
<td>1</td>
<td>Jan, 16(M)</td>
<td><strong>HOLIDAY-DR.MARTIN LUTHER KING JR DAY</strong></td>
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<td>2</td>
<td>Jan, 18</td>
<td>Algae and Fungi</td>
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<td>3</td>
<td>Jan, 25</td>
<td>Plant Life Cycles and Adaptations I, Moses, Ferns and Their Relatives</td>
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<td>4</td>
<td>Feb, 1</td>
<td>Plant Life Cycles and Adaptations II, Gymnosperms and Angiosperms</td>
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<td>5</td>
<td>Feb, 8</td>
<td>Plant Structure</td>
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<td>6</td>
<td>Feb, 15</td>
<td>Leaves; Specialized Organs</td>
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<td>7</td>
<td>Feb, 22</td>
<td><strong>BOTANICAL TOUR</strong></td>
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<td>8</td>
<td>Mar, 2(F)</td>
<td><strong>HOLIDAY-PROFESSIONAL DEVELOPMENT DAY</strong></td>
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<td>9</td>
<td>Mar, 29</td>
<td><strong>FIRST EXAMINATION LABS 1-6</strong></td>
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<tr>
<td>10</td>
<td>Mar, 7</td>
<td>Animal Body Plan and Dichotomous Keys</td>
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<td>11</td>
<td>Mar, 14</td>
<td>Mollusks and Annelids</td>
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<td>12</td>
<td>Mar, 21</td>
<td>Arthropods</td>
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<td>13</td>
<td>Mar, 26-30</td>
<td><strong>HOLIDAY-SPRING BREAK</strong></td>
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<td>14</td>
<td>Apr, 4</td>
<td>Echinoderms</td>
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<td>15</td>
<td>Apr, 6</td>
<td><strong>HOLIDAY-GOOD FRIDAY</strong></td>
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<td>16</td>
<td>Apr, 11</td>
<td>Overview of Phylum Chordata</td>
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<td>17</td>
<td>Apr, 18</td>
<td>Mammalian Anatomy</td>
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<tr>
<td>18</td>
<td>Apr, 25</td>
<td>Review session</td>
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<td>19</td>
<td>May, 2</td>
<td><strong>SECOND EXAMINATION LABS 7-12</strong></td>
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</table>
Lab Safety Quiz  (worth 15 points)

Question 1 of 15  (worth 1 point)
At the end of the lab session, before you leave the lab, you should

A. put all laboratory materials away in their proper places and all chemical/biological wastes in the appropriate receptacles
B. wash off your laboratory bench area, using disinfectant if necessary
C. wash your hands
D. all of these

Answer Key: D

Question 2 of 15  (worth 1 point)
How should you treat the contents in a container labeled "Distilled Water"?

A. as though it were a toxic substance
B. with less caution than if it were acid
C. pour it on to the floor
D. drink it

Answer Key: A
Question 3 of 15  (worth 1 point)
If a chemical should get into your eyes, you should

A determine what the chemical was, then decide whether or not you need to wash
   . station
B have someone assist you immediately to get the eye wash station and wash
C ignore it as we never use dangerous chemicals in the lab
D exhibit severe panic and run around the lab screaming for help

Answer Key: B

Question 4 of 15  (worth 1 point)
If a small fire occurs on your desktop, you should

A panic and leave the lab without telling anyone
B pull the fire alarm and leave the lab
C assess the situation quickly to determine whether or not the fire extinguisher may be used, then extinguish the fire
D throw alcohol on it

Answer Key: C
Question 5 of 15  (worth 1 point)
If there is a large fire in the lab, and it is clearly too large to be extinguished using the in-lab fire extinguisher, you should

A. leave the lab immediately through the nearest safe exit
B. make it your responsibility to pull the fire alarm
C. meet the rest of the class with the instructor in the pre-arranged safe location as soon as possible
D. all of these

Answer Key: D

Question 6 of 15  (worth 1 point)
If you should get injured in the lab

A. avoid telling the instructor because he will think you are stupid
B. avoid telling anyone for fear of embarrassment
C. tell the instructor immediately so that proper first aid may be applied
D. tell your instructor the next day when he's not so busy

Answer Key: C

Question 7 of 15  (worth 1 point)
If you should spill a substantial amount of a hazardous chemical on your clothing and body, you should

A. keep wearing the clothing so that you don't offend anyone or embarrass yourself
B. immediately remove the contaminated clothing and rinse the hazardous chemical under the emergency shower.
C. look for a hazardous chemical spill kit and read the instructions carefully before using the kit.
D. not do anything until you’ve had a chance to discuss the problem with your instructor.

Answer Key: B

Question 8 of 15  (worth 1 point)
In order to ensure the safety of every student in the lab, students should be familiar with

A. the integrating principles of biology
B. safety procedures
C. the location of the soda machine
D. their lab partner’s age and sex

Answer Key: B

Question 9 of 15  (worth 1 point)
Students in the biology laboratory may be exposed to

A. chemicals
B. human organic matter
C. chemical fumes


Question 10 of 15  (worth 1 point)
Treat all chemicals, even those known to you to be safe, as though they were

A dangerous
. s
B safe
. e
C consumable
. ble
D disposable
. e
Answer Key: A

Question 11 of 15  (worth 1 point)
When you are working with chemicals in a laboratory situation where there is a risk of getting them in the eyes, you should be wearing

A sunglasses
. e
B safety glasses with perforations
. e
C approved goggles
. e
D contact lenses
. e
Answer Key: C
Question 12 of 15  (worth 1 point)
You may do the following with preserved dissection specimens.

A. play games with them
B. discard their remains in any trash can
C. treat them with care, respect, and caution, avoiding direct handling when possible
D. store them in a refrigerator designated for the storage of food

Answer Key: C

Question 13 of 15  (worth 1 point)
You should dispose of broken glass and sharp metal waste in

A. only those receptacles marked for such disposal
B. any trash can
C. your pocket
D. outside in the bushes

Answer Key: A

Question 14 of 15  (worth 1 point)
What are you required to wear in the biology lab?

A. lab coat
B. closed-toe shoes
C. hat
D. Answers "A" and "B" above

Answer Key: D

Question 15 of 15 (worth 1 point)
You have an unlabeled flask that contains an unknown fluids. You should

A. make a guess as to its contents and label it appropriately
B. dump it down the sink so no one has to deal with it
C. sniff and taste it to determine what it is
D. label the container "unknown liquid" and inform the instructor about its existence

Answer Key: D

Tasks, Tests and Surveys

Question Pools | Assessments | Grading | Test Drive
Preview Test: Practice Quiz
Practice Quiz  (worth 15 points)
This Practice Quiz consists of ten questions: one matching question and nine multiple choice questions. This quiz is meant to provide you with an opportunity to practice taking quizzes using Laulima. While it will be scored, your score on this quiz will not be used towards your grade in this class. To simulate real quiz-taking situations, I've set a 20 minute time limit to this quiz.

Unlike the real quizzes, you may take this Practice Quiz as often as you want until you are comfortable taking quizzes through Laulima.

Have fun!

Dave

Question 1 of 10  (worth 6 points)
Match the discipline what it studies.

<table>
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<tr>
<th>Match</th>
<th>Choice</th>
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<td>Microbiology</td>
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<td>Physics</td>
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<td>Sales</td>
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Question 2 of 10  (worth 1 point)
In Biology 172 we will learn about

A. the weather  
B. living things  
C. political systems  
D. solving of mathematical equations  

Answer Key: B

Question 3 of 10  (worth 1 point)
Students taking BIOL 172, generally plan to major in

A. music  
B. psychology  
C. life sciences  
D. math
Question 4 of 10  (worth 1 point)
What does the acronym “WCC” stand for?

