

BIOLOGY UEE EXAM QUESTIONS

Complete Question Collection

Questions organized chronologically by year

Note: Some questions within the years are numbered out of sequence because that is how they appeared in the original source material.

Biology UEE 2006

- 1) Biotechnology can be applied in environmental remediation. To which of the major application areas of biotechnology is this most related?
 - A. Medicine and nutrition
 - B. Medicine and industry
 - C. Biodiversity and industry
 - D. Agriculture and environment
- 2) In Ethiopia, which one of the following vertebrate groups has the largest number of genera?
 - A. Mammals
 - B. Birds
 - C. Reptiles
 - D. Amphibians
- 3) Which of the following is not a term used to describe organisms that have had foreign genes added to them?
 - A. Genetically modified organisms
 - B. Transgenic organisms
 - C. Genetically engineered organisms
 - D. Pathogenic organisms

Biology UEE 2007

- 1) Which one of the following behavioral biologists is known for his study about imprinting behavior in animals?
 - A. W. Kohler
 - B. Ivan Pavlov
 - C. B. F. Skinner
 - D. Konrad Lorenz
- 2) Baby ostriches tend to follow the first moving object that they see as they hatch out of the eggs. What kind of animal behavior does this demonstrate?
 - A. Positive taxis
 - B. Positive kinesis
 - C. Innate behaviour
 - D. Learned behaviour
- 3) Which of the following is NOT true about instinctive behavior?
 - A. It can be developed further through learning.
 - B. It is triggered by a key stimulus.
 - C. It has a fixed action pattern.
 - D. It is adaptive for the species.
- 4) Suppose when you first enter a room you notice an unpleasant smell which you eventually forget about its presence. What is this behavior called?
 - A. Latent learning
 - B. Insight learning
 - C. Habituation
 - D. Operant conditioning
- 5) What does an ethologist study?
 - A. Insect diets

- B. Fossil fuel
 - C. Soil types
 - D. Animal behaviour
- 6) Which of the following is an example of an orientation innate behaviour?
- A. Kinesis in woodlice
 - B. Blinking of the eyes
 - C. Sudden withdrawal of limbs from hot object
 - D. Nest building by weaver birds
- 7) In Pavlov's experiment on the classical conditioning of dogs, what does the reaction of the dogs to the sound of the bell represent?
- A. The conditioned stimulus
 - B. The conditioned response
 - C. The unconditioned stimulus
 - D. The unconditioned response

Biology UEE 2008

- 1) To which one of the following classes of stimuli do pheromones belong?
- A. Auditory
 - B. Smell
 - C. Visual
 - D. Touch
- 2) Which of the following is NOT true about innate behaviors?
- A. Can be improved by trial and error
 - B. Common to all members of the species
 - C. Present at birth or on hatching
 - D. Do not have to be learned
- 3) Woodlice are observed avoiding light and heat by quickly moving to moist and darker areas. Which behavior of these animals helps them to detect differences in light intensity and move to the darker and moist part of the habitat?
- A. Instinctive learning
 - B. Negative phototaxis
 - C. Positive phototaxis
 - D. Insight learning
- 4) Which of the following involves trial and error learning?
- A. Operant conditioning
 - B. Sensitization
 - C. Habituation
 - D. Classical conditioning
- 5) Which of the following is a learned behavior?
- A. Suckling of the newborn at mother's breasts
 - B. Salivation by conditioned dogs at the sound of a bell
 - C. Withdrawal of hands suddenly from hot objects
 - D. Blinking the eyes when something gets into them

Biology UEE 2009

- 1) Which type of animal behavior happens without learning?
- A. Innate
 - B. Insight
 - C. Latent
 - D. Conditioned
- 2) Which of the following activities of an organism do we call a behavior?
- A. Reception of external stimulus
 - B. Reception of internal stimulus
 - C. Responding to stimulus

