Biology EUEE 2004 E.C

Grade 11

Unit One

1. Which of the following statements is in agreement with the modern cel theory?
   A. Cells come from nothing. C. Cells come from non-living material.
   B. Cells come from existing cells. D. Cells arise by means of spontaneous generation.
2. Which of the following corresponds to the beginning step of a scientific work?
   A. Testing hypotheses C. Conducting observations
   B. Making observations D. Drawing conclusions
3. In an experiment that is testing the effect of temperature on the germination rate of certain seeds, in which one of the following should the experimental and the control groups differ?
   A. The amount of water they receive. C. The number of seeds assigned to them.
   B. The age of the seeds assigned to them. D. The temperature at which they are kept.
4. What is the term for the process by which organisms keep their internal conditions at a fairly constant state?
   A. Catabolism B. Evolution C. Homeostasis D. Photosynthesis
5. Which of the following is NOT in agreement with the scientific method?
   A. Putting forward testable hypotheses. C. Putting forward personal value judgments.
   B. Carrying out experiments in duplicates. D. Analyzing results and drawing conclusions
6. A cell was examined under a compound light microscope with an eyepiece lens marked 13x and an objective lens marked 40x. How many times larger would the cell appear to the viewer?
   A. 40 times. B. 53 times C. 400 times D. 520 times
7. In an experiment designed to test the effect of different concentrations of a fertilizer on the growth rate of a plant, which one of the following is the dependent variable?
   A. The growth rate of the plant. C. Concentrations of the fertilizer applied.
   B. Plants assigned to the control group. D. Plants assigned to the experimental group.
8. A biologist applied the scientific method repeatedly, gathered a large amount of supporting experimental data and finally described a pattern or relationship between different factors. What is the best term refers to facts established in this way?
   A. Theory B. Hypothesis C. predication D. Law

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Grade 11

Unit One

1. Which of the following steps in the scientific method comes following observation?
   A. Prediction B. Hypothesis C. Experiment D. Theory
2. Which unit is best to use for measuring the smallest cells and organelles?
   A. Micrometre B. Millilitre C. Millimetre D. Nanometre
3. Choose the one that is NOT a requirement of all living things.
   A. Ability to thin C. Response to the stimuli
   B. Organization of parts D. Maintenance of internal constancy
4. One of the following would be harder to see under the ordinary light microscope that is more likely to be available in school laboratories.
   A. Nucleus B. A bacterium C. A mitochondrion D. A ribosome
5. Which of the following is a recently developed active area of research in biology today?
   A. Taxonomic study C. Ecological research
   B. Study about the cell theory D. Stem cell research

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Unit One

1. Which of the following step of the scientific method comes before all the rest?
   A. Hypothesis B. Experiment C. Conclusion D. Reporting the result
2. In scientific method, what is the importance of a background research for a given problem?
   A. To formulate a hypothesis C. To prepare report of the result
   B. To make a prediction D. To make a conclusion

M-S

3. Which of the following factors determines the rate at which organelles settle out of cell homogenate if spun in a centrifuge?
   A. Mass of the organelle.
   B. Function of the organelle in the cell.
   C. Location of the organelle in the cell.
   D. Thickness of the membrane covering the organelle.
4. What is the ultimate source of all scientific knowledge?
   A. Observation
   B. Guessing
   C. Trial and error
   D. Observation and experimentation
5. What did Francesco Redi prove through his scientific experiment?
   A. Maggots appear spontaneously on food placed anywhere.
   B. Maggots do not appear in foods kept in jars that are protected with a cover.
   C. Maggots do not appear in foods kept in open jars.
   D. Flies appear spontaneously on rooting meat kept in closed or open jars alike.
6. What does an ethologist study?
   A. Insect diets B. Soil types C. Fossil fuel D. Animal behavior
7. What do you call the reasoning technique in science where general principles are used to analyze specific cases?
   A. Induction B. Deduction C. Pseudo-deduction D.Pseudo-induction
8. Choose the step that comes at the last step in the scientific method.
   A. Proposing the research hypothesis
   B. Formulation of a scientific theory
   C. Conducting experiments
   D. Making predictions
9. Which of the following is a worthwhile biological problem for scientific investigation?
   A. Estimation of the amount of carbon in a forest ecosystem.
   B. How a crying dog can tell who among elders of the village is going to die next
   C. How witchcrafts inflict bad health by cursing a healthy person
   D. How the traditional medicine men/women cure a possessed person.

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Grade 11
Unit One

1.Which of the following laboratory glassware is used for culturing bacteria ?
   A. petri dish B. Test tube C. filter paper D. Measuring cylinder
2.Which of the following is the correct sequence of the steps in scientific research ?
   A. Hypothesis formulation → Conclusion → experiment → question
   B. Question → hypothesis formulation → experiment → conclusion
   C. Hypothesis formulation → question → experiment → conclusion
   D. Question → hypothesis formulation → conclusion → experiment
3.For what purpose do biologist use the GPS receiver ?
   A.To produce area maps
   B. To measure tree heights
   C. To estimate tree ages
   D. To count tree rings
4.In an experiment designed to study the effect of temperature on the rate of seed germination, which of the following should the experimenter vary ?
   A.Seed number B. Water quality C. Temperature D. Seed size
5.Which of the folliwng is the major mechanism by which AIDS is transmitted ?
   A.Mother to fetal transmission
   B. Heterosexual intercourse
   C. Homosexual intercourse
   D. Contaminated blood transfusion
6.Which of the following types of microscopes is most suitable for a detailed study of the surface structure of an object?
   A.Field microscope
   B. Optical microscope
   C. Scanning electron microscope
   D. Dissecting microscope
7.Which of the following is consistent with science ?
   A. Proof by investigation of the causes of a phenomenon
   B. proof by reference to a respected leader
   C. Proof by reference to an unknown object
   D. Proof based on lessons from a person one believes
8.In which of the following are all the tools mainly used in the laboratory rather than in field situation ?
   A.Centrifuges, microscopes, measuring cylinders , petri dishes
   B. Flow meters, centrifuges, theodolites, microscopes
   C. Centrifuges, plant presses, flow meters, microscopes
   D. Theodolites, petri dishes, GPS receivers, measuring cylinders

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Biology EUEE 2004 E.C
Grade 11
Unit Two

1. Which group of organisms has a system of protein synthesis in which transcription and translation take place at separate times?
   A. In all eukaryotic organisms.
   B. In multicellular animals only.
   C. Only in prokaryotic organisms.
   D. In both prokaryotic and eukaryotic organisms.
2. How many different kinds of amino acids are there for protein synthesis?
   A. Twenty B. Twenty – four C. Twenty – six D. Thirty – two
3. How many carbon atoms are contained in a single molecule of sucrose?
   A. 6 B. 12 C. 24 D. 48
4. In the process of amino acid condensation, which one of the following happens?
   A. Oxygen is used up.
   B. Carbon dioxide is released.
   C. Water is released as a byproduct.
   D. Protein is broken down into amino acids.
5. Which of the following pairs of elements are found in all carbohydrates in addition to the element carbon?
   A. Nitrogen and oxygen.
   B. Hydrogen and oxygen.
   C. Hydrogen and nitrogen.
   D. phosphorus and nitrogen.
6. Among the molecules found in cells, which of the following contains less energy?
   A. A glucose molecule
   B. An amino acid
   C. A triglycerids
   D. A water molecule
7. In which one of their structural parts do different molecules of amino acids differ from one another?
   A. In their R group.
   B. In their amino group.
   C. In their carboxyl group.
   D. In their alpha – carbon group.
8. If one mixes a sample of a fruit juice and some drops of Benedic'ts solution and obtains a brick – red precipitate up on warming the mixture, what does the juice contain?
   A. Starch B. Reducing sugar C. Sucrose D. Protein

Biology EUEE 2005 E.C
Grade 11
Unit Two

1. The main component of the plant cell wall is _____ ?
   A. Starch B. Cellulose C. protein D. Chitin
2. All proteins contain carbon, hydrogen, oxygen and what other element?
   A. Chlorine B. Flourine C. Nitrogen D. Sulphur
3. How many carbon atoms are there in one disaccharide molecule?
   A. 6 B. 12 C. 18 D. 24
4. What is the name of the sugar found in milk?
   A. Glucose B. Lactose C. Maltose D. Sucrose
5. What can one conclude about the contents of the foodstuff if a mixture of Benedict solution and a foodstuff remain blue after heating?
   A. It contains proteins.
   B. It lacks starch
   C. It contains fats
   D. It lacks reducing sugar
6. Which of the following groups of substances are all inorganic?
   A. Water, sugar, calcium, carbonate
   B. Sugar, fatty acid, amino acid
   C. Water, calcium carbonate, carbon dioxide
   D. Carbon dioxide, amino acid, fatty acid
7. In which of the following compounds are both members of the pair are polymers of carbohydrates that naturally occur in plants only?
   A. Starch and chitin
   B. Starch and cellulose
   C. Glycogen and cellulose
   D. Glycogen and chitin
8. Which of the following is generally expected to give better health benefits when present in human diet?
   A. Animal fat
   B. Saturated fatty acid
   C. Monounsaturated fatty acid
   D. Polyunsaturated fatty acid
9. Suppose the amino acid coding region in a mRNA is 1200 nucleotides long, how long is the protein in terms of amino acid number?
   A. 1200 amino acids
   B. 600 amino acids
   C. 400 amino acids
   D. 300 amino acids