A. Wild and Crazy Camels
B. Windward Community College
C. Western Colleges Collective
D. Winsome Calico Cat

Answer Key: B

Question 5 of 10  (worth 1 point)
Which of the following is a prerequisite for BIOL 172?

A. BIOL 100
B. BIOL 127
C. BIOL 171
D. BIOL 200

Answer Key: C
Question 6 of 10  (worth 1 point)
You registered for the class

A. merely to satisfy science core requirements
B. you heard it was ridiculous easy
C. because you were very interested in the subject area
D. because your parents made you take the class

Answer Key: C

Question 7 of 10  (worth 1 point)
Your instructor’s doctoral research involved the study of coral

A. sex
B. growth
C. mucus
D. morpholo gy

Answer Key: C

Question 8 of 10  (worth 1 point)
Your instructor’s email address is

A. krupp@hawaii.edu
Question 9 of 10  (worth 1 point)
Your instructor's first name is

A  Dave
B  Mildr
C  Geor
D  Pope

Answer Key: A

Question 10 of 10  (worth 1 point)
Your instructor's office telephone number is

A  247-
   . 9121
B  236-
   . 9121
C  236-
   . 9114
D  236-
Tasks, Tests and Surveys

Question Pools  | Assessments  | Grading  | Test Drive

Preview Test: Pre-Lab Quiz One

Pre-Lab Quiz One  (worth 15 points)

Question 1 of 15  (worth 1 point)
At the end of the lab session, before you leave the lab, you should

A. put all laboratory materials away in their proper places and all chemical/biological wastes in the appropriate receptacles
B. wash off your laboratory bench area, using disinfectant if necessary
C. wash your hands
D. all of these

Answer Key: D
Question 2 of 15  (worth 1 point)
How should you treat the contents in a container labeled "Distilled Water"?

A as though it were a toxic substance
B with less caution than if it were acid
C pour it on to the floor
D drink it

Answer Key: A

Question 3 of 15  (worth 1 point)
If a chemical should get into your eyes, you should

A determine what the chemical was, then decide whether or not you need to wash your eyes at the eye wash station
B have someone assist you immediately to get to the eye wash station and wash your eyes out
C ignore it as we never use dangerous chemicals in the lab
D exhibit severe panic and run around the lab screaming for help

Answer Key: B

Question 4 of 15  (worth 1 point)
If there is a large fire in the lab, and it is clearly too large to be extinguished using the in-lab fire extinguisher, you should

A leave the lab immediately through the nearest safe exit
B. make it your responsibility to pull the fire alarm
C. meet the rest of the class with the instructor in the pre-arranged safe location as soon as possible
D. all of these

Answer Key: D

Question 5 of 15  (worth 1 point)
If you should spill a substantial amount of a hazardous chemical on your clothing and body, you should

A. keep wearing the clothing so that you don't offend anyone or embarrass yourself
B. immediately remove the contaminated clothing and rinse the hazardous chemicals from your body under the emergency shower
C. look for a hazardous chemical spill kit and read the instructions carefully before using it
D. not do anything until you've had a chance to discuss the problem with your instructor

Answer Key: B

Question 6 of 15  (worth 1 point)
You may do the following with preserved dissection specimens.

A. play games with them
B. discard their remains in any trash can
C. treat them with care, respect, and caution, avoiding direct handling when possible
D. store them in a refrigerator designated for the storage of food.
Answer Key: C

Question 7 of 15  (worth 1 point)
You should dispose of broken glass and sharp metal waste in

A. only those receptacles marked for such disposal
B. any trash can
C. your pocket
D. outside in the bushes

Answer Key: A

Question 8 of 15  (worth 1 point)
What are you required to wear in the biology lab?

A. lab coat
B. closed-toe shoes
C. hat
D. Answers "A" and "B" above

Answer Key: D
Question 9 of 15  (worth 1 point)
In our upcoming lab activity, you will make a microscopic preparation by putting the specimen into a drop of 0.01% neutral red stain. What organism will be examined in this preparation?

A. diatom
B. *Penicillium*
C. seaweed
D. yeast

Answer Key: D

Question 10 of 15  (worth 1 point)
In our upcoming lab activity we will study

A. bacteria
B. algae and fungi
C. mosses and ferns
D. heterotrophic protists

Answer Key: B
Question 11 of 15  (worth 1 point)
We will look at the following kinds of materials in our upcoming lab session:

A. prepared
   . slides
B. live cultures
C. whole
   . specimens
D. all of these

Answer Key: D

Question 12 of 15  (worth 1 point)
The body of a fungus, composed of many filaments, is called a

A. hypha
B. septum
C. myceli
   . um
D. stipe

Answer Key: C

Question 13 of 15  (worth 1 point)
The seaweed structure that resembles roots in higher plants is the

A. stipe
Question 14 of 15  (worth 1 point)
Which fungal phylum produces conidiospores

A. Zygomycota
B. Ascomycota
C. Basidiomycota
D. Chitridiomyco

Answer Key: B

Question 15 of 15  (worth 1 point)
In the five-kingdom system of classification that is now being replaced by a system of three Domains and many more kingdoms, the algae were usually included in Kingdom

A. Prokaryot
B. Protista
C. Fungi
Match the Fungal Phylum on the to its characteristic reproductive structure on the left (one point each).

<table>
<thead>
<tr>
<th>Match</th>
<th>Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A</td>
</tr>
<tr>
<td>2</td>
<td>A</td>
</tr>
</tbody>
</table>
Question 2 of 13  (worth 1 point)

Algae may be distinguished from the higher plants of Kingdom Plantae because algae lack

A. multicellularity
B. chloroplasts
C. specialized vascular tissues and other adaptations to terrestrial life
D. nuclei

Answer Key: 1 - B, 2 - C, 3 - A
Question 3 of 13  (worth 1 point)
Fungi generally acquire their nutrition through

A secreting enzymes and acids that break down complex molecules into simpler substances
B ingest particulate food particles into intracellular food vacuoles
C photosynthesis
D chemosynthesis

Answer Key: A

Question 4 of 13  (worth 1 point)
Which of the follow is a reason why seaweeds have not successfully colonized the terrestrial environment? Seaweeds lack

A structures to anchor them to the bottom
B air-filled floats
C the capacity to photosynthesize
D vascular tissues

Answer Key: D
Question 5 of 13  (worth 1 point)
Which of the following is a seaweed structure that superficially resembles the stems of higher terrestrial plants?

A. stipe  
B. blade  
C. holdfast  
D. pneumatocyst
Answer Key: A

Question 6 of 13  (worth 1 point)
A homosporous plant is one that

A. produces two kinds of sporophytes  
B. is a seedless vascular plant  
C. produces two kinds of spores, one asexually by mitosis and one type by meiosis  
D. produces only one kind of spore, often yielding a gametophyte that exhibits both archegonia and antheridia
Answer Key: D

Question 7 of 13  (worth 1 point)
A land plant exhibits the following characteristics: produces flagellated sperm; the dominant generation is diploid; exhibits megaphylls. The
plant is most likely a

A fern

B charophyte
tC moss
D whiskfer
Answer Key: A

Question 8 of 13 (worth 1 point)
During the lab activity, which of the following will be examined to understand the anatomy of a moss archegonium?

A prepared microscope slide of the female shoot
B prepared microscope slide of the male shoot
C living moss specimens
D sorus
Answer Key: A

Question 9 of 13 (worth 1 point)
For this week’s lab activity, you are going to study

A Kingdom Chlorophyta
Question 10 of 13  (worth 1 point)
In order to discover the location of the fern archegonia and antheridia, you will examine

A. a fern frond
B. the fern sporophyll
C. the fern prothallus
D. a sporangium

Answer Key: C

Question 11 of 13  (worth 1 point)
In plants, the male gamete is produced in the

A. testes
B. antheridium
C. archegonium

Answer Key: B
Question 12 of 13  (worth 1 point)
Which generation of the higher plant life cycle typically possesses vascular tissues?