- D. Lack of receptors to receive stimulus
- 3) Which of the following is NOT a learned behavior?
- A. Imprinting
 - B. Habituation
 - C. Conditioning
 - D. Trial and error
- 4) Which of the following statements can be considered as better definition of the biological concept of behavior?
- A. The reactions of a person or an animal in response to an external or internal stimulus.
 - B. The responses or reactions or movements that a living plant makes in any situation.
 - C. A system of coordinated response by an organism to an external or internal stimulus.
 - D. A receptor of some kind of stimulus that an organism has which produces a response.
- 5) To which category of behavior does the human behavior that involves the strengthening of existing responses or the formation of new responses to existing stimuli that occur because of practice or repetition belong?
- A. Learned behavior
 - B. Instinctive behavior
 - C. Innate behavior
 - D. Inborn behavior
- 6) Which of the following is NOT grouped under genetically preprogrammed patterns of behavior?
- A. Reflex actions in humans
 - B. Orientation behavior
 - C. Conditioned behavior
 - D. Instinctive behaviors

Biology UEE 2011

- 1) Of the following patterns of innate behavior in animals, which one is considered the simplest?
- A. Reflex action
 - B. Instinctive behavior
 - C. Taxis movement
 - D. Kinesis movement
- 2) The daily cycle of activity that occurs over a 24-hour period of time is called a:
- A. Circadian rhythm
 - B. Stimulus-response
 - C. Kinesis behavior
 - D. Taxis behavior
- 3) If a chimpanzee piles up boxes and climbs on them to reach a bunch of bananas hanging from a ceiling, which behavior is manifested?
- A. Operant conditioning
 - B. Trial and error learning
 - C. Latent learning
 - D. Insight learning
- 4) One of the following is true about a behavior that has a fixed action pattern.
- A. It is always done in the same way.
 - B. It is a learned behavior.
 - C. It can be perfected through experience.
 - D. It does not need a stimulus to trigger it.
- 5) What is the behavior that an animal learns to ignore a trivial stimulus that is repeated many times?
- A. Sensitization
 - B. Latent learning
 - C. Insight learning
 - D. Habituation
- 6) "Skinner box" is used for experiments in:
- A. Classical conditioning
 - B. Taxes

- C. Migration
 - D. Operant conditioning
- 7) One of the following behavioral patterns of human babies is more or less similar to the imprinting of newly hatched goose?
- A. Fixed action pattern
 - B. Habituation
 - C. Attachment-formation
 - D. Breast suckling
- 8) What is the survival value of a social behavior in which some birds move in large groups?
- A. Protection of a territory
 - B. Displaying courtship activities
 - C. Technique for trapping prey
 - D. Protection from predators
- 9) One of the following is NOT true about operant conditioning.
- A. It is concerned with learnt behavior.
 - B. It is based on reward and punishment.
 - C. It is based on innate behaviors.
 - D. It is based on consequences of actions.

Biology UEE 2012

- 1) Which of the following products does NOT need the role of bacteria?
- A. Enzymes
 - B. Insulin
 - C. Ethanol
 - D. Vaccine
- 2) A grade 12 student extracted an insulin gene from insulin-producing cells of the pancreas and plasmid from bacteria. Then he transferred the insulin production. What enzyme did the student use to join the insulin gene and bacterial plasmid?
- A. RNA polymerase
 - B. DNA ligase
 - C. DNA helicase
 - D. ATP synthase
- 3) During the practice of genetic engineering, bacteria are important to:
- A. Break down the recombinant DNA molecule
 - B. Produce ligase enzymes
 - C. Provide plasmids
 - D. Produce restriction endonucleases
- 4) The relevance and promise of biology as a field of science can be best explained by its application in:
- A. Oil and mineral production
 - B. Economic growth and urbanization
 - C. Agriculture and genetic engineering
 - D. Sport and culture
- 5) Biologists played a role in the fight against AIDS because they developed:
- A. A vaccine from people who have been repeatedly exposed to HIV but never developed AIDS
 - B. A vaccine from a monkey that develops a very similar disease to AIDS which is caused by a very similar virus
 - C. Antiretrovirals that target and aim to break different stages of the HIV life cycle
 - D. Antiretroviral drugs that provide lasting immunity against reinfection by HIV

Biology UEE 2013

- 1) It is possible to produce human insulin in a bacteria strain. The insulin gene should be inserted in a plasmid and the recombinant DNA plasmid should be inserted into a bacterium. What is the role of bacterium in this process?
- A. The source of insulin and modification
 - B. The source of plasmid and insulin production

