



AP Biology Diagnostic Test

AP[®] Biology Exam

SECTION I: Multiple-Choice Questions

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

At a Glance

Total Time

1 hour and 30 minutes

Number of Questions

69

Percent of Total Grade

50%

Writing Instrument

Pencil required

Instructions

Section I of this examination contains 69 multiple-choice questions. These are broken into Part A (63 multiple-choice questions) and Part B (6 grid-in questions).

Indicate all of your answers to the multiple-choice questions on the answer sheet. No credit will be given for anything written in this exam booklet, but you may use the booklet for notes or scratch work. After you have decided which of the suggested answers is best, completely fill in the corresponding oval on the answer sheet. Give only one answer to each question. If you change an answer, be sure that the previous mark is erased completely. Here is a sample question and answer.

Sample QuestionSample Answer

Chicago is a

(A) state

(B) city

(C) country

(D) continent

(A) ● (C) (D)

Use your time effectively, working as quickly as you can without losing accuracy. Do not spend too much time on any one question. Go on to other questions and come back to the ones you have not answered if you have time. It is not expected that everyone will know the answers to all the multiple-choice questions.

About Guessing

Many candidates wonder whether or not to guess the answers to questions about which they are not certain. Multiple-choice scores are based on the number of questions answered correctly. Points are not deducted for incorrect answers, and no points are awarded for unanswered questions. Because points are not deducted for incorrect answers, you are encouraged to answer all multiple-choice questions. On any questions you do not know the answer to, you should eliminate as many choices as you can, and then select the best answer among the remaining choices.

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BIOLOGY

SECTION I

Time—1 hour and 30 minutes

Part A: Multiple-choice Questions (63 Questions)

Directions: Each of the questions or incomplete statements below is followed by four suggested answers or completions. Select the one that is best in each case and then fill in the corresponding oval on the answer sheet.

- Which of the following extraembryonic membranes share the same function in both reptiles and humans?
 - Allantois
 - Amnion
 - Chorion
 - Yolk sac
- Male mallard ducks have bright green feathers on their heads and other distinctive color patterns, while female mallard ducks have brown feathers and nondistinctive markings. Which best explains this variation?
 - Disruptive selection
 - Directional selection
 - Stabilizing selection
 - Divergent evolution
- In the operation of skeletal muscle, which of the following steps requires energy derived from ATP?
 - Attaching myosin to actin
 - Pulling on actin by myosin
 - Resetting myosin to bind actin again
 - I
 - I and II
 - II and III
 - III
- Which of the following does NOT provide evidence in support of theory of evolution?
 - Comparative anatomy
 - Embryology
 - Molecular biology
 - Mutation
- What is a primary function of hormones?
 - Regulating development and behavior
 - Attracting potential mating partners
 - Running cellular respiration
 - Triggering action potentials in neurons
- What is the defining characteristic of being a base?
 - The ability to dissolve polar substances
 - The release of hydroxide ions in water
 - A pH below 7.0
 - A low heat capacity
- Labeling the CO_2 entering photosynthesis would allow a scientist to then track what being used or stored by the plant?
 - Chlorophyll
 - NADPH
 - Carbohydrates
 - ATP
- If oxygen is not available to act as the final electron acceptor, what stage of cellular respiration would be halted first?
 - Electron transport chain
 - Glycolysis
 - Krebs cycle
 - Pyruvate dehydrogenase complex
- When a neuron's membrane potential is between -70 millivolts and -90 millivolts, the cell is experiencing
 - depolarization
 - hyperpolarization
 - repolarization
 - threshold