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Grade 11
Unit Two

1. To which one of the following organic molecules do enzymes belong?
   A. Carbohydrates B. Amino acids C. Proteins D. Lipids

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2. A carbohydrate compound is known to have 12 carbon atoms in the whole molecule. What could this compound be?
   A. A polypeptide B. A disaccharide C. A monosaccharide D. A polysaccharide
3. If certain food stuff gave a positive result with Benedict's test only after it was hydrolyzed with hydrochloric acid, which of the following substances could it be?
   A. Non-reducing sugar C. Lipid
   B. Nucleic acid D. Protein
4. Which of the following molecules is NOT a polymer?
   A. Protein B. Lipid C. RNA D. Starch
5. At which level of structural organization do proteins have the alpha-helix shape?
   A. Primary structure C. Tertiary structure
   B. Secondary structure D. Quaternary structure
6. Which element is found in nucleic acids?
   A. Calcium B. Iron C. Magnesium D. Phosphorus
7. What is the base found in RNA in place of thymine of DNA?
   A. Cytosine B. Guanine C. Thymine D. Uralic
8. What does a restriction enzyme do?
   A. Restricts transcription C. Prevents DNA from replicating
   B. Cuts DNA at specific sites D. Hydrolyzes the DNA molecule
9. Which are the four most abundant elements in living cells?
   A. Carbon, oxygen, sulfur, phosphorus.
   B. Carbon, oxygen, hydrogen, nitrogen,
   C. Carbon, oxygen, nitrogen, sulfur.
   D. Carbon, oxygen, sulfur, magnesium
10. Which of the following is an inorganic molecule?
    A. $CaCO_3$ B. CH_4 C. $C_6H_{22}O_{11}$ D. $C_{18}H_{36}O_2$
11. In the formation of a macromolecule, what type of reaction would join two subunits together?
    A. Hydrolysis reaction C. Denturation reaction
    B. Dehydration reaction D. Hydrophobic reaction
12. To which group of organic compounds do the triglycerides and waxes belong?
    A. Carbohydrates B. Proteins C. Lipids D. Vitamins
13. Which of the following is true about all proteins?
    A. They are twenty amino acids long.
    B. They are globular in shape.
    C. They perform the same function.
    D. The monomers are held together by peptide bonds.
14. Which of the properties of water allows mosquito larvae to hung themselves dawn into the water from the water surface?
    A. Its high specific heat capacity
    B. Its high latent heat of vaporization
    C. Its high surface tension
    D. Its low density in solid state
15. Which two nitrogenous bases belong to the purines?
    A. Adenine and thymine C. Guanine and cytosine
    B. Adenine and guanine D. Thymine and uracil
16. Which one of the following is a functional group of a fatty acid?
    A. A ketone group C. An amino group
    B. An aldehyde group D. A carboxyl group

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Grade 11
<u>Unit Two</u>

1.Of the following functions, which one do triglycerides accomplish in cells?
   A. Increase density of tissues and cells C. Yield limited amount of ATP for cells
   B. Increase thermal insulation of cells D .Facilitate entry of excess water in to cells
2.How many fatty acids would a cell need to form a molecule of triglyceride ?
   A.Two B.Four C. Five D. Three
3.Which of the following food types would most likely give a negative result upon addition of iodine solution ?
   A.Bread B. Butter C. Biscuit D. Potato

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4.Which of the following molecules can serve as a raw material for industries that produce glucose ?

A.Nucleicacids B. Proteins C. Lipids D. Starch

5.Which of the following classes of fatty acids is without carbon-carbon double bond ?

A.Monounsaturated fatty acids C. Saturated fatty acids

B. Unsaturated fatty acids D. Polyunsaturated fatty acids

6.Why does sucrose give a negative result when mixed and heated with Benedict's Solution ?

A.Because it is not a sugar molecule C. Because it is a non-reducing sugar.

B. Because it is a reducing sugar D. Because it is not a monosaccharide

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Grade 11

Unit Three

1. What do we call the substance upon which and enzyme acts?
   A. Product C. Activation energy
   B. Substrate D. Enzyme – substrate complex
2. Which factor has a more negative effect on the functions of enzymes than the others?
   A. Neutral pH. C. Optimal amount of salt concentration.
   B. Very high temperature. D. optimal amount of substrate concentration
3. In which one of the following points does the induced – fit model of enzyme action differ from the lock – and – key model?
   A. Enzymes lower the energy of activation.
   B. Substrate bind at the active site of the enzyme.
   C. During the reaction, and enzyme – substrate complex is formed.
   D. The shapes of the substrate and active site are complementary.
4. Which of the following mechanisms do cells use to regulate enzyme catalyzed reactions in metabolic pathways?
   A. Enzyme denaturation. C. End product inhibition.
   B. Irreversible inhibition. D. Competitive inhibition.
5. When an enzyme is denatured by heat or extreme pH, which one of the following does it lose?
   A. The peptide bond. C. Secondary structure
   B. Primary structure. D. Tertiary structure.
6. In competitive inhibition, which one of the following factors determines the rate of the inhibition?
   A. The reaction temperature. C. The substrate concentration.
   B. The enzyme concentration D. The ratio of inhibitor to enzyme concentration.
7. Suppose 25% of the molecules of an enzyme are inhibited by a non – competitive inhibitor, which one of the following would happen if the amount of the substrate is increased by 50%?
   A. The reaction rate would double .
   B. More enzyme molecules would get inhibited.
   C. The rate of the reaction would decrease by 50%
   D. The rate of the reaction would remain unchanged.
8. What are the environmental advantages of using enzymes in industry?
   A. It makes high production possible with less input of heat.
   B. It makes high production possible with high input of heat.
   C. It makes high production possible with emission of more CO_2.
   D. It helps high production with supply of more heat and emission of more CO_2.

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Grade 11

Unit Three

1. One of the following molecules is the building units of an enzyme molecule.
   A. Amino acids B. Glucose C. Nucleotides D. Fatty acids
2. Which of the following classes of enzymes digests carbohydrates?
   A. Amylases B. Lipases C. Proteases D. Nucleases
3. Which of the following Paris of molecules are known to have catalytic activity?
   A. Lipids and proteins C. Proteins and RNAs
   B. Carbohydrate and proteins D. proteins and DNAs
4. To which class of enzymes do the digestive enzymes belong?
   A. Esterases B. Transferases C. Hydrolases D. Isomerases

5. Which of the following types of enzyme inhibitions can be removed when the end product of the metabolic pathway is deplected?
   A. Allostreric inhibition
   B. Non – reversible inhibition
   C. Competitive inhibition
   D. Reversible competitive inhibition

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Unit Three

1. Which of the following is a coenzyme?
   A. NAD B. Carbohydrate C. Water molecule D. Protein
2. Which of the following substances has a shape which is similar to that of the substrate of an enzyme?
   A. The reaction product
   B. A competitive inhibitor
   C. A cofactor
   D. An allosteric inhibitor
3. Which one of the following terms refers to have fast an enzyme acts on its substrate?
   A. Turn over number
   B. Substrate number
   C. Enzyme number
   D. Product number
4. The optimum temperature of enzymes found in thermophilic bacteria is:
   A. Lower than for enzymes in the human body.
   B. Higher than enzymes in the human body.
   C. The same as enzymes found in human body.
   D. Lower than enzymes found in warm blooded animals.
5. The most complex structure of proteins is called
   A. Primary structure
   B. Secondary structure
   C. Tertiary structure
   D. Quaternary structure
6. Which of the following properties of enzymes makes it possible that a single enzyme molecule can act on many substrate molecules?
   A. Enzymes are proteins
   B. Enzymes lower the energy of activation
   C. Enzymes are resued over and over again
   D. Enzymes are substrate specific
7. If the ratio of an enzyme catalyzed reaction remains constant even when more substrate is added to the reaction, which of the following might be the reason?
   A. Saturation of the enzyme
   B. Inactivation of the enzyme
   C. Inhibition of enzyme-substrate complex formation
   D. Loss of substrate specificity by the enzyme

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Grade 11
Unit Three

1.Which part of the human alimentary canal contains digestive enzymes that function at acidic pH?
A.Stomach B.Mouth C.Esophagus D.Small intestine

2.Which one of the following functions best at higher optimum pH than all the rest ?
A. Pepsin B. Salivary amylase C. Trypsin D. Enzymes in stomach

3.Which of the following industries can reduce more CO_2 emission by shifting to the use of enzymes in the manufacturing process ?
A.Bread making B. Cheese making C.Leather making D. Manufacturing cosmetics

4.Which of the following is made of globular proteins ?
A.Enzyme B. Keratin C.Collagen D. Glycogen

5.What causes tomato fruits to ripen much more slowly when kept in a refrigerator than if left on a table at room temperature ?
A.Low temperature slows the normal action of ripening enzymes
B. Enzymes produced by bacteria normally inhibit ripening
C. Humidity accelerates enzyme activity and ripening process
D. normal temperature arrests the action of ripening enzymes.

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6.Which class of enzymes joins two molecules together by formation of new bonds

A. Ligase B. Isomerase C. Lyase D.Hydrolase

7.Whihc one of the following should be done in order remove an enzyme inhibition caused by a competitive inhibitor ?

