OROMIA EDUCATION BUREAU
BIOLOGY FIRST ROUND MODEL EXAM FOR GRADE 12

MARCH, 2017/2025

TIME ALLOWED: 2:30 HOUR

GENERAL DIRECTIONS:

I. FOLLOW THE FOLLOWING RULES AND REGULATIONS IN DOING THE EXAMINATION:

- IN THIS EXAM THERE IS TOTAL OF **100** MULTIPLE CHOICES QUESTIONS.
- THERE IS ONLY ONE BEST ANSWER FOR EACH QUESTION.
- CHOOSE THE BEST ANSWER FROM THE SUGGESTED OPTIONS AND WRITE THE LETTER OF YOUR CHOICE ON THE ANSWER SHEET PROVIDED.
- YOU WILL BE ALLOWED TO WORK ON THE EXAM FOR **150** MINUTES. WHEN TIME IS CALLED, YOU MUST IMMEDIATELY STOP WORKING, AND WAIT FOR FURTHER INSTRUCTIONS.
- ANY FORM OF CHEATING ON AN ATTEMPT TO CHEAT IS PROHIBITED.

II. ATTENTION!

- MAKE SURE THAT YOU HAVE WRITTEN ALL THE REQUIRED INFORMATION ON THE ANSWER SHEET BEFORE YOU START TO WORK ON THE EXAM.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

1. One of the following renowned Ethiopian biologists has discovered a 3.3 million-year-old humanoid child fossil in 2006.
   A. Dr Tshaynesh Meselle
   B. Dr Berhane Asfaw
   C. Dr Zeresenay Alemseged
   D. Dr Melaku Worede

The following question is based on comparison of light and electron microscope given in the table below.

No	Electron Microscope	Light Microscope
1	Living cell can be observed	Only dead cell can be observed
2	Uses beam of electron	Uses beam of light
3	Limited resolving power	Higher resolving power
4	Specimen are examined in the plenum	Specimens are examined in a vacuum

2. Which of the above comparison of electron and light microscope is **CORRECT**?
   A. 1 B. 2 C. 3 D. 4
3. Which of the following statements best states the cell theory?
   A. Cells can arise spontaneously from non-living matter
   B. Only plant cells can perform photosynthesis
   C. Cells are only found in multicellular organisms
   D. Cells are the basic unit of life
4. If a cell is observed under a microscope and has a large permanent central vacuole, which type of cell is it most likely to be?
   A. Animal Cell B. Bacterial cell C. Plant cell D. Fungal cell
5. If a cell is placed in hypertonic solution, what will most likely happen to the cell?
   A. It will shrink
   B. It will swell
   C. It will remain the same size
   D. It will burst

A group of grade 12 students conducted a food test on two unknown food samples and obtained results as presented below.

No	Procedure	Colour Change of the food sample	
		Sample 1	Sample 2
1	Iodine is added	Brown	Brown
2	Benedict's solution is added and heated	Red precipitate	Yellow
3	Biuret solution is added	Blue	Blue

6. Which one of the following is **CORRECT** regarding the above observation?
   A. There is high amount of protein in sample 1
   B. High amount of reducing sugar in sample 2
   C. Sample 2 contains starch
   D. There is high amount of reducing sugar in sample 1
7. If one of your friends is having a hard time for chewing and crushing food, which type of his teeth is most likely affected?
   A. Incisors and canines
   B. Premolars and molars
   C. Incisors and premolars
   D. Canines and molars

8. A group of grade 9 students is studying the effect of smoking on lung function. They find that smokers have reduced lung capacity compared to non-smokers. What conclusion can they draw from this data?
   A. Smoking has no effect on lung capacity
   B. Lung capacity can be improved with exercise, regardless of smoking history
   C. Smoking is likely a contributing factor to reduced lung capacity
   D. All smokers will have the same lung capacity regardless of other factors
9. What structural feature distinguishes veins from arteries?
   A. Presence of valves
   B. Thicker muscular walls
   C. Narrower lumen
   D. Walls a single cell thick
10. The muscle walls of the left- hand side of the heart are thicker than one in the right hand side. To which of the following activities of the heart the above structural adaptation most likely contributes?
   A. contains a lot of blood
   B. to pump blood around the whole body
   C. to pump the blood from auricle to ventricle
   D. to receive more deoxygenated blood from the lungs
11. Which of the following statement is **CORRECT** regarding Tape worms?
   A. They feed off their host
   B. They have complete digestive system
   C. Have complete lifecycle, which involves at least two hosts
   D. Live in mutualistic association with host
12. Why people with HIV/AIDS get so many other infections? Because
   A. More and more T- cells are invaded by the virus
   B. HIV/AIDS is a source of other pathogens that cause infection
   C. people with HIV/AIDS are immune to defend infection
   D. more and more T-cells are reproduced as a result of infection
13. In scientific name *Canis simensis*, what *simensis* refers to?
   A. Genus B. Family C. Order D. Species
14. Which of the following statements about class monocotyledon plant is true?
   A. The embryo has two seed leaf
   B. Leaves with parallel veins
   C. They often animal pollinated
   D. In general, monocots reach great sizes
15. What do we call organisms that feed on both plants and animals?
   A. Herbivores B. Carnivores C. Omnivores D. Detritivores
16. Which one of the following is adaptation mechanism of animal in cold climate?
   A. Blubber
   B. More sweat
   C. active in the early morning
   D. Large, thin ears
17. In what way biology benefits technology?
   A. Help to investigate information on biomolecules
   B. Providing material that used to adapt and develop modern technologies
   C. Providing detailed information on chemical component of medicinal plants.
   D. Providing physical devices to gather biological information at all scales of biological organization.