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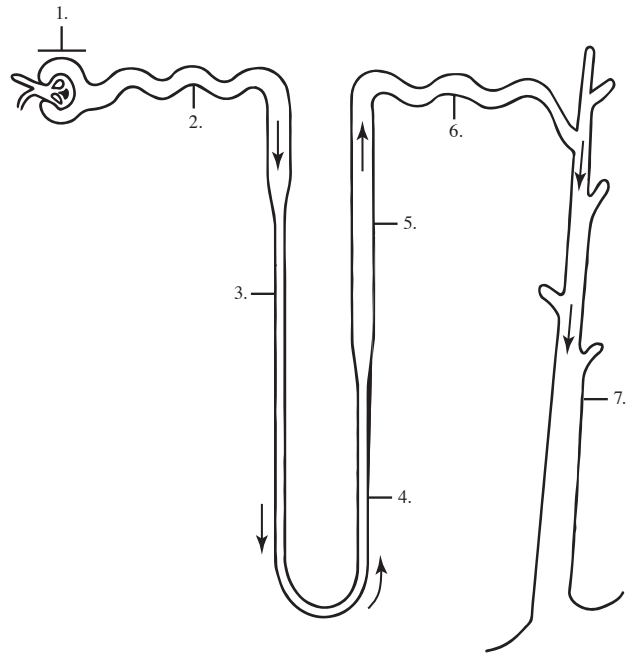
10. Which of the following is NOT a step in transcription?
- (A) RNA polymerase binds to a promoter.
 - (B) RNA polymerase creates a complementary version of both DNA strands.
 - (C) RNA polymerase does not proofread the synthesized transcript.
 - (D) RNA polymerase can exist with multiple copies working on multiple DNA sites.
11. What are the necessary components of a nucleotide?
- (A) An aromatic base and a five-carbon sugar
 - (B) The proper ratio of carbon, hydrogen and oxygen
 - (C) An aromatic base, a five-carbon sugar, and phosphate
 - (D) A chain of at least three amino acids
12. How does translation convert a sequence of nucleotides into the appropriate amino acids?
- (A) A one-to-one relationship exists between nucleotides and amino acids.
 - (B) Enzymes in the ribosome are responsible for converting nucleotides into amino acids.
 - (C) The RNA polymerase is responsible for bringing in the correct sequence of amino acids.
 - (D) Nucleotides are read in groups of three as codons to determine which amino acid is to be added to the polypeptide chain.
13. Osteoclasts are responsible for controlled destruction of bone in order to release stored calcium into the blood. Which hormone is responsible for stimulating osteoclasts?
- (A) Parathyroid hormone
 - (B) Insulin
 - (C) Calcitonin
 - (D) ACTH
14. What characteristic best differentiates a prokaryotic cell from an animal cell?
- (A) The presence of ribosomes
 - (B) The presence of a DNA genome
 - (C) The presence of a cell wall
 - (D) The presence of a plasma membrane
15. Meerkats live in complex social colonies where responsibilities for the group as a whole are shared amongst multiple members. Part of this work includes acting as a sentry to watch for predators or other dangers to the colony and signaling others when such dangers are detected. Given the risk inherent to the animal acting as sentry, this is an example of
- (A) territoriality
 - (B) dominance
 - (C) agnostic behavior
 - (D) altruistic behavior
16. Which of the following is a function of the parasympathetic nervous system?
- (A) Dilation of the bronchioles
 - (B) Constriction of the pupil
 - (C) Limiting blood flow to the gastrointestinal system
 - (D) Resolution following sexual arousal
17. Damage to the exocrine portion of the pancreas could lead to which of the following?
- I. Inability to decrease circulating glucose levels
 - II. Inability to neutralize stomach acid entering the small intestine
 - III. Inability to digest lipids properly
- (A) I and II
 - (B) III only
 - (C) II and III
 - (D) I, II and III
18. Which of the following is the best example of a parasitic relationship?
- (A) Rhinoviruses residing in the upper respiratory tract of humans are the major cause of the common cold.
 - (B) *E. coli*, a predominant form of bacteria in the human gut, can cause infection if accidentally moved to an open wound.
 - (C) Yeast cells respiring anaerobically are killed if the concentration of ethanol they produce becomes too high in their environment.
 - (D) Male lions establishing dominance in a new pride may eat existing cubs.