A.Remove affected enzyme molecules C. Remove the end product of the reaction

B. Add more substrate to the system D. Add more inhibitor to the system

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Grade 11

Unit Four

1. Which of the following compounds in an important component of the bacterial cell wall?
   A. Chitin B. Peptidglycan C. Cellulose D. pectin
2. Which of the following modes of material transport across the cell membrane is NOT governed by the concentration gradient of the transported material?
   A. Simple diffusion B. Facilitated diffusion C. Osmosis D. Active transport
3. Which of the following laboratory equipment is used to separate the organelles of the cell according to their density?
   A. Incubator C. Centrifuge
   B. Measuring cylinder D. Filter paper with fine pores
4. Which of the following ideas in the cell theory was contributed by Rudolf virchow?
   A. All plants are made up of cells. C. Cells are the structural unit of life
   B. All animals are made up of cells. D. Cells come from per-existing cells
5. Which means of particle transport requires input of energy by the cell?
   A. Simple diffusion C. Osmosis
   B. Facilitated diffusion D. Active transport
6. Which of the following requires expenditure of ATP?
   A. Osmosis B. Facilitated diffusion C. Simple diffusion D. Endocytosis
7. Which of the following properties of water makes sweat and effective body cooler?
   A. Its high specific heat. C. Its low density when frozen.
   B. Its high surface tension. D. Its high heat of vaporization.
8. What is the reason that Louis Pasteur used a swan – necked flask instead of straight necked on in his experiment designed to disprove the theory of spontaneous generation?
   A. To allow free passage of air to the broth inside the flask.
   B. To prevent the escape of any microorgnism form the flask.
   C. To keep the broth in the flask hot to kill microorganisms.
   D. To trip particles from the air that might enter the flask before reaching the broth.
9. Suppose we consider four hypothetical cells (designed A,B,C and D) having cubic shape with their sides measuring 2,4,6 and 8 arbitrary units, respectively which of these cells has the largest surface area to volume ration?
   A. Cell A B. Cell B C. Cell C D. Cell D
10. Suppose three potato cylinders are kept for some time in 15%, 8% and 4% sucrose solutions, respectively, and the fourth cylinder is kept in distilled water, which of the cylinders will be more flaccid?
    A. The cylinder in 4% solution. C. The cylinder in 15% solution.
    B. The cylinder in 8% solution. D. The cylinder in distilled water.
11. What type of molecules CANNOT pass across the cell membrane by simple diffusion?
    A. Charged molecules. C. Lipid soluble molecules.
    B. Non – polar molecules. D. Molecules of very small size

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Grade 11

Unit Four

1. Which one of the following is the main constituent of biological membranes?
   A. Phospholipids B. Glycoproteins C. Glycolipids D. Choloesterols
2. If the size of a cell increases, which of the following gets smaller?
   A. The volume of the cell C. Surface area to volume ratio of the cell
   B. The surface area of the cell D. Volume to surface area ratio of the cell
3. What makes unsaturated fatty acids different from saturated fatty acids?
   A. The presence of long chain of carbon. C. The presence of large number of hydrogen atoms.
   B. The presence of one or more double bonds. D. Their occurrence as solid at room temperature.

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4. If a suspension of a mixture of cellular organelles is spun in a centrifuge, which organelle settles to the bottom first?
   A. Mitochondria B. Nuclei C. Chloroplasts D. Ribosomes
5. Which of the following is an important function of the Golgi apparatus?
   A. Protein synthesis
   B. Packaging of proteins for export out of the cell
   C. Removing of debris from cell
   D. Storage of waste materials not needed by the cell
6. What will happen if human red blood cells are kept in a hypotonic solution?
   A. Lose water by osmosis and burst.
   B. Lose water by osmosis and shrink.
   C. Take in water by osmosis, swell and burst.
   D. Take in water by osmosis, swell and remain turgid.
7. In which type of solution is the water potential more negative than in the cells?
   A. Hypotonic C. Isotonic
   B. Hypertonic D. Equal solute and solvent concentration
8. Which of the following paired organelles are membrane – bound?
   A. Ribosomers and peroxiomes C. Mitochondria and ribosomes
   B. Chloroplasts and ribosomes D. Chloroplasts and miotochondria
9. Most cell membranes are primarily composed of which compounds?
   A. Proteins and lipids C. Chitin and starch
   B. DNA and ATP D. Nucleotides and amino acids
10. Which of the following is the correct route that connects a stimulus and a response?
   A. Receptor → Coordinator → effector
   B. Coordinator → receptor → effector
   C. Receptor → effector → coordinator
   D. Effector → receptor → coordinator
11. Which of the following cell types can be rich in lysosomes?
   A. Red blood cells C. Phagocytic cells
   B. Never cells D. Muscle cells
12. If red blood cells shrink when placed in a certain solution, what is the strength of the solution relative to the strength of the protoplasm of the cells?
   A. Hypotonic B. Isotonic C. Hypertonic D. Isoosmotic

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<u>Unit Four</u>

1. Which of the following units of measurement is more convenient to express the size of cellular organelles?
   A. Meter B. Centimeter C. Millimeter D. Micrometer

2. Which of the following is NOT true about mitochondria and chloroplasts?
   A. Both contain chlorophyll
   B. Both contain nucleic acid
   C. Both have double membrane
   D. Both transducer energy
3. Which of the following classes of molecules **CAN NOT** pass easily across the cell membrane by simple diffusion?
   A. Small non – polar molecules C. Non – polar molecules
   B. Lipid soluble molecules D. Polar molecules
4. Among the following scientists who contributed to the cell theory, identify the one who stated that *'a cell can arise only from another cell like it.'*
   A. Robert Hook C. Matthias Schleiden
   B. Theodor Schwann D. Rudolf Virchow
5. What does it mean when biologists express the cell membrane as a unit membrane?
   A. A cell is covered by a single membrane.
   B. A membrane is only one lipid layer thick.
   C. All cells have essentially similar membrane.
   D. A membrane is covered by a single layer of protein.

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6. Which of the following modes of transport is used by cells to move substances against their concentration gradients?
   A. Osmosis C. Facilitated diffusion
   B. Simple diffusion D. Active transport
7. Which of the following will primarily happen if the enzymes in the lysosomes of a cell are defective?
   A. Cellular debris will not be removed
   B. Chromosome replication will ceases
   C. ATP production will stop
   D. Diffusion process will stop
8. What is the purpose of the infoldings of the inner-membrane of the mitochondrion?
   A. Increasing the photosynthetic capacity of the cell.
   B. Speeding up the loss of CO_2 during fermentation.
   C. Speeding up the process of glycolysis.
   D. Increasing the surface are for ATP production

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Grade 11
Unit Four

1.What is the best term that expresses the movement of substances in cells against their concentration gradients?
A.Active transport B. Passive transport C.Osmosis D. Diffusion
2.Who was the person that first observed living cells moving around when he examined drops of water under the microscope ?
A.Robert Brown B. Robert Hooke C. Anton van Leeuwenhoek D. Theodor Schwann
3.In which of the following groups of living organisms do the cells lack organized nuclei ?
A.Fungi B.Protozoa C. Bacteria D. Algae
4.Which one of the following events happened before all the others ?
A.The cell theory was proposed. C. The compound microscope was invented
B. The protozoa were discovered D. The structure of DNA was described
5.Which of the following is NOT a universal property of all living things ?
A.Heritable characters B. Reproduction C.Photosyntheis D. Growth and development
6.Which of the following has a bigger size than all the others ?
A. A ribosome taken from an animal cell C. A nerve cell taken from a huma brain
B. A mitochondrion taken from a plant cell D. A glucose molecule taken from a plant cell
7.How does a simple microscope differ from a compound microscope ?
A. A simple microscope has no lens. C. A simple microscope uses mirror as lens .
B. A simple microscope has got two lenses D. A simple microscope has only one lens
8.Which of the following parts of the plant cell is NOT living component of the cell ?
A. Cell membrane B. Cell wall C. Cytoplasm D. Nucleus
9.According to the fluid-mosaic model of the plast membrane, what does the word 'mosaic' refer to ?
A.The hydrophobic property of fatty acids C. The arrangement of the proteins
B. The bilayer nature of the membrane D. The movement of the phospholipids
10.What is the substance that helps to keep the biological membrane in a fluid state ?
A.Waxes B. Water C. Cholesterol D. Phospholipids

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Grade 11
Unit Five

1. Which of the following processes of photosynthesis does NOT require the presence of light to take place?
   A. The splitting of water C. Reduction of NADP
   B. ATP formation D. Carbon fixation
2. When the muscle cells are in short supply of oxygen, which of the following compounds would be accumulated in them?
   A. Ethanol B. Acetic acid C. Lactic acid D. Carbon dioxide
3. Which of the following is NOT one of the stages in cellular respiration?
   A. Calvin cycle B. Glycolysis C. Electron transport D. Krebs cycle
4. What is the correct equation for cellular respiration?
   A. $6CO_2 + 6H_2O + Energy = 6O_2 + C_6H_{12}O6$ C. $6O_2 + C6H_{12}O_6 + Energy = 6CO_2 + 6H_2O$
   B. $6O_2 + C6H_{12}O_6 = 6CO_2 + Energy$ D. $6CO_2 + 6H_2O = 6O_2 + C6H_{12}O_6 + Energy$