A. zygote  
B. gametophyte  
C. sporophyte  
D. chlorophyte

Answer Key: C

Question 13 of 13  (worth 1 point)
Which plant generation is haploid?

A. sporophyte  
B. anthophyte  
C. gametophyte  
D. haplophyte

Answer Key: C
## Tasks, Tests and Surveys

### Question Pools | Assessments | Grading | Test Drive

**Preview Test: Pre-Lab Quiz Two**

**Pre-Lab Quiz Two**  (worth 15 points)

**Question 1 of 13**  (worth 3 points)

Match the Fungal Phylum on the to its characteristic reproductive structure on the left (one point each).

<table>
<thead>
<tr>
<th>Match</th>
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</tbody>
</table>
Question 2 of 13  (worth 1 point)
Algae may be distinguished from the higher plants of Kingdom Plantae because algae lack

A. multicellularity
B. chloroplasts
C. specialized vascular tissues and other adaptations to terrestrial life
D. nuclei

Answer Key: C
Question 3 of 13  (worth 1 point)
Fungi generally acquire their nutrition through

A. secreting enzymes and acids that break down complex molecules into simpler substances
B. ingest particulate food particles into intracellular food vacuoles
C. photosynthesis
D. chemosynthesis

Answer Key: A

Question 4 of 13  (worth 1 point)
Which of the follow is a reason why seaweeds have not successfully colonized the terrestrial environment? Seaweeds lack

A. structures to anchor them to the bottom
B. air-filled floats
C. the capacity to photosynthesize
D. vascular tissues

Answer Key: D

Question 5 of 13  (worth 1 point)
Which of the following is a seaweed structure that superficially resembles the stems of higher terrestrial plants?

A. stipe
B. blade
C. holdfast
D. pneumatocyst

Answer Key: A

Question 6 of 13  (worth 1 point)
A homosporous plant is one that

A. produces two kinds of sporophytes
B. is a seedless vascular plant
C. produces two kinds of spores, one asexually by mitosis and one type by meiosis
D. produces only one kind of spore, often yielding a gametophyte that exhibits both archegonia

Answer Key: D

Question 7 of 13  (worth 1 point)
A land plant exhibits the following characteristics: produces flagellated sperm; the dominant generation is diploid; exhibits megaphylls. The plant is most likely a
A. fern
B. charophyte
C. moss
D. whiskfer

Answer Key: A

Question 8 of 13  (worth 1 point)
During the lab activity, which of the following will be examined to understand the anatomy of a moss archegonium?

A. prepared microscope slide of the female shoot
B. prepared microscope slide of the male shoot
C. living moss specimens
D. sorus

Answer Key: A

Question 9 of 13  (worth 1 point)
For this week's lab activity, you are going to study

A. Kingdom Chlorophyta
B. flowering plants
C seaweeds and other algae
D seedless terrestrial plants

Question 10 of 13 (worth 1 point)
In order to discover the location of the fern archegonia and antheridia, you will examine

A a fern frond
B the fern sporphyll sorus
C the fern prothallus
D a sporangium

Answer Key: C

Question 11 of 13 (worth 1 point)
In plants, the male gamete is produced in the

A testes
B antheridium
C archegonium
D megasporangium
Question 12 of 13  (worth 1 point)
Which generation of the higher plant life cycle typically possesses vascular tissues?

A. zygote
B. gametophyte
c. sporophyte
d. chlorophyte
Answer Key: C

Question 13 of 13  (worth 1 point)
Which plant generation is haploid?

A. sporophyte
B. anthophyte
c. gametophyte
d. haplophyte
Answer Key: C
Tasks, Tests and Surveys

Preview Test: Pre-Lab Quiz Three

Pre-Lab Quiz Three  (worth 15 points)

Question 1 of 15  (worth 1 point)
A moss adaptation for success in the terrestrial environment is

A. well-developed vascular tissues
B. pollen grains
C. wind-blown spores
D. true roots
E. female gametophyte protected within sporophyte tissues

Answer Key: C

Question 2 of 15  (worth 1 point)
Mosses and ferns are normally dispersed by

A. fleshy fruits
B. windblown spores
C. seeds
Question 3 of 15  (worth 1 point)
Which generation is dominant in the mosses?

A. sporophyte
B. flagellated sperm
C. gametophyte
D. zygote
E. spore

Answer Key: C

Question 4 of 15  (worth 1 point)
Which of the following plant characteristic is NOT necessarily to be regarded as an adaptation for a terrestrial existence?

A. pollen tubes
B. alternation of generations
C. dispersal by windblown spores
Question 5 of 15  (worth 1 point)
Which of the following plants exhibits swimming sperm?

A. hybiscus
B. pine
C. bryophyte
D. corn
E. bean

Answer Key: C

Question 6 of 15  (worth 1 point)
Which tissue of a vascular plant is responsible for the transport of the products of photosynthesis?

A. xylem
B. pollen tube
C. phloem
D. antheridiu
Question 7 of 15  (worth 1 point)
In plants, the female gamete is produced in the

A. testes
B. antheridium
C. archegonium
D. microsporangium
E. female sporophyte

Answer Key: C

Question 8 of 15  (worth 1 point)
In order to understand the life cycle of pines, we will examine

A. a pine life cycle display
B. staminate cones
C. female cones
D. pine seeds
E. all of these
Question 9 of 15  (worth 1 point)
To understand the differences between lima beans and corn seeds we will

A plant these seeds in clear plastic cups and observe them over several days
B go on a field trip to a farm
C listen to a lecture by WCC's agriculture instructor
D ingest them
E place them in an incubator

Answer Key: A

Question 10 of 15  (worth 1 point)
What features will be studied in comparing gymnosperms and angiosperms?

A number of cotyledons
B type of flower
C presence or absence of the fruit
D presence or absence of a sporophyte
E occurrence of an ovule
Question 11 of 15  (worth 1 point)
What might we observe in a microscopic view of a staminate cone?

A. pollen tubes
B. seeds
C. megaspor es
D. microspor es
E. anthers

Answer Key: D

Question 12 of 15  (worth 1 point)
What must you bring with you to lab?

A. pine cones
B. corn cobs
C. potted *Impatiens* plants
D. potting soil
E. several different kinds of fresh flowers

Answer Key: E
Question 13 of 15  (worth 1 point)
When we examine pollen tube formation, we will immerse the pollen grains in ______ on a microscope slide.

A. 4% NaCl
B. distilled water
C. 10% sucrose
D. nectar extracted from flowers
E. IKI solution

Answer Key: C

Question 14 of 15  (worth 1 point)
Which of the following do we expect to see first in the germination of a bean?

A. breaking of the seed coat
B. emergence of the coleoptile
C. emergence of the radical
D. appearance of the epicotyl
E. development of secondary roots

Answer Key: A
Question 15 of 15  (worth 1 point)
Which of the following is something we won’t do during this week’s lab activity?

A. examine prepared slides of a male cone
B. examine the windblown spores of angiosperms
C. understand the functions of fruits
D. study the anatomy of flowers
E. compare germination monocots and eudicots

Answer Key: B
Question 2 of 15  (worth 1 point)
A heterosporous plant is one that

A. produces a gametophyte that bears both sex organs
B. produces microspores and megaspores in separate sporangia, giving rise to separate gametophytes
C. is a seedless vascular plant
D. produces two kinds of spores, one asexually by mitosis and one type by meiosis
E. reproduces only asexually

Answer Key: B

Question 3 of 15  (worth 1 point)
A seed develops from

A. an ovum
Question 4 of 15 (worth 1 point)
The female gametophyte of angiosperms is the

A. anther
B. archegonium
C. microspore
D. germinated pollen
E. ovule

Answer Key: E

Question 5 of 15 (worth 1 point)
The major components of a flower (i.e., sepals, petals, stamens, & carpels) are regarded by botanists to be evolutionarily derived from

A. endosperm
B. leaves
Question 6 of 15  (worth 1 point)
Triploid tissue found in a developing seed is known as the

A. gametophyte
B. endosperm
C. cotyledon
D. zygote
E. plumule

Answer Key: B

Question 7 of 15  (worth 1 point)
Which of the following is found in gymnosperms and angiosperms but not in the mosses?