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19. Two species of flowering bush exist in the same geographic area. What would provide the best evidence that the two species arose via sympatric speciation?
- (A) The internal structures of the flowers and the shapes of the leaves share common characteristics.
 - (B) One of the species was imported from another country but has grown well in proximity to the other.
 - (C) The same types of animals consume both species.
 - (D) Sequencing of the genomes reveals similarities even though the bushes are not able to interbreed.
20. The consumption of fish, such as shark and marlin, is discouraged due to high levels of mercury present in their bodies. Why would consumption of these fish be dangerous while it remained safe to consume other types of fish normally eaten by shark and marlin?
- (A) Bioaccumulation allows mercury to build up in the larger predator fish.
 - (B) The bodies of smaller fish are not impacted by mercury.
 - (C) Smaller fish do not live long enough for mercury to accumulate in them.
 - (D) Shark and marlin lack the ability to detoxify the mercury, whereas the bodies of other fish render it harmless.
21. Kudzu has had a negative impact as an invasive plant species because of the way it grows up around power and telephone poles. What best describes this growth pattern?
- (A) Positive gravitropism
 - (B) Negative phototropism
 - (C) Positive thigmotropism
 - (D) Positive phototropism
22. How does the process of meiosis II differ from mitosis?
- (A) Chromosomes are separated at their centromeres.
 - (B) A crossing over event can occur to increase genetic variability.
 - (C) The nuclear membrane is reformed at the end of cytokinesis
 - (D) Haploid cells are produced.
23. What is the genetic state of the cells produced by telophase I?
- (A) Diploid with two copies ($2n2x$)
 - (B) Diploid with one copy ($2n1x$)
 - (C) Haploid with two copies ($1n2x$)
 - (D) Haploid with one copy ($1n1x$)
24. Which of the following will NOT impact transpiration in plants?
- (A) The amount of phloem within the plant
 - (B) The presence of a cuticle on the leaves
 - (C) The size of the plant's stomata
 - (D) The amount of light to which the plant is exposed
25. What role does the pulmonary vein play in circulation?
- (A) It carries deoxygenated blood away from the heart.
 - (B) It carries deoxygenated blood away from the organs.
 - (C) It carries oxygenated blood toward the heart.
 - (D) It carries oxygen to the blood.
26. What advantage does asexual reproduction tend to have in comparison to sexual reproduction?
- (A) Asexual reproduction produces genetic diversity more quickly.
 - (B) Asexual reproduction typically produces new organisms at a faster rate.
 - (C) Sexual reproduction provides more evolutionary pressure.
 - (D) Sexual reproduction forms a larger supply of gametes.
27. Which of the following is/are reasons that breeding between members of the same species would NOT occur?
- I. Alignment of mating seasons
 - II. Temporary geographic isolation
 - III. Alteration of courtship behavior due to illness
- (A) I
 - (B) I and II
 - (C) III
 - (D) II and III

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28. How does the composition of bones in human babies differ from that in adults?
- (A) The bones of babies contain only collagen and calcium-phosphate crystals.
 - (B) Cartilage is present in the bones of babies as part of developmental growth.
 - (C) Androgens and estrogens promote bone growth in babies.
 - (D) More calcium is stored in the bones of babies than those of adults.
29. A virus enters the lytic life cycle by incorporating its genome into that of the host cell. What is required in order for this to occur?
- (A) A dsDNA copy of the viral genome needs to be available.
 - (B) Viral transcripts need to have a 5' cap.
 - (C) The viral introns need to be removed and the exons spliced together into one contiguous sequence.
 - (D) The enzyme reverse transcriptase needs to be made by the host cell.
30. What extraembryonic membrane is responsible for the exchange of gases and nutrients between a human fetus and its mother?
- (A) Amnion
 - (B) Chorion
 - (C) Placenta
 - (D) Yolk sac
31. What best accounts for the diversity of cell types within a human all arising from the same genome?
- (A) Different sequences act as exons and introns creating a diversity of transcripts and producing different cellular products.
 - (B) Variations in chemical exposure during fetal development impact the formation of different tissue types.
 - (C) Crossing over events generate a mixture of genomes to encode differing patterns of cellular expression.
 - (D) Different patterns of diet and exercise impact genome expression.



32. In which portion(s) of the nephron shown above is the tubule permeable to water at all times, assuming a gradient exists to move it?
- (A) 1 and 7
 - (B) 3
 - (C) 5 and 6
 - (D) 4
33. What would be the best description of the placement of secondary consumers in an ecological community?
- (A) They are able to increase their population size exponentially.
 - (B) They are pioneer organisms establishing a climax community.
 - (C) They are always at carrying capacity for their environment.
 - (D) They are k-strategists engaged in a pattern of logistic growth.