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5. What amount of net gain in ATP does glycol sis provide to a cell?
   A. 2 ATP molecules. C. 18 ATP molecules
   B. 4 ATP molecules D. 36 ATP molecules
6. How many moles of ATP will be generated as a result of the oxidation of one mole of FADH2 in an actively respiring mitochondrion?
   A. 0 B. 3 C. 2 D. 6
7. Which of the following is true for cellular respiration?
   A. Restricted to plant cells. C. Occurs in all eukaryotic cells.
   B. Restricted to animal cells. D. Occurs in prokaryotic cells only
8. In cyclic photophosphorilation, what is the source of the recycled electron?
   A. Reduced NADP C. Adenosine triphosphate
   B. Chlorophyll molecule. D. Photolysis of water molecules
9. If there were no free oxygen to breath, whci one of the following steps of the respiration process can operate in our body?
   A. Clycolysis C. Electron transport chain
   B. krebs cycle D. Reactin that links glycolysis and Krebs cycle
10. What if the source of the oxygen that is produced during the process of photosynthesis by high plants?
    A. CO_2 B. H_2O C. ATP D. chlorophyll

Biology EUEE 2005 E.C
Grade 11
Unit Five

1. During chemiosmosis, what substance diffuses from one side to the other side of the membrane?
   A. Water molecules B. protons C. Electrons D. ATP molecules
2. Which of the following is NOT true about photosystem – II?
   A. Its reaction cente molecule is p680.
   B. It passes its excited electrons to photosystem – I.
   C. The energy lost from its excited electrons reduces NADP.
   D. It replenishes its lost electrons from photolysis of water.
3. What is the importance of chemiosmosis in photosynthesis and cellular respiration?
   A. Splitting of water molecule C. Combining hydrogen and carbon
   B. Operating the proton pump D. Synthesizing ATP
4. Where does the light dependent reaction of photosynthesis occur in the chloroplast?
   A. In the thylakoid membrane C. In all parts of the chloroplast
   B. In the fluid of the stroma D. In the stomatal opening
5. For which of the following is the sugar produced by photosynthesis NOT used?
   A. To produce biomass. C. To produce ATP respiration.
   B. To make new DNA. D. To produce enzymes.
6. In which process is ATP generated during short distance high speed running?
   A. Aerobic respiration C. Anaerobic respiration
   B. Mitochondrial energy transformation D. The krebscycl

Biology EUEE 2007 E.C
Grade 11
Unit Five

1. What is the molecule that supplies the quickest and suitable sources of energy to cells?
   A. Lactose B. Sucrose C. ATP D. Lipid
2. Which of the following classes of organic molecules is the least important source of energy for cellular respiration?
   A. Nucleic acids B. Lipids C. Carbohydrates D. Protein
3. In which industrial products is pyruvate fermentation by yeast practically applied?
   A. Brewing beer C. production of vinegar
   B. Swiss cheese making D. Yoghurt making
4. When athletes take part in short distance running, how do the cells generate most of the energy that is quickly needed?
   A. Aerobic respiration in muscle cells.
   B. Mitochondrion respiration in any cell.
   C. Anaerobic respiration in muscle cells.
   D. Yeast fermentation in the stomach.
5. Cells immediately used the energy that electrons lose as they pass along the chain of electron carriers to:
   A. Produce ATP C. Spain the rotor of ATP synthase
   B. Pump protons D. reduce NAD

M-S

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6. Which of the following happens in both cyclic and non-cyclic photophosphorilation?
   A. ATP is formed
   B. Oxygen is generated
   C. NADP is reduced
   D. Water molecule splits
7. Which of the following is NOT true about C4 plants such as tef*(Eragrostistef)?*
   A. CO_2 is harvested during the night time.
   B. The bundle sheath cells contain chloroplasts.
   C. Light-dependent reaction occurs in mesophyll cells.
   D. Chloroplasts of bundle sheath cells lack thylakoids

Biology EUEE 2008 E.C
Grade 11
Unit Five

1.What is the molecule in plant cells that first captures the radiant energy from sunlight ?
A.ATP B.DNA C. Chlorophyll C. Carbon dioxide

2.What happens in the first reaction of the krebs cycle during energy transformation ?
A.A2 –C compound is produced
B. A 6- C compound is produced
C. A 4-C compound is produced
D. A 5- C compound is produced

3.Under what conditions do C4 plants have more photosynthetic efficiency than C3 plants ?
A.Low water supply B. Low temperature C.Low light internsity D. Low CO_2 concentration

4.Which of the following processes releases CO_2 in to the atmosphere ?
A.Respiratiion B. Assimilation C. Feeding D. Photosynthesis

5.During which of the following processes in cellular respiration are most of the ATPs formed ?
A.Glycolysis B. Chemiosmosis C.Link reaction D. Krebs cycle

6.Which phosphate bond of the ATP is broken when the energy it contains is needed for cellular activity ?
A.The first bond B. The C- C bonds C. The second bond D. The third bond

7.What is the advantage that a photo system containing molecules of different types of light sensitive pigments have ?
A.To absorb light of different wave lengths
B. To increase the size of the photosystem
C. To increase the complexisty of the photosystem
D. To increase the surface area for light absorption

8. from which of the following does the O_2 released during the process of photosynthesis originate?
A. Pyruvic acid B. Sugar C. CO_2 D. Water

9. Which of the following substances is NOT formed when glucose is fermented by yeasts?
A. Alcohol B. ATP C. Lactic acid D. Carbon dioxide

10. Which of the following is the adaptation by C4 plants that helps them to avoid photorespiration?
A. Harvesting of carbon dioxide at night
B. Using separate cell for light & dark reactions
C. Storing carbon dioxide in the vacuole
D. Keeping the stomata closed during the day

Biology EUEE 2004 E.C
Grade 12
Unit One

1. In which kingdom of life are the unicellular eukaryotes grouped?
   A. Monera B. Protista C. Plantae D. Animalia
2. Which of the following is the best collective name for all bacteria with spherical shapes?
   A. Cocci B. Bacilli C. Sphitochates D. Streptococci
3. Which tool of the biologist is more suitable for culturing bacteria in the laboratory?
   A. Test tubes B. Microscopes C. Perti dishes D. Beakers
4. Which one of the following types of microscopes is the best to show the details of the surface of an object?
   A. Optical microscope
   B. Compound microscope
   C. Scanning electron microscope
   D. Transmission electron microscope
5. Which one of the following is NOT one of the roles that microorganisms play in ecosystems?
   A. Nutrient recycling
   B. Carbon fixation
   C. Nitrogen fixation
   D. Energy recycling
6. Viruses are better characterized as:
   A. Decomposers B. producers C. carnivores D. parasites
7. In which part of the cell do Gram – positive and Gram – negative bacteria differ regarding their staining property with Gram's stain?
   A. Cytoplsm B. Cell membrane C. Cell wall D. Nucleus

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8. In DNA cloning technology, which of the following molecules serves as a vector of gene of interest to be transferred to bacteria host?
   A. Bacterial DNA B. Plsmid DNA C. Nuclear DNA D. Mitochondrial DNA
9. To which of the following groups does HIV belong?
   A. Plasmids B. Retroviruses C. DNA viruses D. Bacteriophages
10. What is the main mode of transmission of diseases such as cholera and typhoid fever?
   A. Sexual intercourse C. Blood – to – blood contact
   B. Bites of animal vectors D. Drinking contaminated water
11. What are the individual strands of a fungal mycelium called?
   A. Fungus B Spores C. Hyphae D. Hydra
12. To which major area of relevance and applications of biology is the production of transgenic organism related?
   A. Agriculture B. Environment C. Biotechnology D. Medicine
13. Which of the following is true about the anitiretroviraldurgs currently used to treat AIDS patients?
   A. They cure AIDS C. They serve as anti – HIV vaccines
   B. They stop HIV transmission D. They slow down HIV multiplication

Biology EUEE 2005 E.C

Grade 12

<u>Unit One</u>

1. Which of the following kingdoms of life is consisting of prokaryotic organisms?
   A. Fungi B. Monera C. Protista D. Plantae
2. What are the most frequent causative agents of food poisoning?
   A. Bacteria B. Protozoa C. Viruses D. Worms
3. Which of the following human diseases can be prevented by taking proper diets?
   A. Degenerative diseases B. Genetic diseases C. Social diseases D. Deficiency diseases
4. Which of the following parctieces does NOT normally transmit HIV?
   A. Sexual intercourse through anus C. Blood transfusion
   B. Sharing injection needles D. Shaking hands
5. To which of the following groups do those bacteriophages that integrate their DNA into the chromosome of their bacterial host belong?
   A. Virulent viruses C. Lysogenic viruses
   B. Lytic viruses D. Non – parasitic viruses
6. In which of the following features are eukaryotic cells distinguished from prokaryotic cells?
   A. They have mitochondria C. They have no DNA
   B. Their nuclei lack membranes D. They have smaller robosomes
7. Which of the following field equipment is used to determine and exact location of a place?
   A. Gheodolite C. Field microscope
   B. Global positioning system D. Field pH kit
8. What is a theory in biology?
   A. The outcome of an experiment C. A hypothesis supported by experiments and/or observations
   B. A proof that shows the hypothesis is true D. An opinion or educated guess resulting from observations
9. For which of the following is a theodolite used in biology education?
   A. Measuring the height of trees. C. Measuring the rate of flow of water in a cell
   B. Recording positions where a species is found D. Measuring the pH of water or soil
10. Which group of micro – organisms causes the disease known as athlete's foot?
   A. Bacteria B. Fungi C. Protozoa D. Viruses
11. Under which of the following groups can the fungi be more conveniently placed?
   A. Autotrophs B. Heterotophs C. Prokaryotes D. plants
12. What is the advantage of using HAART (hightly active anti – retroviral theraphy) for the treatment of HIV?
   A. It gives a lasting immunity to HIV C. It prevents re – infection by HIV
   B. It prevents mutation of HIV D. It helps to break the life cycle of HIV
13. On which one of the following principles are most of the anti – HIV drugs currently in use working?
   A. Inhibition of enzyme action C. Digesting of viral particles
   B. Degradation of viral RNA D. Phagocytosis of the virus
14. If a new anti – HIV drug is to be developed to prevent the virus from entering the host cell, which one of the following processes should the drug target?
   A. Reverse transcription C. Integration of viral DNA in to host DNA
   B. Binding of Gp 120 and CD4 D. Assembly of viral parts into a whole virus

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Biology EUEE 2007 E.C

Grade 12

Unit One

1. What colour do gram-positive bacteria stain with Gram's stain ?

A.Red B. Pink C. Purple D. White

2.Which group of organisms in the ecosystem relase nutrients locked up in dead bodies of organisms?