18. Which one of the following characteristics feature **is not** characterize animals?
    A. Unicellular B. Heterotrophs C. Eukaryotes D. Excrete
19. How do vertebrates and invertebrates primarily differ?
    A. many vertebrates are soft bodied, while invertebrates do not.
    B. vertebrates are cold blooded, while invertebrates are warm-blooded.
    C. invertebrates have more complex and specialized organ, while vertebrates do not.
    D. vertebrates have vertebral column, while invertebrates do not.
20. Why insects are considered as essential for pest regulation? Because they
    A. transfer male gametes to stigma of a flower.
    B. decomposes organic matter, enriching the soil.
    C. consumed by human in many countries.
    D. consumes pests and limiting potential pest population.
21. Which one of the following **is not** instinctive behavior?
    A. swimming with dolphin and aquatic animals
    B. opening mouth in chicks when their mother returns to the nest.
    C. honeybees dance when they return to the hive after finding a source of food
    D. blinking when something gets too close to your eye
22. What role do receptors play in the homeostasis process?
    A. they monitor environmental changes.
    B. they detect stimuli and send information to the brain.
    C. they adjust body conditions back towards the set point.
    D. they regulate the body's response to stimuli.
23. Kidney is one of the main organs responsible for osmoregulation. When the water level in the body is high, how kidneys respond to this change?
    A. The kidney releases a large amount of hypotonic urine.
    B. The kidney produces a low amount of hypertonic urine.
    C. High volume of water is reabsorbed by the kidneys.
    D. The kidney produce small amount of diluted urine.
24. Which one of the following is true about enzymes?
    A. Enzymes consumed in the reaction they catalyzed.
    B. Enzymes increase the rate by increasing activation energy.
    C. Enzymes are highly specific for their substrates.
    D. Enzymes can function in wide range of temperature and pH.
25. What is the quaternary structure of protein?
    A. The folding pattern of the polypeptide chain. C. The three-dimensional shape.
    B. The interaction between subunits. D. The sequence of amino acids
26. What is the key feature of the lock and key model of enzyme-substrate interaction?
    A. Enzyme active sites fill-in with a substrate to interact through covalent interactions.
    B. The enzyme changes shape to better fit the substrate after binding.
    C. The substrate fits perfectly into the enzyme's active site from the start.
    D. The enzyme does not bind to the substrate at all until the reaction is complete.

27. Which type of inhibition is likely occurring if a molecule that inhibits an enzyme's activity binds to an enzyme active site?
    A. Non-competitive inhibition
    B. Activator inhibition
    C. Competitive inhibition
    D. Substrate inhibition
28. Consider the following chemical reactions below.
    A. $HR_2 + A \xrightarrow{E} H + AR_2$
    B. Ethanol $+NAD^+ \xrightarrow{F}$ Acetaldehyde $+NADH +H^+$

    Based on the above chemical reactions '**A**' and '**B**', in which classes of enzymes does enzyme "E" and "F" can be grouped respectively?
    A. Oxidoreductases and Transferase
    B. Lyases and Hydrolases
    C. Hydrolases and Lyases
    D. Transferases and Oxidoreductases
29. Which of the following factors can lead to increased catalytic efficiency of an enzyme?
    A. presence of inhibitory compounds
    B. presence of cofactors
    C. increase in temperature beyond optimal range
    D. increase in substrate concentration beyond saturation point
30. What role do betaglucanase enzymes play in industrial process?
    A. In biofuel industry, breakdown cellulose into sugars and ferment to produce cellulosic ethanol.
    B. In dairy industry, hydrolyses protein in the manufacture of cheese.
    C. In food processing, clarify fruit juices.
    D. In brewing industry, improve beer filtration.
31. If a template DNA strands that has the nucleotide sequence of 3'-GCT AAC GAT-5' given to you, what would be the nucleotide sequence of the strand that builds on this?
    A. 5'-GCU AAC GAU-3'
    B. 5'-CGA TTG CTA-3'
    C. 3'-CGA TTG CTA-5'
    D. 3'-GCT AAC GAT-5'
32. If a scientist were to design a drug that inhibits the mitotic spindle formation during mitosis cell division, what would be the expected out comes on cell division?
    A. Cells would divide normally
    B. Cells would undergo meiosis instead
    C. Cells would immediately die
    D. Cells would be unable to separate sister chromatids
33. What is the process of converting mRNA into a protein called?
    A. Translation B. Transcription C. Replication D. Mutation
34. Mendel's Law of Independent Assortment states that:
    A. Alleles for different genes segregate independently during gamete formation.
    B. Alleles for the same gene segregate independently during gamete formation.
    C. Alleles for the same gene segregate together during gamete formation.
    D. Alleles for different genes segregate together during gamete formation.
35. In incomplete dominance:
    A. One allele is completely dominant over the other.
    B. There are more than two alleles for a particular gene.
    C. Both alleles are expressed equally.
    D. Neither allele is completely dominant over the other