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34. What adaptive feature would be most useful for survival in the taiga?
- (A) Thick fur and the ability to hibernate
 - (B) The ability to derive moisture from succulent plants
 - (C) Camouflaging coloration to avoid predation
 - (D) High acuity color vision
35. Which of the following best accounts for routine mutation in both bacteria and humans?
- (A) Exposure to UV rays is so ubiquitous that it is continuously creating mutations.
 - (B) The variations induced by meiosis contribute to the overall mutation rate.
 - (C) The enzymes of replication can create errors that are then perpetuated as cells continue to divide.
 - (D) Cell replication can alter the ploidy of the daughter cells being produced.
36. How could a known sequence encoding antibiotic resistance be isolated from a bacterial plasmid?
- (A) The intact plasmid could be digested with restriction enzymes specific to locations around the sequence.
 - (B) The intact plasmid could be run on a gel electrophoresis to determine its size.
 - (C) The plasmid could have an RNA copy made of its DNA sequence.
 - (D) The plasmid could be transferred into another strain of bacteria to see if they also become resistant to the antibiotic.
37. How are alleles organized as part of the human genome?
- (A) Alleles are paired with their two copies proximal to one another on the same chromosome.
 - (B) Alleles are paired with one copy on each member of a pair of chromosomes.
 - (C) Cells have a single allele encoding a given trait.
 - (D) Cells have a mix of different types of alleles on each member of a pair of chromosomes.
38. What role does the Golgi apparatus play in the production of a secretory protein?
- (A) Placement of the protein in the cell membrane
 - (B) Release of the protein from the cell
 - (C) Translation of the protein
 - (D) Modification of the protein after translation
39. Which of the following is the best description for the function of the stomach?
- (A) Elementary digestion of carbohydrates to the level of disaccharides
 - (B) Elementary digestion of proteins and destruction of microorganisms
 - (C) Elementary digestion of lipids for absorption by lacteals
 - (D) Production of vitamin K to aid in blood clotting
40. Why does peristalsis need to slow as chyme progresses through the small intestine and enters the large intestine?
- (A) Slowed movement allows maximum exposure to the extensive surface area provided by the microvilli on the villi.
 - (B) Salivary amylase is slow to digest carbohydrates and needs time in order to be effective.
 - (C) Longer transit time facilitates movement of water into the gut.
 - (D) Additional time is needed to neutralize the acid entering the small intestine from the stomach.

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41. Which of the following is considered a trace element for living organisms?
- (A) Magnesium
 - (B) Phosphorous
 - (C) Potassium
 - (D) Iron
42. Under what circumstances would apoptosis be MOST likely to occur?
- (A) A cell has experienced an error during replication.
 - (B) Translation has produced more of a secretory protein than will be required.
 - (C) A cell has been infected by a virus and the infection has been detected by the immune system.
 - (D) The cell membrane has been breached due to physical stress.
43. Assuming that the size of a given type of finch is highly heritable, how would the mean height be impacted if a subset of smaller birds became geographically isolated for breeding purposes?
- (A) The mean height would be lower compared to the species overall.
 - (B) The mean height would be higher compared to the founding population.
 - (C) The mean height would be lower compared to the founding population.
 - (D) The mean height would be higher compared to the species overall.
44. In a certain breed of rabbit, long narrow (N) ears are dominant over shorter rounded (n) ears. As part of a breeding experiment, one-half of the offspring have long narrow ears and the other half has shorter rounded ears. What are the likely genotypes of the parents?
- (A) NN x nn
 - (B) Nn x nn
 - (C) NN x Nn
 - (D) Nn x nn
45. Feedback loops create regulatory mechanisms for both hormones and enzyme activity. Which of the following is NOT an example of negative feedback?
- (A) The decrease in glycolytic enzyme activity when a certain level of ATP is reached
 - (B) High estrogen and progesterone levels preventing the release of FSH and LH
 - (C) Decreasing acid production in the stomach when food is not present
 - (D) The continued production of prolactin based on frequent nursing patterns of a newborn
46. Which of the following is a requirement to maintain allelic frequencies in a Hardy-Weinberg population model?
- (A) Genetic drift
 - (B) Natural selection
 - (C) Random mating
 - (D) Frequent mutation
47. Which of the following is NOT a characteristic of viruses?
- (A) The ability to infect bacterial cells
 - (B) Genomes that can be composed of DNA or RNA
 - (C) The use of plasmids to increase genetic diversity
 - (D) Genomes that mutate quickly
48. What are some identifying structural components of an amino acid?
- (A) A phosphate and a ribose
 - (B) An equal ratio of carbon to hydrogen
 - (C) A peptide bond and a disulfide bridge
 - (D) A variable group and an amino group