- C. Multiplying the recombinant DNA molecule
D. Joining the gene of insulin with the gene of plasmid
- 2) The relevance and promise of biological sciences can be demonstrated by their contribution in:
A. Finding mechanisms to feed the growing human population
B. Finding solutions to ethnic conflicts
C. Development of housing and construction sectors
D. Advancement of aviation technology
- 3) All are the roles of biology to combat the spread of HIV/AIDS EXCEPT:
A. Producing drugs that can stop the virus from reproducing
B. Breaking the transmission pathway
C. Raising fund for infected people
D. Producing a vaccine against the virus
- 4) This item is based on the following list of events during cloning of an insulin gene into plasmid:
I. Obtaining insulin-producing cells and plasmid from organism
II. Cutting the insulin gene and plasmid
III. X
IV. Inserting the recombinant plasmid into bacteria
V. Production of insulin by bacteria
Which one of the following best represents the step listed as “X”?
A. Inserting the insulin gene into a bacterium
B. Inserting the open plasmid into a bacterium
C. Fusing the insulin and plasmid genes to the cell wall of bacteria
D. Combining the insulin gene into the open plasmid

Answer: A

Original source also listed: *Joining the gene of insulin with the gene of plasmid.*

Biology UEE 2014

- 1) Currently natural resources are being depleted at increasing rate and waste materials are accumulated and discharged freely into water bodies. What is the best strategy to overcome these problems?
A. Decomposition
B. Succession
C. Fossilization
D. Recycling
- 2) The Institute of Biodiversity Conservation is one of the biological research institutes of Ethiopia attempting to conserve the genetic resources of the country. As such, the institute's major research efforts on all of the following EXCEPT:
A. Microorganism conservation
B. Animal conservation
C. Soil conservation
D. Plant conservation

Biology UEE 2015

- 1) Which one of the following sentences explains the traditional use of biotechnology? Production of:
A. Insulin using transgenic bacteria
B. Dairy products at household level
C. Myco-proteins under a laboratory
D. Vinegar using industrial fermenter
- 2) Which one of the following sentences explains the role of bacteria in genetic engineering? They are used to:
A. Isolate genes from donor DNA
B. Cut genes from donor DNA
C. Open up a plasmid
D. Contain a recombinant plasmid
- 3) One of the following renowned Ethiopian biologists has developed a vaccine for the rinderpest disease:
A. Professor Sebsebe Demisew

- B. Professor Yalemtehay Mekonnen
- C. Professor Beyene Petros
- D. Professor Tilahun Yilma

- 4) Walia ibex is an endemic animal species in Ethiopia which is found in:
- A. Simien Mountain National Park
 - B. Bale Mountain National Park
 - C. Omo National Park
 - D. Nechisar National Park

Biology UEE 2016

- 1) Which one of the following plant species is endemic to Ethiopia?
- A. *Percica papaya*
 - B. *Eucalyptus globulosa*
 - C. *Aurocaria baramuleta*
 - D. *Guizotia abyssinica*
- 2) Which one of the following national parks of Ethiopia is declared as the world's heritage site and comprises endemic animals like Walia ibex?
- A. Yangudi Rassa National Park
 - B. Simien Mountain National Park
 - C. Rift Valley National Park
 - D. Bale Mountain National Park
- 3) Which of the following is the most advanced and recent event in the history of cell biology?
- A. Discovery of the double-helix structure of DNA
 - B. Invention of the first scanning electron microscope
 - C. Description of the Golgi apparatus
 - D. Sequencing of the human genome
- 4) Which one of the following statements shows the future promise of biological sciences?
- A. Finding alternative living place for human population
 - B. Using stem cells to repair damaged organs and grow new organ
 - C. Finding the adaptation mechanism of plant in new condition
 - D. Advising the government on how to conserve environment
- 5) Which one of the following research activities has been conducted at Armauer Hansen Research Institute?
- A. Improving crop production through genetic engineering
 - B. Conserving the genes of endemic plants and animals
 - C. Assessing the nutritional status of mothers and babies
 - D. Developing drugs for leishmaniasis and tuberculosis
- 6) Which one of the following alternatives contains only protein-rich cereals?
- A. Red kidney peas, maize and white pea
 - B. White kidney peas, red kidney peas and chickpea
 - C. Barley, chickpea and groundnut
 - D. Wheat, red kidney peas and sesame
- 7) A transgenic organism is an organism that:
- A. Replicates its DNA without control
 - B. Can undergo chromosomal non-disjunction
 - C. Has received genetic material of another organism
 - D. Is artificially cultured and harvested
- 8) Which of the following explains how biology takes part in biosensor technology? Using microorganism to:
- A. Monitor pollutants
 - B. Extract metals from ores
 - C. Develop vaccines
 - D. Produce antibiotics
- 9) In a textile industry microorganism's commercial products play significant role in removing stains like grease by changing:
- A. The acidic or basic nature of the stain molecules

