

BIOLOGY 100 CHALLENGE EXAM

The exam is offered at the beginning of each block; see the class schedule under “Exemption and Challenge Examinations” for specific dates. The exam is offered in the Testing Center during their regular hours. There is a \$20.00 fee to take the exam but there is no charge to purchase the credits.

You cannot challenge Biology 100 for a pass-fail type grade; you must accept the letter grade on your transcript. The exam may only be taken once. You may elect to not accept the grade you received on your challenge exam by not doing the paperwork to receive the credits. This means you will not receive credit or a grade for the class.

If you are enrolled in the course, take the challenge exam and accept the letter grade, be sure to drop the class by the drop deadline. If you do not officially drop the course, the grade given by the instructor based on class performance will appear on your transcript.

There are two sections to the exam. The first section will consist of 100 multiple choice/true-false questions. If the first section is passed (60% minimum) you will continue on to the second section which consists of 12-15 short essay/calculation questions. The essay questions are to be answered in the testing center as well and will be picked up and graded by the Biology 100 office. Your final grade will be a total of your machine-scored portion and essay portion and will be available to you one week after you take the exam. At that time you can pick up a Class Credit Request Form from the Testing Center office and have it properly validated there. The form goes to the Records Office and the grade is recorded on your transcript. Credit must be submitted to the Records Office within one year from when the exam was taken. Challenge exams are not available to view or review by students.

Three textbooks that may be helpful to your preparation are located in the reserve library under **Biology 100 – Challenge Exam**. These copies are on reserve.

**BIOLOGY: The Unity and Diversity of Life, 7th edition, Starr and Taggart.
(call number QH 308.2.S72 1995)**

**The World of Biology, 5th edition, Solomon and Berg.
(call number QH 308.2.D38 1995)**

**Biology: Core Concepts, 2nd edition, Levine.
(call number QH 308.2.L474 1991)**

SAMPLE STUDY QUESTIONS

- In _____ reactions, small molecules are covalently linked to form macromolecules.
 - catabolism
 - hydrolysis
 - condensation
 - entropic
- Which of the following is/are true concerning metabolic pathways?
 - The products of a metabolic reaction will always contain more energy than did the reactants.
 - They occur in an orderly series of chemical reactions.
 - They may cause the formation or breakdown of molecules.
 - They are able to surmount the second law of thermodynamics.
 - Enzyme activity greatly increases the rate by lowering the activation energy.
 - all of the above
 - a, b, c, and e only
 - a and d only
 - none of the above
- Which of the following is false concerning glycolysis and aerobic respiration?
 - For each NADH that enters the electron transport chain, two molecules of ATP are produced.
 - The products of glycolysis include ATP, NADH, and pyruvate.
 - Aerobic respiration requires the presence of oxygen.
 - Glycolysis occurs in the cytoplasm of eukaryotic cells while aerobic respiration occurs in the mitochondria.
 - Both glycolysis and the Krebs cycle release CO₂ as “waste” products.
- Chromatids separate during
 - prophase of mitosis.
 - anaphase I of meiosis.
 - telophase II of meiosis.
 - metaphase of mitosis.
 - none of the above
- Which of the following is true concerning protein synthesis?
 - Following transcription, exons are removed from the mRNA leaving the introns, the actual coding portions of the mRNA.
 - The anticodon UAG would be able to base-pair with the codon ATC.
 - tRNA brings amino acids to a binding site at the ribosome.
 - The mRNA sequence: AUGGCACGAAUU would code for six amino acids.
- A round-leafed, purple-rooted plant (RrPp) is crossed with an oval-leafed, purple-rooted plant (rrPP). Round leaves (R) are dominant over oval leaves (r); and purple roots (P) are dominant over white roots (p). The R(r) and P(p) alleles are located on separate pairs of homologous chromosomes. On average, how many of the offspring from this cross will have oval leaves and purple roots?
 - none
 - 1/8
 - 1/4
 - 1/3
 - 1/2
 - 3/4

7. Full expression of both the A and B alleles in a type AB individual is an example of
- pleiotropy
 - sex-linked inheritance
 - polygenic inheritance
 - codominance
 - incomplete dominance
8. Which of the following is/are false concerning plants or animals?
- When plants moved to growing on land, one of the problems they had to solve was support for leaves and flowers.
 - Xylem is a vascular tissue that conducts water while phloem is the vascular tissue which conducts food.
 - A target cell for a particular hormone has receptors to which the hormone can bind to elicit a cellular response.
 - An antibody is a receptor molecule with binding sites for a specific antigen.
 - all of the above
 - a and c only
 - b and d only
 - none of the above
9. The frequency of allele "A" in a non-evolving population of finches is 0.6. What is the probability of locating the aa genotype in the next generation?
- 0.16
 - 0.36
 - 0.4
 - 0.6
 - none of the above
10. In 1898 H.C. Bumpus of Brown University collected female sparrows felled by a heavy snow and ice storm in Providence, RI. He compared those that revived with those that died. Neither large nor small birds survived as well as those that were near the mean size for the population.
- the founder principle
 - divergence
 - allopatric speciation
 - directional selection
 - stabilizing selection
 - adaptive radiation
 - genetic drift
11. Which of the following statements is/are true concerning ecosystems?
- Photoautotrophs are primary producers.
 - Energy flows while nutrients cycle through an ecosystem.
 - A food chain could properly be described as 'who eats whom'.
 - An average of 10% of the energy entering one trophic level becomes available to organisms at the next level.
 - all of the above
 - a, c, and d only
 - b and c only
 - a and d only
 - none of the above