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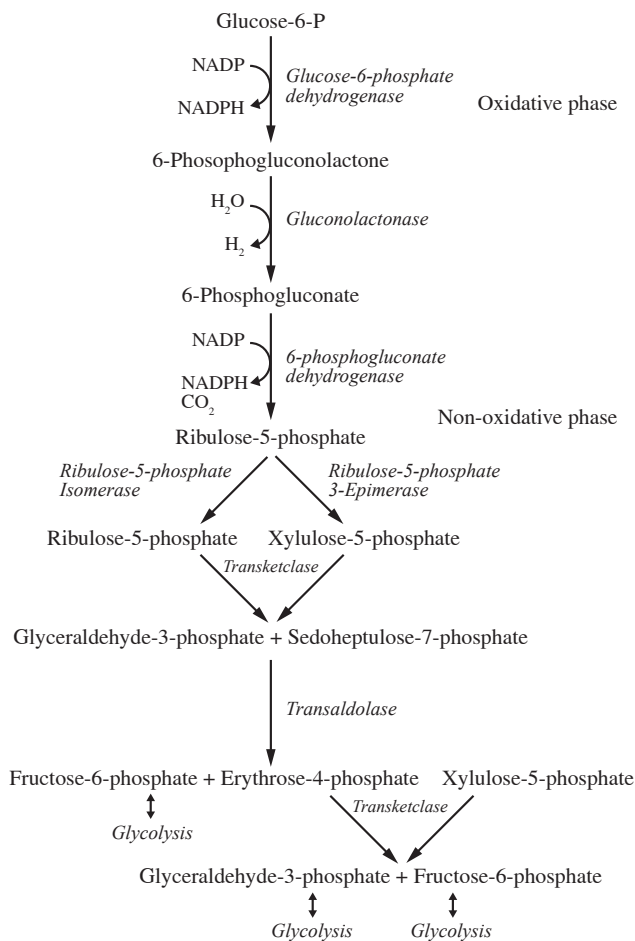
49. Which of the following is the best description of the events in mitosis?
- (A) A cell replicates its genome, divides the information into two matching copies, and splits the contents of the cell to produce two daughter cells.
 - (B) A cell divides its diploid genome into two equivalent copies and splits the contents of the cell to produce two daughter cells.
 - (C) A cell replicates its genome, divides the information into two matching copies, and provides one daughter cell with the majority of its cellular contents.
 - (D) A cell provides the opportunity for chromosomes to recombine and then replicates prior to dividing its cellular contents between daughter cells.
50. How does a chemoautotroph function metabolically?
- (A) CO_2 as its carbon source, sunlight as its energy source
 - (B) Sunlight as its carbon source, organic molecules as its energy source
 - (C) Organic molecules as its carbon and energy source
 - (D) CO_2 as its carbon source, inorganic molecules as its energy source
51. In eukaryotes, the electron transport chain occurs across which membrane?
- (A) Plasma membrane
 - (B) Inner mitochondrial membrane
 - (C) Endoplasmic reticulum
 - (D) Nuclear membrane
52. What types of membrane channels are used to maintain resting membrane potential?
- (A) K^+ leak channels and Na^+ leak channels
 - (B) Na^+/K^+ pump and K^+ leak channels
 - (C) Na^+/K^+ pump and Na^+ leak channels
 - (D) Ca^{++} leak channels and Cl^- leak channels

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Questions 53-55 refer to the diagram.

The pentose phosphate pathway is one of several metabolic pathways that complement the central processes producing ATP for the body.