A. male gametophyte
B. zygote
Question 8 of 15  (worth 1 point)
In order to study the vascular cambium and secondary growth of a plant, we will examine

A. trees growing outside of the building
B. potted monocot plants
C. prepared slides of *Tilia* older stem
D. fresh cross-sections of *Coleus* stems
E. thorns of *Euphorbia milli*

Answer Key: C

Question 9 of 15  (worth 1 point)
What are you supposed to bring to the laboratory session this week.

A. your lab notebook
B. description of the lab assignment
C. closed-toe shoes
D four plants: two monocots species and two dicots species not seen in the laboratory
E all of these
Answer Key: E

Question 10 of 15  (worth 1 point)
A sieve-tube member would likely lose its nucleus in which zone of growth in a root?

A zone of division
B root cap
C zone of elongation
D quiescent center
E zone of maturation
Answer Key: E

Question 11 of 15  (worth 1 point)
Monocot leaves may be distinguished from dicot leaves because monocot leaves

A have a plummule
B exhibit parallel venation
C exhibit netlike
venation

D.

are compound

E. possess two
cotyledons

Answer Key: B

Question 12 of 15  (worth 1 point)
Monocot roots may be distinguished from dicot roots because monocots have

A. X-shape core of xylem
tissue
B. a pith of parenchyma cells
cortex
D. root hairs
E. a pericycle

Answer Key: B

Question 13 of 15  (worth 1 point)
Primary growth involves

A. cell proliferation in the vascular
cambium
B. growth in length
C. wood formation
D. growth in girth
E. mitosis in the gametophyte

Answer Key: B

Question 14 of 15  (worth 1 point)
Primary xylem and phloem are formed from the

A. ground
  . meristem
B. vascular
  . cambium
C. protoderm
D. cork cambium
E. procambium

Answer Key: E

Question 15 of 15  (worth 1 point)
The most generalized type of plant cell, often forming the ground substance, is the

A. sclereid
B. tracheid
C. parenchyma
  . cell
A flowering plant whose flower exhibits five petals is likely to be a

A. dicot
B. bryophyte
C. monocot
D. pterophyt
E. gymnospe

Answer Key: A
Question 2 of 15  (worth 1 point)
A heterosporous plant is one that

A. produces a gametophyte that bears both sex organs
B. produces microspores and megaspores in separate sporangia, giving rise to separate gametophytes
C. is a seedless vascular plant
D. produces two kinds of spores, one asexually by mitosis and one type by meiosis
E. reproduces only asexually

Answer Key: B

Question 3 of 15  (worth 1 point)
A seed develops from

A. an ovum
B. an ovary
C. a pollen grain
D. an embryo
E. an ovule

Answer Key: E

Question 4 of 15  (worth 1 point)
The female gametophyte of angiosperms is the

A. anther
B. archegonium
C. microspore
D. germinated pollen grain
E. ovule

Answer Key: E

Question 5 of 15 (worth 1 point)
The major components of a flower (i.e., sepals, petals, stamens, & carpels) are regarded by botanists to be evolutionarily derived from

A. endosperm
B. leaves
C. mycorrhizae
D. roots
E. archegonia

Answer Key: B

Question 6 of 15 (worth 1 point)
Triploid tissue found in a developing seed is known as the
A. gametophyte
  . te
B. endosperm
  .
C. cotyledon
  .
D. zygote
  .
E. plumule
  .
Answer Key: B

**Question 7 of 15**  (worth 1 point)
Which of the following is found in gymnosperms and angiosperms but not in the mosses?

A. male
  . gametophyte
B. zygote
  .
C. spores
  .
D. egg
  .
E. seeds
  .
Answer Key: E

**Question 8 of 15**  (worth 1 point)
To understand animal body plans during this week's lab, we will
A. go on a field trip to the zoo
B. dissect a sea anemone, earthworm, crayfish, and a shark
C. examine a variety of animal specimens and document their body plan characteristics in a table
D. watch a movie
E. examine tissue specimens in commercially-prepared microscope slides

Answer Key: C

Question 9 of 15  (worth 1 point)
Which of the following is a tool we will use in lab to identify species?

A. dichotomous taxonomic key
B. encyclopedia
C. taxonomic field guide
D. pictures on the Internet
E. microscope

Answer Key: A

Question 10 of 15  (worth 1 point)
An exoskeleton must be secreted by

A. chondrocytes
Question 11 of 15  (worth 1 point)
Based upon the fossil record, most of the animal body plans represented by existing groups of animals appeared rather suddenly about _____ years ago.

A 10,000
B 2 billion
C 3.8 billion
D 540 million
E 65 million

Answer Key: D

Question 12 of 15  (worth 1 point)
During which stage of development do the three primary germ layers become apparent in an animal embryo?

A gastrulation
Question 13 of 15  (worth 1 point)
Serial repetition of body parts is called

A segmentation
B cephalization
C cleavage
D gastrulation
E colonialism

Answer Key: A

Question 14 of 15  (worth 1 point)
Translating from Latin and Greek root words, what does the term "gymnoderm" mean?

A flat gut
Question 15 of 15  (worth 1 point)
Cephalization is primarily associated with

A. bilateral symmetry.
B. method of reproduction.
C. adaptation to dark environments.
D. fate of the blastopore.
E. type of digestive system.

Answer Key: A
Question 1 of 15  (worth 1 point)
In order to study the vascular cambium and secondary growth of a plant, we will examine

A  trees growing outside of the building
   B  potted monocot plants
   C  prepared slides of "Tilia older stem"
   D  fresh cross-sections of Coleus stems
   E  thorns of Euphorbia milli

Answer Key: C

Question 2 of 15  (worth 1 point)
What are you supposed to bring to the laboratory session this week.

A  your lab notebook
   B  description of the lab assignment
   C  closed-toe shoes
   D  four plants: two monocots species and two dicots species not seen in the laboratory
   E  all of these

Answer Key: E
Question 3 of 15  (worth 1 point)
A sieve-tube member would likely lose its nucleus in which zone of growth in a root?

A. zone of division  
B. root cap  
C. zone of  
  elongation  
D. quiescent center  
E. zone of  
  maturation

Answer Key: E

Question 4 of 15  (worth 1 point)
Monocot leaves may be distinguished from dicot leaves because monocot leaves

A. have a plummule  
B. exhibit parallel  
  venation  
C. exhibit netlike  
  venation  
D. are compound  
E. possess two  
  cotyledons

Answer Key: B
Question 5 of 15  (worth 1 point)
Monocot roots may be distinguished from dicot roots because monocots have

A X-shape core of xylem
  . tissue
B a pith of parenchyma cells
C  a cortex
D  root hairs
E  a pericycle

Answer Key: B

Question 6 of 15  (worth 1 point)
Primary growth involves

A cell proliferation in the vascular cambium
B  growth in length
C  wood formation
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E  mitosis in the gametophyte

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Question 7 of 15  (worth 1 point)
Primary xylem and phloem are formed from the

A ground
  . meristem
B vascular
  . cambium
C protoderm
  
D cork cambium
  
E procambium
  
Answer Key: E

Question 8 of 15  (worth 1 point)
The most generalized type of plant cell, often forming the ground substance, is the

A sclereid
  
B tracheid
  
C parenchyma
  . cell
D sclerenchyma
  . cell
E companion cell
  
Answer Key: C
Question 9 of 15  (worth 1 point)
Jointed appendages are seen in the

A. echinder
   . ms
B. annelids
C. arthropods
   . ds
D. mollusks
E. flatworms
   . s

Answer Key: C

Question 10 of 15  (worth 1 point)
The pseudocoel is embryologically derived from

A. a splitting of mesodermal tissue to form a fluid-filled space
B. outpocketing of the mesodermal lining of the archenteron
C. the persistence of the blastocoel into adulthood
D. invagination of a tube at the blastopore
E. spirally cleaving cells

Answer Key: C
Question 11 of 15  (worth 1 point)
Translating from Latin and Greek root words, what does the term "gymnoderm" mean?