A. parasites B. decomposers C. Autotrophy D. Carnivores

3.Among the following organisms, which one belongs to the prokaryotes?

A.paramecium B. streptococcus C. Spirogyra D.Tapeworm

4.What is the process called when two bacteria directly contact cell to cell and exchange their genetic information ?

A. conjugation B. transformation C. co-transformation D. Transduction

5.What does it means when biologists express the cell membrane as a unit membrane ?

A. a cell is covered by a single membrane.
B. A membrane is only one lipid layer thick.
C. All cells have essentially similar membrane
D. A membrane is covered by a single layer of protein

6.In which of the following ways do retroviruse differ from other RNA viruses?

A. Their genetic material is DNA.
B. Their genetic material is RNA
C. They copy RNA to DNA molecule.
D. They copy RNA from DNA molecule

7.Which of the following groups of micro- organisms does not contain parasitic members ?

A. Bacteria B. Algae C. Fungi D. protozoa

8.Which one of the following is the smallest of all ?

A.A red blood cell B. A virus C.A bacterium D. An amoeba

9.Which one of the following shows the feeding method of decomposers?

A. Saprobiotic nutrition
B. Autotrophic nutrition
C. parasitic nutrition
D. Intracellular digestion

10.Which stage in the life cycle of HIV is disrupted if AIDS patiens are treated with a drug that has a protease inhibiting activity

A.Entry of the virus into the host.
B. conversion of viral RNA to DNA
C. Integration of viral DNA into host DNA.
D. Assembly of viral parts into whole virus

11.The T-lymphocyte cells of AIDS patients are destroyed by

A. multiplication of HIV inside the cell
B. infection of opportunistic organisms
C. the immune system of the host organism itself
D. the CD4 receptors on the cell surface

12.One of the following is true about bacteriophages that have lysogenic life cycle.

A. They are RNA viruses
B. They integrate their nucleic acid in to that of the host
C. The multiply in the host immediately after infection
D. progeny viruses are released by chronic release method

Biology EUEE 2008 E.C

Grade 12

Unit One

1.Which of the folliwng diseases is correctly matched with its causative agent ?

A.Malaria- fungus
B. AIDS- virus
C. Ringworm- protozoa
D. Syphilis- worm

M-S

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2.Which step in the HIV life cycle is disrupted by an anti- retroviral drug that competitively inhibits the reverse transcriptase enzyme ?

A.Entry in to the host cell
B. Assembly of viral parts in to a virus
C. Formation of DNA from RNA
D. Integration of viral DNA in to host DNA

3.In what way would AIDS patients benefit from treatment with anti- retroviral drugs ?

A.Reductiion of HIV replication
B. Provision of cure for AIDS
C. Immunizing against HIV
D. Killing of opportunistic infectious agents

4.Which of the following is the best collective name for all bacteria with spherical shapes?

A.Spirochaetes B. Bacilli C. Cocci D. Streptococci

5.Which of the following diseases is transmitted by mosquitoes?

A.Diabetes mellitus
B. Kaposi's cancer
C. Rabies
D. Malaria

Biology EUEE 2004 E.C
Grade 12

Unit Two

1. Which of the following is NOT recycled between organisms and the environment in an ecosystem?
   A. Energy B. Carbon C. Nitrogen D. phosphorus
2. What is the term that refers to all parts of the earth where living things are found?
   A. Population B. Ecosystem C. Biosphere D. Environment
3. Select the function that living things are NOT capable of performing.
   A. Mainain their internal body environment
   B. Pass genetic information to their offspring
   C. Respond to other organisms found in their surroundings
   D. Determine the amount of radiation reaching the environment
4. Which one of the following demographic factors affects the number of human population globally?
   A. Natality B. Migration C. Emigration D. Immigration
5. Which one of the following is the main source of the greenhouse gases that are concrntrating in the atmosphere of the earth?
   A. Burning of fossil fuels
   B. Plants growing in greenhouses
   C. Photosynthesis by aquatic plants
   D. Respiration by animals and plants
6. What is the most probable selection pressure responsible for the evolution of green skin color in frogs inhabiting tropical rain forests?
   A. Climate B. Reproduction C. Infection by pathogens D. predation
7. When do populations of living organisms show exponential growth?
   A. When the resources are plentiful
   B. Whenever they enter a new environment
   C. When they face strong competition from other species
   D. When the carrying capacity of the environment is reached
8. Which of the following terrestrial biomes experiences hot days and cold nights?
   A. Tundra B. Tropical rainforest C. Desert D. Grasslands
9. Which alternative contains only crops known to have been domesticated within Ethiopia?
   A. Guizotiabaabyssinica, Zea mays, Pisumsativum C.Orizasativa, Triticumasestivum, Solanumtuberosum
   B. Viciafaba, Caricapapya, Musa paradisiacal D. Coffea Arabica, Eragrostistef, Ensetevntricoslum
10. What could be the main reason behind the currently observed slow or stable rate of population growth in the industrialized countries?
    A. Good family planning
    B. Increasing death rate
    C. Poor health conditions
    D. High rate of child death
11. What is the average projected rate of loss of biodiversity every 50 years?
    A. 5% B. 10% C. 20% D. 50%
12. Which of the following statements is true about the nitrogen cycle?
    A. Plants fix nitrates from atmospheric nitrogen
    B. The nitrogen used by animals largely comes from plants
    C. Nitrogen is consumed by bacteria and removed from the soil
    D. Nitrogen – fixing bacteria reduce the total amount of available nitrogen
13. Which one of the following steps in the life cycle of HIV is blocked if an antiretroviral drug that inhibits the reverse transcription enzyme is given to an AIDS patient?
    A. Formation of DNA from RNA
    B. The entry of HIV into CD4 cells
    C. The assembly of parts into HIV particle
    D. The integration of HIV DNA into host chromosome

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14. Which stage in a primary ecological succession contains more biodiversity?
    A. The third seral stage
    B. The second seral stage
    C. The climax community
    D. The pineer community
15. How do human beings increase biodiversity?
    A. By reducing species richness
    B. By increasing genetic variability
    C. By promoting habitat uniformity
    D. By narrowing ecological variability
16. Which of the following can be given as a good reason for finding large numbers of plant and mammal species in Ethiopia today?
    A. Lack of ecological disturbance
    B. Environment free from predators
    C. Presence of many biomes and habitats
    D. Good ecological and biodiversity management
17. Which factors are involved in the determination of climax vegetation?
    A. Temperature and preciptitation
    B. Grazing and browsing animals
    C. Radiation and reflection
    D. Predators and preys
18. The tropical rainforest largely found in South America and Africa can be best characterized by a combination of which environmental features?
    A. Low rainfall and low temperature
    B. High rainfall and high temperature
    C. Low rainfall and high temperature
    D. High rainfall and low temperature

Biology EUEE 2005 E.C
Grade 12

Unit Two

1. One of the following biomes in Africa is supporting large wild mammals such as elephants, giraffes and lions.
    A. The Congo Rainforest
    B. The Rain Forest of Western Ethiopia
    C. The Savanna Grassland
    D. The Sahara Desert
2. Which component of soil fertility is improved when farmers grow legumes in crop rotation?
    A. Phosphorus B. Nitrogen C. Sulfur D. Carbon
3. What is the important role played by microorganisms such as bacteria and fungi in the ecosystem?
    A. Antibiotic production
    B. Recycling of nutrients
    C. Forming organic substances
    D. Supplying energy to the ecosystem
4. In which one of the following aspects is the tropical rainforest biome poor?
    A. Species diversity B. Amount of sunlight C. Annual precipitation D. Soil fertility
5. Which of the following is NOT usually true as and ecological succession progresses to advanced seral states?
    A. More ecological niches are formed
    B. Species become more diverse
    C. The depth of the soil increases
    D. Less populations are supported
6. In which one of the four phases of population growth is the number of the population the highest?
    A. Lag phase B. Log phase C. Constant phase D. Decline phase
7. Which of the following is an ecosystem?
    A. A Tropical Rainforest
    B. The African continent
    C. All the organisms in a given area
    D. The non – living components of an environment
8. Which of the following crops is considered to be the best choice for a better balance of essential amino acids as a human diet?
    A. Maize B. Quinoa C. Rice D. Wheat
9. What is the main reason for the high species richness of plants and mammals observed in Ethiopia?
    A. Lack of predators
    B. Lack of disturbance
    C. Presence of several biomes within the country
    D. Efficient management of the ecological resources
10. What is the type of community called when it has reached the final and most complex stage of a succession?
    A. Pioneer community B. Seral community. C. Climax communityD. secondary community
11. In which of the following are flowers and fruits found?
    A. Ferns and relatives B. Gymnosperms and ferns C. Mosses and conifers D. Monocots and dicosts
12. Which one of the following concepts contains all the others?
    A. Species B. Genus C. Population D. Community
13. If the age pyramid of a certain country is narrowing at the base, what does this tell about the trend of the population size of the country? The population size is:
    A. Declining B. growing fast C. increasing slowly D. stablishing