- B. The temperature of insoluble large stain molecules
 - C. The color of stain molecules to another color
 - D. Large insoluble stain molecules into small and soluble ones
- 10) Which one of the following statements is correct about application of biopesticide in agriculture? It:
- A. Uses bacteria and fungi or their metabolites to kill insects
 - B. Breaks down glyphosate by an enzyme introduced into plant cell culture
 - C. Produces insect-resistant crops through modification of the plant genes using bacterial plasmids
 - D. Produces toxic chemicals by crops through modification of their genes

Biology UEE 2017

- 1) Which one of the following Ethiopian biological research institutes is known for housing a major gene bank in Africa?
- A. Addis Ababa University Biology Department
 - B. Institute of Biodiversity Conservation
 - C. Akilu Lemma Institute of Pathobiology
 - D. Armauer Hansen Research Institute
- 2) What is the primary purpose of creating transgenic organisms? To:
- A. Generate pathogenic organisms that fight against non-pathogenic ones
 - B. Produce organisms that mimic human beings in every aspect of behaviors
 - C. Promote expression of desired genes that improve nutritional quality of organisms
 - D. Produce novel organisms that can affect reproduction across different species
- 3) What is the role of biology in the investigation of a criminal case? To:
- A. Detect flavor compounds in food and monitor environmental pollutants
 - B. Examine potential sources of evidences using blood, saliva and hair
 - C. Sense pathogens and herbicides using immunochemical detection system
 - D. Determine the production of complex organic compounds using mold fungus
- 4) How does biological washing powder save energy? Because they:
- A. Use lipase enzyme without other combination for any stain in clothes
 - B. Are effective in cleaning clothes at lower temperatures without boiling water
 - C. Are effective in removing dirty ores in clothes without spraying acidic water
 - D. Use protease enzyme without other combination for any stain in clothes
- 5) What is biological warfare? The use of:
- A. Selective genes to produce genetically modified organisms
 - B. Cloning technique to make exact genetic copies of an organism
 - C. Bacteria, fungi and viruses as a biological agent to control pests
 - D. Infectious agents with the intent to kill humans, animals or plants

Biology UEE 2013 – Animal Behaviour

- 5) The behavior which trainers look, if modified, could lead to the desired behavior and reward such a behavior is:
- A. Innate
 - B. Reflex
 - C. Instinct
 - D. Operant
- 6) Which one of the following examples of behavior describes when an animal stops responding to stimulus or cue after a period of repeated exposure?
- A. Imprinting
 - B. Reflex
 - C. Habituation
 - D. Conditioning
- 7) Which one of the following behavior is a courtship behavior?
- A. Touch
 - B. Ritual fighting
 - C. Scent marking
 - D. Defending a den

- 8) The Ethiopian wolf (*Canis simensis*) lives and hunts in packs. During patrolling their habitat, both male and female wolves of the group maintain their area with urine containing pheromone. This pattern of behavior best exemplifies:
- A. Courtship behavior
 - B. Territorial behavior
 - C. Operant behavior
 - D. Learned behavior

Biology UEE 2014 – Animal Behaviour

- 1) Instinctive behaviour:
- A. Is common to all members of a species
 - B. Varies from individual to individual
 - C. May be modified by new experiences
 - D. Develops through trial and error
- 2) Which one of the following statements is an example of latent learning?
- A. The random movement of woodlice in response to changes in light intensity and humidity
 - B. Knowledge of a mice about the immediate environment of its burrow may help it escape from predator
 - C. Foraging bees returning from successful trip dance on the honeycomb to recruit others to harvest a new
 - D. Female baboon turns its buttock to ward the dominant male to signify readiness to mate
- 3) Consider the following statements.
- I. Genetically determined and common to all members of a species
 - II. The behaviour may be modified by new experiences
 - III. Behaviour is fully functional at the first attempt
 - IV. Generally there is no modification of the behaviour
- Which numbers describe innate and learned behaviours?
- A. Innate: III, IV and Learned: I, II
 - B. Innate: I, II and Learned: III, IV
 - C. Innate: II, III, IV and Learned: I
 - D. Innate: I, III, IV and Learned: II
- 4) Which one of the following is an example of social behaviour?
- A. Exaggeration of size by fluffing up of feathers
 - B. Singing of frogs on spring nights
 - C. Marking a territory with urine
 - D. Caring for offspring that are not one's own
- 5) Which one of the following is a behavioral method of temperature regulation in homoiotherms?
- A. Piloerection
 - B. Licking
 - C. Aestivation
 - D. Vasodilation