A. flat gut
   B. spiny foot
   C. naked skin
   D. horrible skin
   E. outside bone

Answer Key: C

Question 12 of 15  (worth 1 point)
Which of the following is NOT usually associated with bilateral symmetry?

A. sessile habit
   B. active life
   C. cephalization
   D. complete gut
   E. anterior brain

Answer Key: A
Question 13 of 15  (worth 1 point)
If you were to construct a dichotomous key for fossil species, you would most likely have to base your key upon

A. the pattern of coelom formation
B. the presence of closed circulatory system
C. features observed in preservable hard parts
D. the existence or absence of determinant cleavage
E. the age of the fossil

Answer Key: C

Question 14 of 15  (worth 1 point)
The endoskeleton is secreted by _______ tissues.

A. ectodermal
B. endodermal
C. mesodermal
D. skeletodermal
E. mantle

Answer Key: C
Question 15 of 15  (worth 1 point)
A bilaterally symmetric animal is also most likely to

A. be cephalized
B. have a complete gut
C. possess a dorsal surface
D. a mechanism for locomotion
E. all of these

Answer Key: E

Tasks, Tests and Surveys

Preview Test: Pre-Lab Quiz Six (old)

Question 1 of 10  (worth 1 point)
To understand animal body plans during this week's lab, we will

A. go on a field trip to the zoo
B. dissect a sea anemone, earthworm, crayfish, and a shark
C. examine a variety of animal specimens and document their body plan characteristics in a table
D. watch a movie
E examine tissue specimens in commercially-prepared microscope slidea

Answer Key: C

**Question 2 of 10**  (worth 1 point)
Which of the following is a tool we will use in lab to identify species?

A. dichotomous taxonomic key
B. encyclopedia
C. taxonomic field guide
D. pictures on the Internet
E. microscope

Answer Key: A

**Question 3 of 10**  (worth 1 point)
During which stage of development do the three primary germ layers become apparent in an animal embryo?

A. gastrulation
B. gametogene
C. cleavage
D. fertilization
Question 4 of 10  (worth 1 point)
Serial repetition of body parts is called

A segmentati
. on
B cephalizati
. on
C cleavage
. 
D gastrulatio
. n
E colonialism
. 
Answer Key: A

Question 5 of 10  (worth 1 point)
Translating from Latin and Greek root words, what does the term "gymnoderm" mean?

A flat gut
. 
B spiny foot
. 
C naked skin
. 
D horrible
. skin
E outside
Question 6 of 10  (worth 1 point)
An exoskeleton must be secreted by

A. chondrocytes
B. amoebocytes
C. ectodermal tissues
D. mesoderm
E. columnar epithelium

Answer Key: C

Question 7 of 10  (worth 1 point)
Based upon the fossil record, most of the animal body plans represented by existing groups of animals appeared rather suddenly about _____ years ago.

A. 10,000
B. 2 billion
C. 3.8 billion
D. 540 million
E. 65
Question 8 of 10  (worth 3 points)
Match the leaf image (X, Y, or Z) with the description of its leaf arrangement.

<table>
<thead>
<tr>
<th>Match</th>
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<tr>
<td>p a l n a t e s e l e c t c o m p o u n d 2</td>
<td>A B C</td>
</tr>
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</tbody>
</table>
Question 9 of 10  (worth 1 point)
A cross-section of a leaf reveals that it has large air spaces in its mesophyll and lacks stomata on its undersurface. This leaf is probably a __________ leaf.

A mesophyll
. c
B hydrophyll
. c
C xerophytic
. d
D spongophy
Question 10 of 10  (worth 4 points)
Match the type of leaf adaptation to its function.

<table>
<thead>
<tr>
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<td>. tic</td>
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<tr>
<td>C saprophyti</td>
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</tbody>
</table>

Answer Key: B
WINDWARD COMMUNITY COLLEGE

on 2.

water storage 3.

protection from herbi

A B C

A B C

A B C

A B C

Answer Key: 1 - D, 2 - A, 3 - C, 4 - B

Tasks, Tests and Surveys

Preview Test: Pre-Lab Quiz Six

Pre-Lab Quiz Six  (worth 15 points)
Question 1 of 15  (worth 1 point)
In this week's lab activity we will study

A cotyledons of monocots and dicots
B stems and roots
C flowers of monocots and dicots
D leaves of monocots and dicots
E all of these

Answer Key: D

Question 2 of 15  (worth 1 point)
According to the lab instructions, what kind of living material are you supposed to prepare for microscopic observation as a wet mount?

A cross section of a monocot leaf
B cross section of a dicot leaf
C epidermis of a Zebrina leaf
D trichomes from African violets
E thin section of a succulent leaf

Answer Key: C
Question 3 of 15  (worth 1 point)
According to your lab assignment you are to produce labeled drawings of

A. cross section of a dicot leaf
B. cross section of a monocot leaf
C. several stomata from a Zebrina leaf
D. all of these
E. none of these

Answer Key: D

Question 4 of 15  (worth 1 point)
The cells that open and close the stomata of leaves are

A. guard cells
B. Bulliform cells
C. trichomes
D. spongy mesophyll
E. parenchyma

Answer Key: A
Question 5 of 15  (worth 1 point)
The process in which the loss of water vapor at the leaves pulls water up through the xylem of a plant is called

A. transpiration
B. transport
C. respiration
D. acclimation
E. differentiation

Answer Key: A

Question 6 of 15  (worth 1 point)
To understand specialized leaf modifications and adaptations for functions other than photosynthesis, you will

A. prepare wet microscope mounts of various leaves
B. examine some plants displayed in the lab
C. go on a field trip around the WCC campus
D. grow some plants from seeds
E. conduct research about these modifications in the library

Answer Key: B
Question 7 of 15  (worth 1 point)
Typical leaf epidermal cells lack

A. a cuticle
B. nuclei
C. chloroplasts
D. cytoplasm
E. cell walls

Answer Key: C

Question 8 of 15  (worth 1 point)
Tiny hairs that may function in reducing evaporative water loss from leaves of plants adapted to arid environments are

A. guard cells
B. Bulliform cells
C. trichomes
D. spongy mesophyll
E. parenchyma

Answer Key: C

Question 9 of 15  (worth 1 point)
The bark of a woody dicot stem is composed of

A secondary
  . phloem
B . cork
C . cortex
D . cork cambium
E . all of these

Answer Key: E

**Question 10 of 15  (worth 1 point)**

Vascular tissues are found in the _____ of the root.

A cortex
  .
B endodermis
  .
C stele
  .
D epidermis
  .
E pericycle
  .

Answer Key: C

**Question 11 of 15  (worth 1 point)**

Which meristem is responsible for the primary growth of the plant?
Question 12 of 15  (worth 1 point)
Which of the following function in providing a very large surface area for absorption in a plant root?

A root hairs
B trichom es
C proproo ts
D tubers
E stolons

Answer Key: A

Question 13 of 15  (worth 1 point)
Which tissue, among those listed below, is the most medially (=toward the center) distributed?