Biology EUEE 2006 E.C
Grade 12
Unit Two

1.Which group of animals has the highest numbers of total and endemic species in Ethiopia ?
    A. Amphibians
    B. Birds
    C. Mammals
    D. Reptiles

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2.Which one of the following crops has its centre of origin and diversity in Ethiopia has become a leading international commodity of commerce?
A. Teff B. Enset C. Coffee D. Anchote

3.Whic of the following is NOT the correct characteristic of tropical rainforests?
A. Low biodiversity
B. High temperature
C. Heavy precipitation
D. Trees of different heights

4.Which one of the following processes has a decreasing effect on the concentration of atmospheric carbon dioxide ?
A. cellular respiration
B. combustion of fossil fuels
C. decomposition of dead organisms
D. photosynthesis

5.From where do plants get most of their nutrients ?
A.chlorphyll B. soil C. light D. atmosphere

6.What happens when the carrying capacity of an ecosystem is reached ?
A. excretory product accumulates and population numbers increase
B. population numbers decline rapidly
C. population number remain more or less constant
D. Resources are plentiful and opulation shoot up

7.Which of the following is NOT a true characteristic of the populations of most of the developing countries of the populations of most of the developing countries of the world ?
A. High fertility rate
B. increasing population size
C. more number of old people than young people
D. Birth rate greater than mortality rate

8.Which of the following is NOT true about the nature of the first form of organisms on earth ? They were
A. prokaryotic
B. unicellular
C. aerobic
D. anaerobic

9.What is the reason that plants do not use nitrogen directly from the atmosphere ?
A. Nitrogen concentration is low in the atmosphere
B. The molecular size of nitrogen is two large to pass through the stomata
C. Nitrogen can enter plants only through the root hairs
D. plants lack the necessary process to use elementary nitrogen

10.Which of the following biomes of the Earth has the greatest diversity of species ?
A. Deciduous forest
B. Tropical rain forest
C. Desert
D. Tundra

Biology EUEE 2008 E.C
Grade 12
Unit Two

1.Of the following , which one is the main source from which plants get the nutrients necessary for their growth and development ?
A.Light B. Chlorophyll C. Atmosphere D. Soil

2.Which of the following organisms usually forms the pioneer community in a primary biological succession ?
A.Annual herbs B. Lichens C.Trees D. Ferns

3.In the carbon cycle, which of the following processes removes carbon dioxide from the atmosphere ?
A.Respirtion B. Decompostion C. Combusion D.Photosynthesis

4.Wht are the possible consequences of deforestation of the tropical rainforest ?
A.An increase in existing ecological niches
B. Reduction in species diversity of an area
C. Increased removal of CO_2 from the atmosphere
D. An increase in the amount of nitrogen in the soil

5.If an area is dominated by just one species having very many individuals, what would be its index of diversity ?
A.Flucturating B. High C. Low D.Unpredicatble

6.Which of the following organic compounds would release both nitrogen and sulfur to the ecosystem when decomposed ?
A.Polysaccharides B. Sucrose C.Proteins D. Lipids

7.Among the vertebrates found in Ethiopia , which class has the highest percentage of endemic species ?
A.Amphibians B.Reptiles C.Birds D.Mammals

8.Which of the folliwng terms refers to the movements of individuals out of a population ?
A.Mortality B. Immigration C. Emigration D.Natality

9.In Ethiopian animal diversity , which group is represented by the highest number of orders , families, genera and species ?
A.Birds B. Amphibians C.Fish D.Mammals

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10.Which of the following processes involved in the water cycle is carried out by green plants ?

A.Evaporation B.Precipitation C.Condensation D.Transpiration

11.In which biome are epiphytes typically present as a characteristic element ?

A. Tropialmontane forests C. The Tundra environment

B. cold desert woodlands D. Boreal deciduous forests

12.If a country has a larger number of young people relative to the number of old people to which category of countries does it belong ?

A.Industrial B. Hunter- gatherer C.Post – industrial D. Developing

13.Which of the following is an important way by which green plants mitigate the greenhouse effect ?

A. Use of fire wood to replace coal C. Releasing water to the atmosphere

B. Removing CO_2 from the atmosphere D. Releasing oxygen to the atmosphere

Biology EUEE 2004 E.C

Grade 12

Unit Three

1. Which one of the following NOT a mutation?
   A. DNA replication to form tow daughter DNAs.
   B. Gain of an extra chromosome by a cell.
   C. Deletion of a base pair from DNA.
   D. Loss of a chromosome by a cell.
2. As was shown by Gregore Mendel in garden pea, what percentage of the F2 generation of a monohybrid cross has the recessive phenotype?
   A. 75% B. 50% C. 25% D. 12.5%
3. What do geneticists call the genotype in which the two alleles of a pair are identical?
   A. Dominant B. Recessive C. Homozygous D. Hetrozygous
4. Which one of the following is referred to as the first law of Mendel?
   A. The occurrence of alleles in pairs C. The equal contribution of alleles by both parents
   B. The dominance of one allele over the other D. The separation of alleles during gamete formation
5. Which of the following is the best way to check whether an individual having a dominant phenotype is homozygous or heterozygous for the trait?
   A. To self the individual C. To cross it to homozygous recessive individual
   B. To cross it to a heterozygous individual D. To cross it to a homozygous dominant individual
6. A genetic cross between to F1 – hybrid pea plants having yellow seeds (dominant) will yield what percent green – seeded (recessive) plants in the F2 generation?
   A. 0% B. 25% C. 50% D. 75%
7. What would most likely result is mitosis fails to be accompanied by cytoplasmic division?
   A. Two cells without nuclei C. Two cells each with one nucleus
   B. One cell without a nucleus D. One cell with two identical nuclei
8. Among the following couples whose ABO blood genotypes are shown, which one can produce children of A,B,AB and O blood types?
   A. OO and AB B. BO and AA C. BO and AO D. BB and AO
9. Which parts of the angiosperm flower are both essential for the success of hybridization experiments?
   A. Sepal and petal C. Pollen and filament
   B. Stamen and petal D. Gynoecium and andoecium

Biology EUEE 2005 E.C

Grade 12

Unit Three

1. Before making crosses, which part of the flower did Mendel remove to avoid self pollination?
   A. Stigma B. Ovule C. Ovary D. Stamens
2. Which of the following is the correct F2 phenotypic ratio of a monohybrid cross?
   A. 1:2 B. 1:1 C. 3:1 D. 2:2
3. Which energy rich organic compound contains adenine in its molecule?
   A. Lipid B. Carbohydrate C. Glucose D. ATP
4. One of the following is an important cause of gene mutation.
   A. Old age B. Alcoholic drinks C. Smoking D. Radiation

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5. How many chromosomes do humans inherit from each of their parents?
   A. 23 chromosomes B. 23 Pairs of chromosomes C. 46 chromosomes D. 46 pairs of chromosomes
6. Which of the following is NOT true about the gene called SRY?
   A. It is found on the Y – chromosome C. Testes develop in its presence
   B. It determines maleness D. Females have two copies of this gene
7. The sheep 'dolly' is an example of which biotechnological manipulation of animals by human?
   A. Transgenic animal B. Genetically engineered animal C. Cloned animal D. Hybrid animal
8. Choose the one that is different from all the others.
   A. Genetically modified organisms C. Pathogenic organisms
   B. Genetically engineered organisms D. Transgenic organisms
9. In a cross between hertrozygotes what proportion is expected to be homozygous recessive?
   A. 25% B. 50% C. 75% D. 100%
10. Gene silencing is the function of one of the following molecules
   A. dsRNA B. mRNA C. siRNA D. tRNA
11. Which process is held responsible for chronic myelogenous leukemia?
   A. Translocation B. Translation C. Transcription D. Duplication
12. Two parents of genotype Aa are cross – bred. The alleles show complete dominance. What proportion of the offspring will phenotypically look like their parents?
   A. 0 B. ¼ C. ½ D. ¾
13. In which of its contants RNA differes from DNA?
   A. Deoxyribos and guanine B. Ribose and uracil C. Ribose and thymine D. Phosphate and adenine
14. Among the following mating, where the ABO blood genotypes of the partners are shown, identify the mating in which all the children will have the same blood type.
   A. AO x BO B. AA x OO C. AB x BO D. BB x AO
15. If a new mutant allele arises in a certain population, which of the following factors determines if the allele is going to adaptive or non – adaptive?
   A. The environment in which the population lives. C. The population in which the gene is found
   B. The rate at which the gene mutates D. The use and disuse of the gene by the population
16. In some human liver cells there are 92 chromosomes per cell. What is the ploidy level of such cells?
   A. Haploid B. Diploid C. Tetraploid D. Hexaploid