Pentose Phosphate pathway



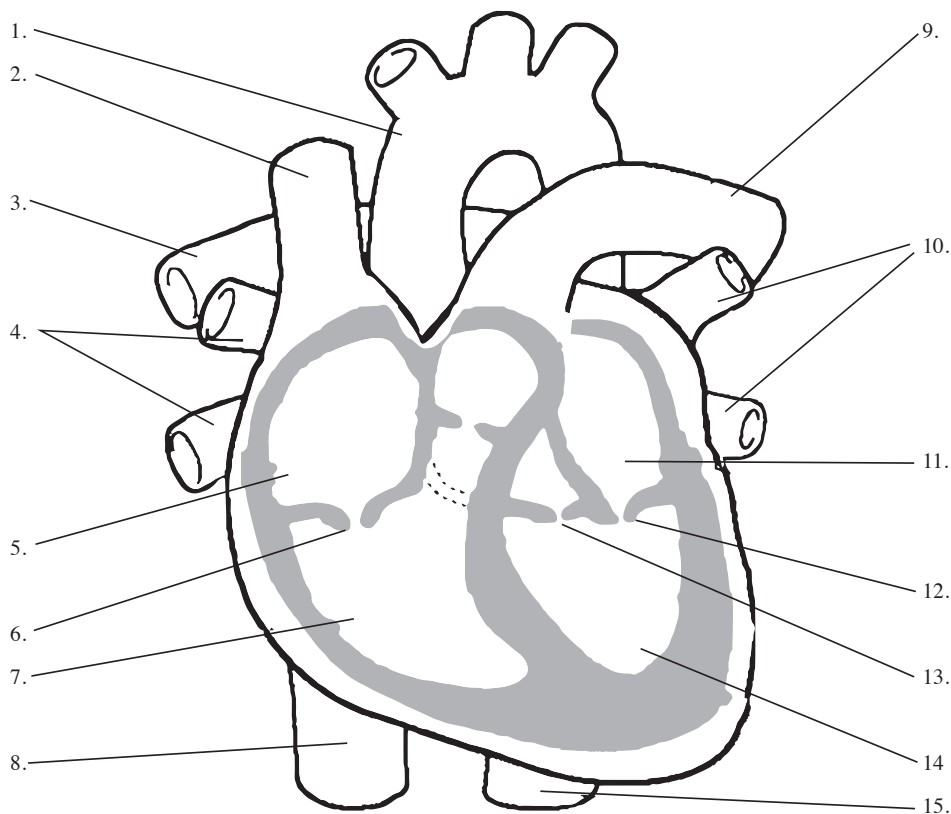
53. How does the pentose phosphate pathway contribute to the production of nucleotides?
- (A) Producing ribose-5-phosphate
 (B) Producing NADPH
 (C) Producing ribulose-5-phosphate
 (D) Producing fructose-6-phosphate
54. In what way does the pentose phosphate pathway interact in a circular fashion with glycolysis?
- (A) High levels of glyceraldehyde-3-phosphate downregulate the pathway and leave glucose-6-phosphate in glycolysis.
 (B) High levels of glucose-6-phosphate power both the pathway and glycolysis.
 (C) Glucose-6-phosphate enters the pathway from glycolysis, and fructose-6-phosphate leaves the pathway for glycolysis.
 (D) NADP⁺ enters the pathway from glycolysis, and NADPH leaves the pathway for glycolysis.
55. What would be the most effective target for negative feedback in order to regulate the pentose phosphate pathway?
- (A) 6-phosphogluconate dehydrogenase
 (B) Transketolase
 (C) Transaldolase
 (D) Glucose-6-phosphate dehydrogenase

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Section I

Questions 56-58 refer to the diagram.

The heart separates the circulatory system into two divisions: the pulmonic and the systemic. The flow of blood through the heart is determined by where it originates and whether or not it is oxygenated.

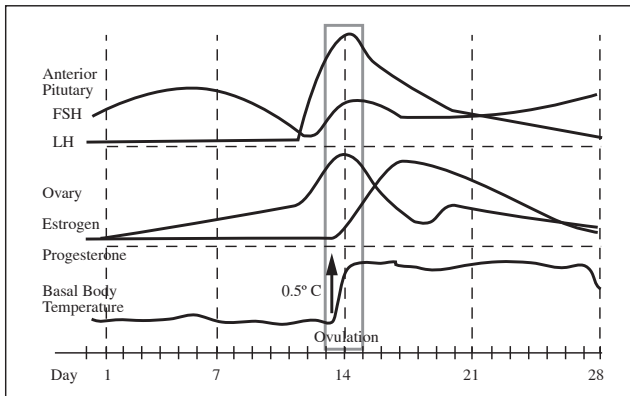


56. Which of the following is an accurate sequence for the movement of oxygenated blood through the heart?
- (A) 2 – 6 – 7 – 9
 (B) 10 – 12 – 14 – 1
 (C) 8 – 4 – 5 – 9
 (D) 3 – 14 – 11 – 10
57. What valves are present at locations 6 and 12, respectively?
- (A) A tricuspid semilunar valve and a bicuspid semilunar valve
 (B) A bicuspid AV valve and a tricuspid AV valve
 (C) A tricuspid AV valve and a bicuspid AV valve
 (D) A bicuspid semilunar valve and a tricuspid semilunar valve
58. During fetal development, an opening exists between the left and right atria. The foramen ovale typically closes shortly after birth. Why does this opening exist during development, but then disappears?
- (A) The foramen ovale allows the fetus to more effectively distribute the oxygen supplied by the mother's body and thus return any extra to maternal circulation.
 (B) The foramen ovale allows for the mixing of blood between the circuits of the body because the lungs are not yet in use.
 (C) The foramen ovale exists as a vestigial structure which is then corrected once fetal development is complete.
 (D) The foramen ovale allows space for the heart muscle to grow during fetal development so the chambers can form properly.