A apicle
B lateral
C xylem
D phloem
E parenchy ma

Answer Key: A
Question 14 of 15  (worth 1 point)
Wood is primarily made up of

A. pith
B. xylem
C. phloe
D. cambiu
E. cork

Answer Key: B

Question 15 of 15  (worth 1 point)
Which plant cell types are typically dead at functional maturity?
A sieve-tube members
B companion cells
C collenchyma cells
D parenchyma cells
E tracheids

Answer Key: E

Tasks, Tests and Surveys

Question Pools | Assessments | Grading | Test Drive
Preview Test: Pre-Lab Quiz Seven

Pre-Lab Quiz Seven (worth 15 points)

Question 1 of 15 (worth 1 point)
In order to study and draw sponge spicules, you will

A observe sponges in the field while snorkeling
B examine a commercially-prepared slide of Grantia spicules
C carefully slice some living sponge specimens and examine these slices under the microscope
D search for them over the Internet
E examine the sponge model illustrating a single choanocyte chamber

Answer Key: B
Question 2 of 15 (worth 1 point)
In order to understand the anatomy and morphology of the hydrozoan *Hydra*, you will

A. collect specimens from a stream and examine these specimens in the lab
B. examine commercially-prepared slides illustrating transverse sections of *Hydra*
C. dissect preserve specimens under a dissecting microscope
D. examine a model of *Hydra*
E. refer to pictures in your textbook

Answer Key: D

Question 3 of 15 (worth 1 point)
Which of the following will you dissect in the lab activity?

A. sea anemone
B. sea jelly
C. *Hydra*
D. planarian
E. Chinese liver fluke

Answer Key: A
Question 4 of 15  (worth 1 point)
In order to understand the life cycle of the Chinese liver fluke, you will

A. study this life cycle in living infected animals
B. examine a model illustrating this life cycle
C. examine commercially-prepared slides illustrating various life cycle stages
D. prepare a PowerPoint presentation and deliver it to the class
E. grow out these life cycle stages in culture

Answer Key: C

Question 5 of 15  (worth 1 point)
Sponges may be distinguished by their possession of

A. jointed appendages
B. true coeloms
C. choanocytes
D. nematocysts
E. three primary germ layers

Answer Key: C
Question 6 of 15  (worth 1 point)
The specialized stinging capsule of cnidarians is the

A. nematocyst
   . t
B. pneumato
   . cyt
C. proboscis
   .
D. spicule
   .
E. mesentery
   .
Answer Key: A

Question 7 of 15  (worth 1 point)
Which mode of feeding best characterizes the sponges?

A. active predators
   .
B. blood-sucking
   . ectoparasites
C. filter-feeders
   .
D. algal grazers
   .
E. deposit-feeders
   .
Answer Key: C
Question 8 of 15  (worth 1 point)  
Which of the following is NOT a characteristic of Phylum Platyhelminthes

A. blind-sac gut  
B. acoelomate  
C. bilaterally symmetric  
D. body is dorsoventrally flattened  
E. diploblastic

Answer Key: E

Question 9 of 15  (worth 1 point)  
A diploblastic body construction may be found in Phylum

A. Porifera  
B. Mollusca  
C. Platyhelminth  
D. Annelida  
E. Cnidaria

Answer Key: E

Question 10 of 15  (worth 1 point)
The cells that open and close the stomata of leaves are

A. guard cells
B. Bulliform cells
C. trichomes
D. spongy mesophyll
E. parenchyma

Answer Key: A

Question 11 of 15 (worth 1 point)
Tiny hairs that may function in reducing evaporative water loss from leaves of plants adapted to arid environments are

A. guard cells
B. Bulliform cells
C. trichomes
D. spongy mesophyll
E. parenchyma

Answer Key: C

Question 12 of 15 (worth 1 point)
Typical leaf epidermal cells lack
Question 13 of 15  (worth 1 point)
Monocot leaves may be distinguished from dicot leaves because monocot leaves

A. have a plummule
B. exhibit parallel venation
C. exhibit netlike venation
D. are compound
E. possess two cotyledons

Answer Key: B

Question 14 of 15  (worth 1 point)
Pores on the leaf surface that function in gas exchange are called

A student examining leaf cross sections under a microscope finds many loosely packed cells with relatively thin cell walls. The cells have numerous chloroplasts. What type of cells are these?

A xylem
B sclereids.
C stomata.
D phloem
cells.
E hairs.

Answer Key: C

Question 15 of 15 (worth 1 point)

A student examining leaf cross sections under a microscope finds many loosely packed cells with relatively thin cell walls. The cells have numerous chloroplasts. What type of cells are these?

A xylem
B endodermis
C parenchyma
D collenchyma
E sclerenchyma

Answer Key: C
Preview Test: Pre-Lab Quiz Eight

Pre-Lab Quiz Eight  (worth 15 points)

Question 1 of 12  (worth 1 point)
According to the lab description which kind of mollusk will be dissected during the lab activity?

A. snail
B. chiton
C. clam or freshwater mussel
D. squid
E. slug

Answer Key: C

Question 2 of 12  (worth 1 point)
After making and recording observations on the similarity and differences of errant and sedentary polychaete worms, you will

A. draw labeled diagrams of each
B. dissect them
C. prepare portions of them for microscopic examination
D. write a short essay that attempts to generalize relationships between their respective anatomy
E. eat them
Question 3 of 12  (worth 1 point)
By examining dissected display specimens you will compare annelids to

A  squids
B  earthwor
C  nematod
D  clams
E  crayfish

Answer Key: C

Question 4 of 12  (worth 1 point)
How will you determine the anterior end of the clam?

A  note the direction that the umbo points
B  identify the head
C  watch how the animal moves forward
D  there is no anterior end because the clam lacks a head
E  make a guess

Answer Key: A
Question 5 of 12  (worth 1 point)
To understand annelid anatomy you will dissect

A  a sandworm
B  an earthworm
C  a leech
D  a & b above
E  a, b & c above
Answer Key: D

Question 6 of 12  (worth 1 point)
What must be cut with a scalpel in order to remove the shell of the bivalved mollusk?

A  proboscis
B  adductor muscles
C  foot
D  mantle
E  umbo
Answer Key: B
Question 7 of 12  (worth 1 point)
Which structure of the sandworm will be removed for separate examination under the dissecting microscope?

A prostomium
B pharynx
C parapodium
D peristomium
E palps

Answer Key: C

Question 8 of 12  (worth 1 point)
Which surface should be facing up for your first incision into the earthworm?

A dorsal
B ventral
C anterior
D posterior
E interior

Answer Key: A
Question 9 of 12  (worth 1 point)
The mollusks and annelids belong to the

A. deuterostomes
B. ecdysozoans
C. radiata
D. lophophorates
E. lophotrochozoa

Answer Key: E

Question 10 of 12  (worth 4 points)
Match the cnidarian class with its description (one point each).

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Question 11 of 12  (worth 1 point)
The Cestoda is distinguished from other flatworm classes by its possession of

A. a blind-sac gut
B. radial symmetry
C  a scolex and
   proglottids
D  a ciliated epidermis
E  a free-living life style

Answer Key: C

Question 12 of 12  (worth 1 point)
Which of the following groups is characterized by the possession of silicate spicules?

A  Calcarea
B  Silicea
C  Tremato
D  Monogen
E  Turbellar

Answer Key: B

Tasks, Tests and Surveys

Preview Test: Pre-Lab Quiz Nine

Pre-Lab Quiz Nine  (worth 15 points)
Question 1 of 9  (worth 1 point)
In order to examine the life cycle of different insects, you will

A. maintain live cockroaches at home
B. fertilization grasshopper eggs in the lab
C. examine preserved specimens mounted in plastic
D. dissect various stages of preserved bees
E. read about it in your textbook rather than examine any specimens in the lab

Answer Key: C

Question 2 of 9  (worth 1 point)
In this lab activity, we will understand trilobite anatomy by

A. dissecting preserved specimens
B. examining fossil specimens
C. observing the behavior of living specimens
D. searching the Internet for trilobite images
E. examining the dissected display specimen

Answer Key: B
Question 3 of 9  (worth 1 point)
Which of the following arthropods will be dissected in the lab activity to specifically understand its **internal** anatomy?