Biology EUEE 2007 E.C
Grade 12
<u>Unit Three</u>

1.Which of the following is true about mutations that occur in normal body cells ?
   A.They never lead to cancerous cells.They never damage the affected cells .
   B. They never pass to the next generation.. There is no way that they kill the affected cells.
   C
2.For what purpose do molecular biologists use the technology known as polymerase chain reaction or PCR?
   A. To insert DNA into plasmids C. To multiply copies of DNA molecule.
   B. To insert plasmid into bacteria D.To produce DNA from RNA
3.What is the long term primary effect of the current tree planting activities that Ethopia is undertaking ?
   A. It will protect from harmful solar rays.
   B. it will increase the global temperature.
   C. it will reduce the atmospheric CO_2.
   D. it will mend the holes in the ozone layer.
4.What do you call a group of genetically identical plants produced by vegetative perpoduction ?
   A. Family B. clone C. hybrid D. Genus
5.A cow was found to yield much higher milk than any of the breeds of the parental cattle. What could be the most probale reason for this?
   A. Dominant genes B. hybrid vigor
   C. recessive genes D. Co- dominance genes
6. When the F1 hybrid of a monohybrid cross is back crossed with the homozygous recessive parent, what percentage of the offspring would be homozygous recessive?
   A.0% B.25% C.50% D.75%
7.Of the following four cells whose surface area to volume ratio is given, which cell can more efficiently transport its needs of materials across the cell surface?
   A.24:8 ratio B. 54:27 ratio C. 96:64 ratio D.150:125 ratio

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8.The following are simpsom's index of species diversity calculated for four areas containing the same types of species. Which index value is from the area dominated relatively by a fewer number of species ?

A.8.00 B.6.00 C. 3.5 D.2.5

9.Which of the following is true ?

A. Recessive alleles are only expressed in the homogygote.
B. Dominat alleles are expressed only in the heterozygote.
C. Recessive alleles are expressed in the heterozygote.
D. Genetically modified organisms are never used to manufacture vaccines

Biology EUEE 2008 E.C
Grade 12
Unit Three

1.Which process produces m RNA during protein synthesis ?

A.Translation B. Replication C. Mutation D. Transcription

2.In cell division, what is the phase that comes following the metaphase called ?

A.Extraphase B. Prophase C. Anaphase D. Telophas

3.Which of the following is true about gene mutation ?

A.Altering the DNA sequence of a gene C. Addisiton of genes to a chromosome
B. Change in the postion of a block of genes D. Loss of genes from a chromosome

4.Wht is the circumstance that causes the health condition known as sickle- cell anaemia ?

A.DNA denaturation C.RNA mutation and decay
B. Haemoglobin mutation D. Phosphate mutagenesis

5.Which one of the following terms refers to the failure of sister chromatids to separate from one another during anaphase ?

A.Non – disjunction C.Deletion
B. Replication D. Double inversion

6.Which of the folliwng is the correct constitution of the sex chromosome of a normal worman ?

A. XY B. XX C.XO D.XXY

7.Which of the following is true about sex determination in birds ?

A.They have the heterozygotic X & Y chromosomes C. Females have the homozygotic WW chromosomes
B. Males have heterozygotic W& Z chromosomes. D. They have the heterozygotic W & Z chromosomes

8. How many amino acids are there in all known proteins ?

A. About 10 B. About 35 C.About 20 D. About 46

9.In enzymes that contain non – protein organic molecules, in addition to the protein component , what is the protein component called ?

A.Apoenzyme B. Coenzyme C. Holoenzyme D. Cofactor

10.Which of the following crosses will produce progeny with phenotypic ratio of 3:1 ?

A.Crossing the F1 to the dominant parent C. Crossing the F1 to the recessive parent
B. crossing two homozygote individuals D. Crossing two heterozygote individuals

11.What percentage of the F2 progeny of a monohybrid cross is expected to have the recessive phenotype ?

A.100% B.75% C.25% D.50%

12.Deficiency of which of the following nutrients in human diet is likely to result in a deficiency of some co-enzymes like FAD?

A.Essential amino acids B. Vitamins C.Carbohydrates D. Saturated fatty acids

13.If a codon on a messenger RNA is UUU, what is the complementary anticodon on the transfer RNA?

A.UUU B.GGG C.CCC D.AAA

14.If a clone is produced by transferring a nucleus of animal A to an enucleated egg of animal B and the egg is then implanted in the uterus of animal C, which animal would the clone resemble most ?

A.Animal C B. Animal B C.Animal A D. Other animals

15.If it is known that the total amount of DNA in a cell is 300 units and that adenine alone contributes 70 of these units how many units go to cytosine?

A.40 units B. 70 units C. 80 units D.35 units

16.Which of the following can be understood about living things from the study of how breeders improve domesticated plants and animals ?

A.Living things tend to over- reproduce C. Living things can be improved through selection
B. Natural resources are of limited supply D. Individuals compete for resources

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17.Suppose two heterozygous round yellow (RrYy x RrYy) pea plants were crossed and 128 seeds were produced , how many of the seeds are expected to be heterozygous round yellow ?

A.64 seeds B.32 seeds C. 96 seeds D. 128 seeds

18.Which aspect of biotechnology is considered strictly genetic engineering ?

A. providing gene therapy
B. Production of new types of plants
C. Monoclonal antibodies
D. Mapping of the human genome

19. Which characteristics of RNA makes it suitable for moving out the nucleus?

A. Inability to replicate
B. Absence of thymine
C. Its unstable nature
D. Smallness of its size

20. Which of the following sequences represents the correct change in number of chromosomes during fertilization?

A. n + n ⟶ 2n B. 2n ⟶ 3n C. n ⟶ n D. 2n ⟶ n + n

Biology EUEE 2004 E.C
Grade 12
Unit Four

1. To which genus of human – like organisms does Lucy belong?
   A. The genus Homo
   B. The genus Ardipithecus
   C. The genus shahelanthropus
   D. The genus Austrialophihecus
2. Which of the following idea is NOT a part of Darwin's Theory of Evolution?
   A. Over reproduction
   B. Use – and discuse of body parts
   C. Existence of heritable variation
   D. Competition for scarce resources
3. Which of the following fossils is the nearest to the common ancestor of the homindis and the apes?
   A. Homo habilis
   B. Homo erectus
   C. Ardipithecustramidus
   D. Australopithecus afarensis
4. Which group of organisms found in Ethiopia is represented by the highest number of endemic taxa?
   A. Mammals B. Amphibians C. Birds D. Plants
5. Which of the following is true about the evolutionary origin of groups of organisms?
   A. The dinosaurs appeared before the origin of the land plants.
   B. The earliest Homo sapiens appered before the flowering plants
   C. The first photosynthetic organisms appeared before the oldest eukaryotes
   D. The first animals appeared before the formation of free O_2 in the atmosphere
6. Why are fossils of soft – bodies organisms usually relatively rare in the environment?
   A. They are generally small in size
   B. Their bodies decompose readily
   C. They all lived in environments where sedienatin did not occur
   D. They were never common in environments in which they lived
7. Carbon 14 has a half life of about 5730 years. Suppose a fossil contains only 12% of the amount off carbon 14 normally present in living organisms, how old is the fossil?
   A. 5730 years B. 11460 years C. 17190 years D. 22920 years
8. Which of the following pairs of molecules can give information about how much two species are evolutionary releated to one another?
   A. DNA and proteins
   B. Starch and cellulose
   C. Lipids and carbohydrates
   D. Carbohydrates and proteins
9. What does the structural similarity between the flippers of whales and arms of humans show?
   A. Whales evoluved from the human species
   B. Whales are older than the human species
   C. The human species began life in the oceans
   D. Whales and humans had a common ancestry
10. Which of the following terms mean stages in an ecological succession?
    A. Pioneers B. Climaxes C. Seres D. Niches

Biology EUEE 2005 E.C
Grade 12
Unit Four

1. What is the specialist in biology called if he/she studies fossils to generate newknowlledge on the origin and evolution of living things of past geologic periods?
   A. Geneticist B. Ecologist C. Paleontologist D. comparative Biochemist
2. What are the most likely causes of variations within species?
   A. Mitosis and asexual reproduction
   B. Overpopulation and overproduction
   C. Vegetative propagation and cloning
   D. Mutations and sexual reproduction