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Questions 59-61 refer to the diagram.

The menstrual cycle is controlled by the anterior pituitary regulating the ovaries, the ovaries regulating the uterus and the uterus feeding back to the anterior pituitary. This graph shows the relationship between the relevant hormones over the course of a typical 28-day cycle.



59. In the latter half of the menstrual cycle, basal body temperature (BBT) undergoes a slight but detectable and sustained rise. Based on the graph, which hormone is most likely responsible for this rise?

- (A) Progesterone
- (B) LH
- (C) FSH
- (D) Estrogen

60. Given that FSH and LH levels fall during the latter half of the menstrual cycle, what impact are estrogen and progesterone together likely having on the anterior pituitary?

- (A) Creating a positive feedback loop
- (B) Creating a process of feedforward regulation
- (C) Creating allosteric regulation
- (D) Creating a negative feedback loop

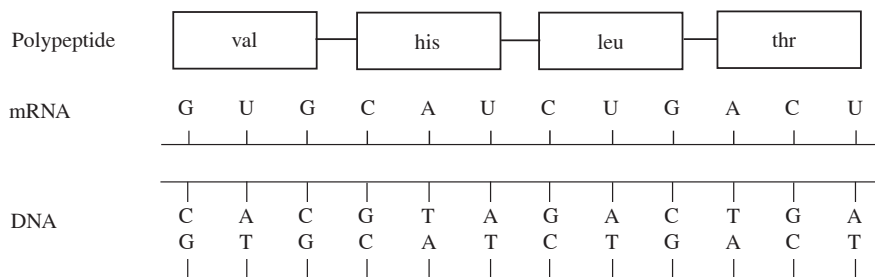
61. During what days is the corpus luteum an active structure on the ovary?

- (A) 1-5
- (B) 5-14
- (C) 14-15
- (D) 16-24

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Questions 62-63 refer to the diagram.

The diagram depicts how a sequence originating in the genome then become interpreted by transcription and finally by translation.



62. If the codon for histidine was removed, what type of mutation would have been achieved?
- (A) Frameshift
 (B) Deletion
 (C) Transition
 (D) Insertion
63. What best describes the relationship between the DNA sequence and the transcript derived from it?
- (A) The two sequences are identical, except for the exchange of thymine for uracil
 (B) The two sequences exist in a 3:1 ratio of nucleotides.
 (C) The two sequences are complementary.
 (D) The two sequences could both undergo translation.

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Directions: This part B consists of questions requiring numeric answers. Calculate the correct answer for each question.

64. In a population model to study squirrels, the frequency of a dominant allele for tail length is found to be 0.8. What is the frequency of squirrels who are heterozygous for this allele?

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1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

66. A man with the blood genotype $I^A I^B$ has children with a woman with the blood genotype $I^A i$. What is the probability that of their two children one child will have blood type A and one child will have blood type B?

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0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

65. The average male African bush elephant weighs approximately 12,000 lbs and has a trophic level efficiency of about 5%. If 650 tons of plants are available in a wildlife preserve for consumption by elephants, how many tons of them can be maintained in the preserve?

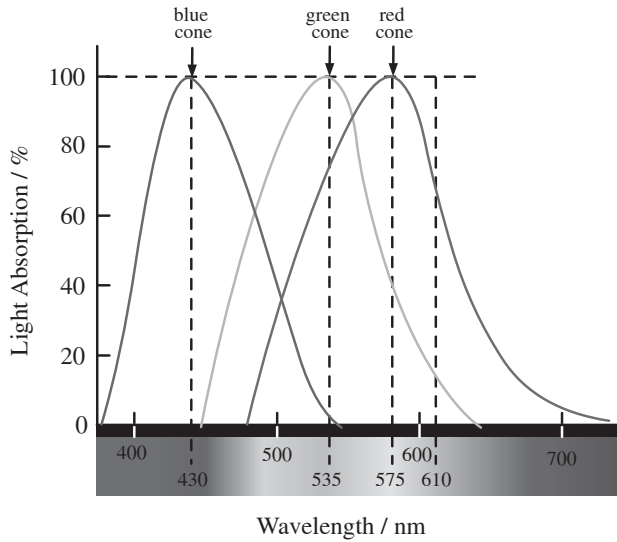
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2	2	2	2	2
3	3	3	3	3
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5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
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Section I

Question 67 refers to the diagram.