A . spider
B . horseshoe crab
C . crayfish
D . millipede
E . grasshopper

Answer Key: C

Question 4 of 9  (worth 1 point)
Which of the following will be examined to understand the external anatomy of an insect?

A . bee
B . cockroach
C . spider
D . grasshopper
E . centipede

Answer Key: D
Question 5 of 9  (worth 1 point)
Mouthparts characteristic of the Cheliceriformes are

A. Aristotle’s lantern
B. mandibles
C. pedipalps
D. maxillae
E. chelicerae

Answer Key: E

Question 6 of 9  (worth 1 point)
Of the animals listed below, horseshoe crabs are most closely related to

A. spiders
B. insects
C. barnacles
D. crayfish
E. true crabs

Answer Key: A
Question 7 of 9  (worth 1 point)
The gills of crayfish are

A dermal projections containing extensions of the body
  .  coelom
B  .  found in the book lungs
C  .  flat abdominal appendages
D  .  are actually modified branches on their biramous appendages
E  .  are attached to bony gill arches

Answer Key: D

Question 8 of 9  (worth 3 points)
Match the annelidan class with the specimen named (one point each).

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<td>A B C</td>
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Answer Key: 1 - A, 2 - C, 3 - B
**Question 9 of 9**  (worth 5 points)
Match the molluscan class with its description (one point each).

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s u c k e r s
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B
C
all divided into two dorso-laterally hinged valves
Answer Key: 1 - E, 2 - C, 3 - A, 4 - D, 5 - B

Tasks, Tests and Surveys

Preview Test: Pre-Lab Quiz Ten

Pre-Lab Quiz Ten  (worth 15 points)

Question 1 of 11  (worth 1 point)
Which kind of echinoderm will be dissected during the lab activity?

A. sea star
B. sea urchin
C. brittle star
Question 2 of 11  (worth 1 point)
Which of the following will be removed from the surface of a sea star so that it may be examined microscopically?

A pedicellaria
B tube foot
C ampulla
D skeletal ossicle
E Aristotle's lantern

Answer Key: A

Question 3 of 11  (worth 1 point)
Although adults of many species display radial symmetry, echinoderms are included with the bilateria because

A the embryo exhibits bilateral symmetry reflecting its ancestral heritage with bilaterally symmetric animals
B both endoderm and ectoderm are present
C gametes are produced by meiosis
calcium carbonate is incorporated into the skeletal elements.

the digestive system is incomplete.

Answer Key: A

Question 4 of 11  (worth 1 point)
Echinoderms, such as sea stars and sea urchins, move using their

A. parapodia
B. tube feet
C. pedicellaria
D. jointed appendages
E. muscular foot

Answer Key: B

Question 5 of 11  (worth 1 point)
Movement of coelomic fluids as a circulation mechanism is most important in

A. echinoderms
B. flatworms
C. cnidarians


Question 6 of 11  (worth 1 point)
Sea stars typically feed by

A. ingesting deposited organic detritus
B. filter suspended food particles from the water
C. evert their stomachs around their prey
D. photosynthesis
E. using a radula to scrape algae from rocks

Answer Key: C

Question 7 of 11  (worth 1 point)
The echinoderm class characterized by sessile suspension feeders whose pinnulated arms project upward into the water column is Class

A. Asteroidea
B. Echinoidea
C. Ophiuroidea
D. Holothuroid
Question 8 of 11  (worth 1 point)
The name "echinoderm" may be translated to mean

A. spiny skin
B. jointed skin
C. water-filled
D. five-part symmetry
E. stomach foot

Answer Key: A

Question 9 of 11  (worth 1 point)
Which of the following is a characteristic of adult echinoderms?

A. exoskeleton
B. gastrovascular cavity
C. spiral cleavage during early embryonic development
D. a lophophore
E. secondary radial symmetry
Question 10 of 11  (worth 1 point)
Which of the following is NOT a feature that you are likely to observe on the surface of a sea star?

A madreporite
B pedicellario
C tube foot
D radial canal
E papulæ

Answer Key: D

Question 11 of 11  (worth 5 points)
Match the arthropodan subphyla to their respective defining characteristics.

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During the lab activity, we will examine all of the following vertebrate skeletons EXCEPT that of a

A. mudpup
B. fetal pig
C. pigeon
D. shark
E. human

Answer Key: B
Question 2 of 11 (worth 1 point)
The lab activity specifically states that you will examine the larval stage of a

A. fish  
B. tunicate  
C. frog  
D. cephalochorda  
E. butterfly  

Answer Key: B

Question 3 of 11 (worth 1 point)
When carrying out dissections (either individually or as a demonstration), which of the following features will only be observed in the shark specimen?

A. gills  
B. lungs  
C. heart  
D. appendag  
E. spiral valve  

Answer Key: E
Question 4 of 11  (worth 1 point)
Where will you begin making your incision when dissecting the frog?

A. near the tail on the dorsal surface
B. from the throat region on the ventral surface
C. from a spot near the cloaca on the ventral surface
D. from a point midway along the side of the animal
E. from the neck region after first decapitating the specimen

Answer Key: C

Question 5 of 11  (worth 1 point)
Your instructor will dissect which of the following during the lab activity as a demonstration activity?

A. frog
B. bony fish
C. shark
D. tunicate
E. Amphiox us

Answer Key: C
Question 6 of 11 (worth 1 point)
Bony fishes differ from sharks in having

A. jaws
B. an endoskeleton
C. a swim bladder
D. paired pectoral and pelvic fins
E. scales

Answer Key: C

Question 7 of 11 (worth 1 point)
Most modern biologists and paleontologists believe birds are direct descendants of

A. dinosaurs
B. mammal-like reptiles
C. Homo sapiens
D. sharks
E. crocodiles

Answer Key: A
Question 8 of 11  (worth 1 point)
The swim bladder of bony fishes apparently evolved from

A. bone

B. gills

C. lungs

D. the tunic

E. the dorsal hollow nerve cord

Answer Key: C

Question 9 of 11  (worth 1 point)
The vertebrate jaw probably evolved from

A. pharyngeal gill arch supports

B. the notochord

C. the vertebral column

D. the amniote egg

E. epidermal scales

Answer Key: A

Question 10 of 11  (worth 1 point)
Which of the following is **NOT** a tetrapod?

A. lampr
B. frog
C. bird
D. turtle
E. mous

Answer Key: A

**Question 11 of 11**  (worth 5 points)
Match the echinoderm class with its characteristics.

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Answer Key: 1 - E, 2 - C, 3 - B, 4 - D, 5 - A
Tasks, Tests and Surveys

**Question Pools** | **Assessments** | **Grading** | **Test Drive**

Preview Test: Pre-Lab Quiz Twelve

Pre-Lab Quiz Twelve  (worth 15 points)

**Question 1 of 13**  (worth 1 point)
Referring to the document identifying what you will need to know from this week’s lab activity, we will also look at models of the human ____________.

A. urogenital systems
B. eye
C. ear
D. brain
E. all of these

Answer Key: E

**Question 2 of 13**  (worth 1 point)
Referring to the document identifying what you will need to know from this week’s lab activity, you will examine and dissect two preserved specimens. One of these is a fetal pig. The other is a ____________.
A sheep's brain
B cow's uterus
C adult pig
D human
E pig's ovary

Answer Key: A

**Question 3 of 13** (worth 1 point)
Which of the following organ systems of the fetal pig will be covered in this week's lab?