Biology UEE 2015 – Animal Behaviour

- 1) Which of the following temperature controlling mechanisms in homoiotherms is categorized into behavioural method?
- A. Seeking shade when the temperature rises
 - B. Shivering as a result of drop in temperature
 - C. Constriction of capillaries when the temperature falls
 - D. Sweating when the temperature increases
- 2) All of the following are examples of innate behaviours EXCEPT:
- A. Training killer whales at marine parks
 - B. Increasing breathing rate during exercise
 - C. Producing tears when dust gets into the eyes
 - D. A fly moving its maggot into more humid environment
- 3) Which one of the following is an example of a learned behaviour?
- A. Nest-building
 - B. Weaving a web

- C. Knee-jerk reflex
- D. Classical conditioning

- 4) Which one of the following is an example of territorial behaviour of animals?
- A. A male robin threatening an intruder
 - B. Fixed action of zebra fish to find a mate
 - C. Penguins huddling to reduce heat loss
 - D. Honeybees nesting in a tree

Biology UEE 2016 – Adaptation

- 1) Which one of the following adaptations is important for survival of polar bear in very cold environments? Having:
- A. Smaller size
 - B. Fine silky fur
 - C. Blubbers under the skin
 - D. Thick wrinkled ears

Biology UEE 2017 – Animal Biology

- 1) A grade 11 student observed and identified some animals group having closed circulatory system, centralized nervous system with brain and sensory organs. Based on their identification select one of the following animals that can belong to this group?
- A. Snails
 - B. Earthworm
 - C. Squid
 - D. Snake
- 2) What does it mean if an animal is poikilothermic? It:
- A. Changes its body temperature with environmental condition
 - B. Increases its metabolic rate during cold and hot conditions
 - C. Keeps its body temperature constant regardless of external changes
 - D. Produces heat when temperature falls by activating the hypothalamus
- 3) Assume a patient with type II diabetes gets an advice to practice regular exercise to raise the number of insulin receptors. Then, how does insulin regulate the blood glucose level if it is high in this patient? It stimulates:
- A. Glycolysis, which converts glucose into pyruvate
 - B. Glycogenesis, which converts glucose into glycogen
 - C. Lipolysis that converts fatty acid into glucose
 - D. Gluconeogenesis that creates glucose from amino acids

ANSWER KEY

Biology UEE Questions

UEE 2006

1. D
2. B
3. D

6. D
7. C
8. D
9. C

8. A
9. D
10. A

UEE 2007

1. D
2. D
3. A
4. C
5. D
6. A
7. B

UEE 2012

1. D
2. B
3. C
4. C
5. C

UEE 2017 – Biotechnology

1. B
2. C
3. B
4. B
5. D

UEE 2008

1. B
2. A
3. B
4. A
5. B

UEE 2013 – Biotechnology

1. C
2. A
3. C
4. D

UEE 2013 – Behaviour

1. D
2. C
3. B
4. B

UEE 2009

1. A
2. C
3. A
4. C
5. A
6. C

UEE 2014 – Biotechnology

1. D
2. C

UEE 2014 – Behaviour

1. A
2. B
3. D
4. D
5. B

UEE 2011

1. A
2. A
3. D
4. A
5. D

UEE 2015 – Biotechnology

1. B
2. D
3. D
4. A

UEE 2015 – Behaviour

1. A
2. A
3. D
4. A

UEE 2016 – Biotechnology

1. D
2. B
3. D
4. B
5. D
6. B
7. C

UEE 2016 – Adaptation

1. C

UEE 2017 – Animal Biology

1. C
2. A
3. B

End of Answer Key