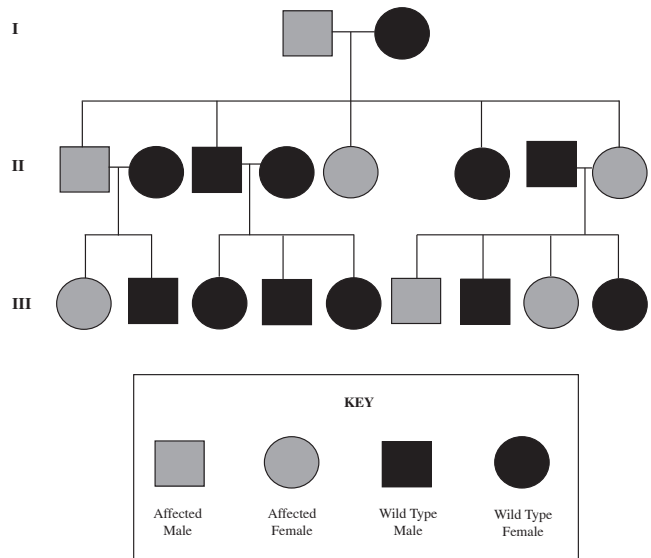
The human eye contains three types of cones which each absorb light from a different part of the visible spectrum. The input from all three types creates high acuity color vision that is integrated by the brain.



67. At what wavelength are both red and blue cones absorbing approximately 40% of the available light?

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1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Question 68 refers to the diagram.



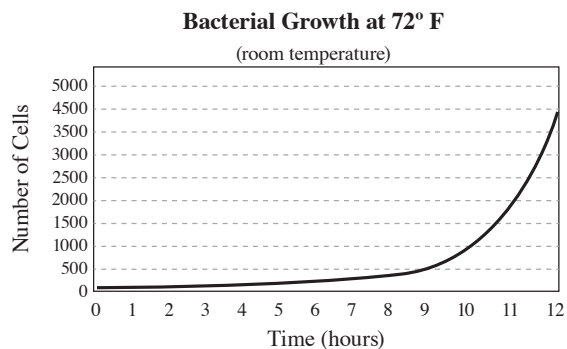
68. If an affected person from this family pedigree has a child with someone who is not affected, what is the probability that that child will have the condition?

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1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

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Question 69 refers to the diagram.

Bacteria are able to maintain log growth so long as nutrients are in continual supply and metabolic waste products are removed from the environments. Often these conditions can only be achieved via an *in vitro* environment.



69. Given the growth demonstrated in the graph, approximately how many bacterial cells will be present in a laboratory culture after 13 hours?

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0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

END OF SECTION I

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BIOLOGY

SECTION II

Planning time—10 minutes

Writing time—1 hour and 30 minutes

Directions: Questions 1 and 2 are long-form essay questions that should require about 20 minutes each to answer. Questions 3 through 8 are short free-response questions that should require about 6 minutes each to answer. Read each question carefully and write your response. Answers must be written out. Outline form is not acceptable. It is important that you read each question completely before you begin to write.

1. The kidney is a highly vascularized organ composed of both nephrons and their surrounding network of blood vessels.
 - a. Describe the stages of the nephron, including their major function and any associated blood vessels.
 - b. Define what components of filtrate end up in the urine to be excreted and why the presence of white blood cells is cause for concern.

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Section II

2. The polymerase chain reaction (PCR) is an experimental technique used to create abundant copies of an existing DNA sequence.
 - a. Explain the process by which PCR is able to produce multiple DNA copies.
 - b. Describe an experiment in which PCR could be used to locate a gene of interest.
 - c. Define the unique properties of Taq polymerase.

GO ON TO THE NEXT PAGE.

3. Define natural selection, and give two examples.

4. Describe the process of glycolysis. Explain the differences between it occurring aerobically versus anaerobically.

GO ON TO THE NEXT PAGE.

Section II

5. Describe the two possible life cycles of a bacteriophage.

6. Define the functions of the sympathetic nervous system, and give an example of its type of response.

GO ON TO THE NEXT PAGE.

7. Describe the process of depolarization and repolarization in a neuron.

8. Define the impact of blood pH on respiratory rate.

STOP

END OF EXAM