A urinary system
B reproductive system
C digestive system
D nervous system
E all of these

Answer Key: E

**Question 4 of 13** (worth 1 point)
The scientific name for the domestic pig is
A. *Homo sapiens*
B. *Domesticus pigus*
C. *Sus scrofa*
D. *Porcinus swinus*
E. *Porkius pigius*

Answer Key: C

**Question 5 of 13**  (worth 1 point)
When making an incision along the mid-ventral line of the body, you will probably view a brown oval structure over the trachea in the neck region. This structure is the ___________.

A. thyroi
B. thym
C. larynx
D. stern
E. heart

Answer Key: A

**Question 6 of 13**  (worth 1 point)
Which of the following must be removed in order to view the brain of the fetal pig?
A. skin
B. skull cap
C. meninges
D. all of these (answers a, b & c)
E. none of these since we are carrying out this activity

Answer Key: D

Question 7 of 13 (worth 1 point)
In order to expose the urinary and reproductive systems of the fetal pig, you will need to

A. remove the umbilical cord
B. extract the liver
C. cut through the rib cage
D. cut through the muscle and bone of the pelvic girdle
E. make an incision from the dorsal surface of your pig

Answer Key: D

Question 8 of 13 (worth 1 point)
The diaphragm, the bell-shaped muscle that separates the thoracic and abdominal cavities, must be
A. removed completely
B. kept intact but freed from its connection to the internal surface of the body wall
C. left alone
D. cut medially to divide it into two pieces
E. pushed aside in order to view the liver

Answer Key: B

**Question 9 of 13  (worth 1 point)**
Which of the following terms refers to the tail region of the pig?

A. anteri or
B. dorsal
C. ventral
D. posteri or
E. proximal

Answer Key: D

**Question 10 of 13  (worth 1 point)**
Referring to the document identifying what you will need to know from this week's lab activity, understanding of skin anatomy will involve
A. cutting a thin section from your finger and examining it under the microscope
B. examining prepared microscope slide sections of pork skin
C. studying the contents of a bag of fried pork skins from the supermarket
D. examining a model of the skin
E. examining your lab partner’s skin under a magnifying lens

Answer Key: D

Question 11 of 13  (worth 3 points)
Match the Chordate Subphyla with their descriptions.

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2. See
The brain; ependyma; cranium; enclones;
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epithelium;

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present;

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system
WINDWARD COMMUNITY COLLEGE

with a heart.

allfundamental
Select Chordate
Features persist in the adult stages; body
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Answer Key: 1 - C, 2 - A, 3 - B
Question 12 of 13  (worth 1 point)
Endothermy is characteristic of

A  all vertebrates
   B  amphibians
   C  mammals only
   D  birds and mammals
   E  turtles

Answer Key: D

Question 13 of 13  (worth 1 point)
Viviparity is characteristic of most

A  amphibians
   B  reptiles
   C  ray-finned fishes
   D  birds
   E  mammals

Answer Key: E

Tasks, Tests and Surveys
Question 1 of 7  (worth 1 point)

In studying the development of various animals, we will examine microscope slides for all of the following *EXCEPT*

- A. sea stars
- B. frogs
- C. chickens
- D. humans
- E. none of these we will examine slides for all of them

Answer Key: D

Question 2 of 7  (worth 1 point)

As a consequence of our lab activity, what will we need to do in regards to human development?

- A. fertilize live eggs and observe development taking place
- B. examine aborted embryos and fetuses
- C. examine human development models to compare human development to that of chickens
- C. chicken
Question 3 of 7  (worth 1 point)
Incomplete cleavage due the presence of substantial yolk is called _______ cleavage

A. radial
B. meroblast ic
C. spiral
D. determina nt
E. holoblasti c

Answer Key: B

Question 4 of 7  (worth 1 point)
The concept that development involves the formation of structures from material that initially lacks form is called

A. epigenesis
B. preformation
C. menstruation
Question 5 of 7  (worth 1 point)
The embryonic gut is called the

A. archenteron
B. blastocoe
c. l
D. somite
E. notochord

Answer Key: A

Question 6 of 7  (worth 5 points)
Match the stages of development with their descriptions (one point each).

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where selected tissues take
WINDWARD COMMUNITY COLLEGE

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A B C
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zygote begins to divide into A, B, C

eggs
Question 7 of 7  (worth 5 points)
Match the body part of the fetal to its function (1 point each).

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**Carotid Artery**

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**Umbilical Vein**

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1. The alternation of generation in plants refers to:

   A. A diploid sporophyte generation and a haploid gametophyte generation
   B. A haploid sporophyte generation and a haploid gametophyte generation
   C. A diploid gametophyte generation and a haploid sporophyte generation
   D. A diploid gametophyte generation and a diploid sporophyte generation
   E. None of the above

2. Sepals refers to:

   A. The second colored whorl of flowers
   B. The outermost green whorl of flowers
   C. The second green whorl of flowers
   D. The outermost colored (other than green) whorl of flowers
3. Clitellum is:
   A. Enlarged section around a short length of the body of earthworm
   B. Secretes mucus to hold the worms together during mating
   C. The head of the earthworm
   D. The tail end of the earthworm
   E. A and B only

4. Earthworms have:
   A. One pair of hearts
   B. Two pairs of hearts
   C. A series of hearts
   D. Heartless
   E. Three pairs of hearts

5. The order of the levels of organizations (from simplest to the complex form) in plants and animals is:
   A. Organs, tissues, cells
   B. Cells, tissues, organs
   C. Tissues, cells, organs
   D. Tissues, organs, cells
   E. Cells, tissues, cells

6. Simple squamous epithelial cells are characterized by:
   A. Thin, flat, many-sided cells, with a central nucleus
   B. Tall, cylindrical cells with a nucleus at the base
   C. Cube shaped cells with a central nucleus
   D. Cells with several cytoplasmic extensions and a central nucleus
   E. None of the above

7. The red blood cells are differentiated from the white blood cells:
   A. Red blood cells are nucleated and white blood cells are without nucleus
   B. White blood cells are nucleated and red blood cells are without a nucleus
   C. Red blood cells are larger than white blood cells
   D. Red blood cells have granules in their cytoplasm
   E. All of the above
8. The function of the nictitating membrane in frogs is:

   A. To lubricate the skin
   B. Hearing
   C. To moisten the eye
   D. Excretion
   E. Digestion

9. Tympanum in frog is located;

   A. Behind each ear
   B. Behind each eye
   C. In the oral cavity
   D. On the tongue
   E. All over the surface of the skin

10. The tongue in frogs differ from other vertebrates in that:

    A. The tongue in frog is bifurcated at front
    B. The tongue is extremely small
    C. The tongue is attached at the back of upper jaw and free at the front
    D. The tongue is attached at the back of lower jaw and free at the front.
    E. The tongue is attached at the front and back of the lower jaw.

**BIO 101 LAB FINAL-PRACTICAL**

1. SQUAMOUS EPITHELIAL
2. COLUMNAR EPITHELIAL
3. SKELETAL MUSCLE
4. BONE
5. NEURON
6. SMOOTH MUSCLE
7. CUBOIDAL EPITHELIAL
8. BLOOD SMEAR
9. SICKLE CELL
10. CARDIAC MUSCLE
11. ADIPOSE TISSUE
12. MANTLE
13. ADDUCTOR MUSCLE
14. GILLS
15. FOOT
16. KIDNEY
17. CLITELLUM
18. SEMINAL VESICLES
19. NEPHREDIA
20. TYMPANUM
21. EYE
22. LUNG
23. GALL BLADDER
24. FAT BODIES
25. SPLEEN
26. OVARIES
27. LARYNX
28. THYMUS GLAND
29. UMBILICAL CORD
30. URINARY BLADDER
31. STOMACH
32. LIVER
33. THYROID GLAND
34. HEART
35. PANCREAS