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3. In which hominid species did scientists find the smallest brain size (cranial capacity)?
   A. Homo sapiens B. Homo Habils C. Homo erectus D. Homo neanderthalenisi
4. Which of the following theories explains evolutionary changes of living things in terms of changes in their allele frequencies?
   A. Darwin's natural selection C. Inheritance of acquired characteristic
   B. Spontaneous generation D. Neo – Darwinism
5. What is the reproductive isolating mechanism called if two species of frogs do not interbreed because they cannot understand the mating calls of one another?
   A. Seasonal isolation B. Behavioral isolation C. Temproal isolation D. Isolation by distance
6. Among the following, which one is the best criterion to show that two populations belong to same species?
   A. Morphological similarity C. Inhabiting the same geographic area
   B. Physiologically similarity D. Production of fertile offspring
7. In the process of the evolution of life on earth, which of the following four processes evolved last?
   A. Photosynthesis B. Aerobic respiration C. chemosynthesis D. photo – autotrophism
8. Which of the following characteristics can show the evolutionary relationships among organisms?
   A. Structures having similar functions C. Structures having common origin
   B. Structures having same size D. Structures having different origins
9. Which one of the following factors is NOT important for evolutionary change of a population?
   A. Over reproduction C. Existence of heritable variation
   B. Insufficiency of natural resources D. Survival of all that are born
10. In which geologic period does the fossil records show more diverse and relatively higher forms of organisms?
   A. Devonian B. Cretaceous C. Jurassic D. Permian

Biology EUEE 2007 E.C
Grade 12
<u>Unit Four</u>

1.Which of the following are the two major constituents of eukaryotic chromosomes?
   A. DNA and RNA C.DNA and carbohydrate
   B. DNA and protein D. RNA and lipid
2.Why is it that mutations are considered as one of the raw materials of evolution ?
   A. They contribute to new variations in organisms.
   B. They are usually related to the environment in which they appear.
   C. They are mostly beneficial to the organism in which they appear.
   D. They usually become the causes for species extinction

3.Which of the following is consistent with the understanding of human evolution ?
   A. Bipedalism was never important in human evolution
   B. Larger brain size had no contribution to the evolution of the human species
   C. Human ancestry had no relation whatsoever with that of the chimpanzees
   D. Fossils of Lucy and Ardi provided evidence for human origin.
4.Which of the following is an evolutionary requirement for two sub-populations of a species to evolve into independent species?
   A. Free exchange of genes C.Free migration between populations
   B. Geographic isolation D.Absence of natural selection
5.From evolutionary point of view, which of the following animals is expected to have hemoglobin proteins that are least similar to that of human ?
   A. Ape B. Cow C. Chicken D. Frog
6.Which of the following expression is more related to the pharase "survival of the fittest"?
   A. Natural selection
   B. Mendelian inheritance
   C. Gene mutation
   D.Inheritance of acquired characteristics
7.If a substance that weight 2,000 grams and has a half- life of 100 years is left with only 250 grams, for how long has the radioactive decaying activity been undergoing ?
   A.200 years B. 250 years C. 300 years D. 500years
8.Suppose a fossil initially contains 100,000 atoms of a certain radioactive element whose half life is 10,000 years, after how many years would the number of the atoms be 12500?
   A.Ten thousand years C. Thirty thousand years
   B. Twenty thousand years D. Forty thousand years
9.Which of the following came first in the course of organic evolution ?
   A.photosyntheticorgainism C. Land plants
   B. Free oxygen in the atmosphere D. Multicelluar organisms

M-S

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Biology EUEE 2008 E.C
Grade 12
Unit Four

1. What do you call structures that have the same evolutionary origin even though they may now have different structural make ups or functions ?
   A. Endemic B. Analogous C. Homologous D. Indigenous
2. "Rats can be produced by keeping rags and grains at a corner of a room". Which of the following line of thinking supports this statement ?
   A. Darwinian evolution C. Alternation of generation
   B. Spontaneous generation D. Sexual reproduction
3. What is the specific name of biological scientists who do research that tries to find evidence of life on other plants in the Solar system ?
   A. Neurobiologists B. Paleontologists C. Astrobiologists D. Biogeography's
4. Why are mutations considered important in evolution ?
   A. They are usually related to the environment. C. They are always beneficial to the organism .
   B. They contribute to new variations in organisms D. They become causes for species migrations

5.Which of the following pairs are ANALOGOUS structures ?
   A.The human arm and the front leg of a mule C. The wing of a bird and the wing of a butterfly
   B. The front leg of a frog and the wing of a bat D. The wing of a bat and the wing of a bird

6.Which of the following changes that happened during human evolution had the most contribution to the evolutionary success of Homo sapiens ?
   A. Proportionately big brain size to body mass C. Long legs, arms and more upright body posture
   B. Big body parts and big overall body mass D. Fast running ability and overall physical strength

7.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 C. Postitivephototaxis
   B. Negative photo taxis D. Insight learning

8.Choose the one that had the LEAST contribution to human evolution ?
   A. Development of bipedalism C. Attaining opposable thumb
   B. Adaptation to flight D. Increasing brain size

9.What does an evolutionary selective pressure that acts around the mean do ?
   A. It stabilizes B. It terminates C. It converges D. It disrupts

10.In his theory of evolution, the cause of which of the following concepts was MISSING in Darwin's explanation ?
   A. Over- reproduction C. Hereditary variation
   B. Struggle for survival D. Survival of the fittest

11.Which of the folliwng pairs and ANALOGOUS structures ?
   A.The human arm and the front leg of a mule C. The wing of a bird and the wing of a butterfly
   B. The front leg of a frog and the wing of a bat D. The wing of a bat and the wing of a bird

Biology EUEE 2004 E.C
Grade 12
Unit Five

1. During seasons of reproduction, the males of some species of birds produce colourful feathers to attract females. What do ethologists call this method of communication in animals?
   A. Visual B. Chemical C. Auditory D. Touch
2. What is the role of the worker honey bee just after it emegraes?
   A. Forage for nectar, pollen and water C. Guard the hive
   B. Clean out dirty honeycomb D. Build honeycomb
3. Which of the following types of movements in response to a stimulus has no specific direction?
   A. Taxis B. Kinesis C. Gravitropism D. Phototropism
4. In the classical conditioning experiment performed by pavolv on dogs, which of the following alternatives is the unconditioned stimulus?
   A. The sound of the bell C. The salivation at the sound of the bell
   B. The smell of the food D. The salivation at the smell of the food

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5. Why is it that the woodlice are typically found under logs, stones, bark and amongst leaf litter?
   A. To be sheltered in a dry windy environment
   B. To run away from the area where the air is humid
   C. To make sure that they are in the hottest place all the time
   D. To reduce the rate at which water is lost from their bodies
6. How many years have passed since Darwin's book on the theory of evolution was published?
   A. About 50 years B. About 160 years C. About 120 years D. About 100 years

Biology EUEE 2005 E.C
Grade 12
Unit Five

1. Which one of the following do bees use to inform other bees about the location and distance of a new source of nectar they discover?
   A. Pheromones B. Waggle dance C. Buzzing noise D. Vibration of wings
2. Which of the following is NOT classified as a learned behavior?
   A. Insight B. Innate C. Latent D. Conditioned
3. When two speicies are compared, which of the following sources of evidence is least informative boaut the degree of relationships between the species?
   A. Nucleotide sequences of DNAs C. Glucose e sequence of polysaccharides
   B. Amino acid sequences of proteins D. DNA – DNA hybridization
4. What do we call the learned behavior if a mouse that had just escaped from the mouth of a cat jumped violently at a sliight touch by a trivial object?
   A. Latent learning B. Sensitization C. Conditioning D. Imprinting
5. The group of the Ethiopian wolf which does NOT contribute to territory making with their urine containing pheromones is _____ .
   A. Adult males C. Sub – adult males
   B. Adult females D. sub – adult females
6. To what kind of animal behavior can the spinning of a web by a spider be classified?
   A. Learned behavior C. Instinctive behavior
   B. Experiential behavior D. Accidental behavior

Biology EUEE 2007 E.C
Grade 12
Unit five

1.Which of the following behavioral biologists is known for his study about imprinting behavior in animals?
   A.W.Kohler C. Ivan Pavlov
   B. B.F. Skinner D. Konrad Lorenz
2.Baby ostriches tend to following 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 C. positive kinesis
   B. innate behavior D. learned behavior
3.Which of the following is NOT true about instinctive behavior ?
   A.It can be developed further trough 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 C. Habituation
   B. insight learning D. operant conditioning
5.Which one of the following is an example of an orientational innate behavior ?
   A.Kineses in woodlice
   B. Blinking of the eyes
   C. Sudden withdrawal of limbs from hot object
   D. Nest building by weaver birds

M-S

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6.Which hormone promotes human sleepfulness in darkness and controls the sleep- wake cycle ?

A. insulin B. Adrenaline C. Melatonin D. Thyroxine

7.Which hormone promotes human sleepfulness in darkness and controls the sleep- wake cycle ?

A.insulin C. melatonin

B. Adrenaline D. Thyroxine

Biology EUEE 2008 E.C
Grade 12
Unit five

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 C. Present at birth or on hatching

B. Common to all members of the species D. Do not have to be learned

3.If someone suddenly removes his/her hand from a very hot object, which of the following types of behavior is manifested?

A. Reflex action B. Imprinting C. Learned behavior D. Sensitization

4.Which of the following involves trial and error learning ?

A. Operant conditioning B. Habituation C. Sensitization D. Classical conditioning

5.Which of the following is responsible for the bending of a young plant towards a unidirectional source of light ?

A. Reduced photosynthesis on dark side C. Reduced auxin concentration on dark side

B. Faster growth rate on the dark side D. Increased rate of cell division on the light side

6.Which of the following is a learned behavior ?

A. Suckling of then wborn at mother's breasts C. Withdrawal of hands suddenly from hot objects

B. Salivation by conditioned dogs at the sound of a bell D. Blinking the eyes when something gets in to them

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