36. If an individual with blood type "B" receives a transfusion of type "A" blood, due to which antibodies is the most likely immune response?
    A. Anti-A antibodies
    B. Anti-B antibodies
    C. Both Anti-A and Anti-B antibodies
    D. No immune response
37. What type muscle is involuntary and found in the walls of internal organs?
    A. Cardiac muscle
    B. Striated muscle
    C. Skeletal muscle
    D. Smooth muscle
38. What is the role of ligaments in musculoskeletal system?
    A. Muscle to bone
    B. Position and movement
    C. Attach bone to bone
    D. prevent bone from rubbing against each other
39. Which one of the following bone cells CORRECTLY match with function?
    A. Osteoclasts _ repair of fracture
    B. Osteocytes_ form bone into correct shapes.
    C. Osteoblasts_ new bone formation.
    D. Osteoprogenitor_ mature bones of newborns.
40. If Mrs. "X" had problem with his seminal vesicle and fail to function properly, which one of the following condition would be most likely to happen?
    A. Sperm would not get sufficient energy.
    B. Sperm would be affected by acidic environment
    C. Sperm would not mature properly.
    D. Sperm would not reach proper destination.
41. In the process of oogenesis, at which stage secondary oocyte arrests?
    A. Prophase I B. Prophase II C. Metaphase I D. Metaphase II
42. The correct sequence of cell stage in spermatogenesis is:
    A. Spermatocytes → Spermatids → Spermatogonia → Sperms.
    B. Spermatogonia → Spermatids → Spermatocytes → Sperms.
    C. Spermatocytes → Spermatogonia →Spermatids → Sperms.
    D. Spermatogonia → Spermatocytes →Spermatids → Sperms.
43. Which one of the following **is not** practice that affects reproductive health?
    A. Kidnapping or abduction
    B. Early marriage
    C. Spacing and timing of births
    D. Gender-based violence
44. In what way alcohol use affect users' health?
    A. By inducing sleepiness and confusion.
    B. By reducing likelihood of getting STI.
    C. By reducing risk of cancer and cirrhosis
    D. by decreasing dementia
45. Which statement best describes the relationship between substance use and STIs?
    A. Substance use has no impact on STI rate.
    B. Substance use can lead to lower rates of STIs due to increased sexual awareness
    C. Substance use can increase the likelihood of engaging in unprotected sex, raising STI risk.
    D. Substance use only affects pregnancy rates, not STIs
46. If a population exhibits a Type I survivorship curve, what can be inferred about its reproductive strategy?
    A. It produces many offspring with little parental care.
    B. It relies heavily on external factors for survival
    C. It has equal mortality rates throughout its lifespan.
    D. It invests significant parental care into fewer offspring.

47. Which type of species dispersal pattern the following figure A, B, and C respectively represent?

A. Uniform dispersion, Random dispersion and Clumped dispersion.
B. Random dispersion, Uniform dispersion and Clumped dispersion.
C. Clumped dispersion, Uniform dispersion and Random dispersion.
D. Uniform dispersion, Clumped dispersion and Random dispersion.

48. Which factor is most likely to lead to exponential growth in a population?
A. Limited resource and high competition
B. Abundant resources and optimal conditions
C. High predation rates
D. Habitat destruction

49. What is the primary characteristic of non-renewable resources?
A. They can be replenished quickly.
B. They are abundant and widely distributed.
C. They can be reused indefinitely.
D. They exist in finite amounts.

50. Why is the Konso cultural landscape in Ethiopia recognized as a UNESCO word heritage site?
A. Because of its modern infrastructure and urbanization.
B. Due to its long-standing traditional conservation practice.
C. Because of its large population and industrial growth
D. Due to its extensive mining activities.

51. What is the importance of biology in conservation of natural resources?
A. Preservation of animals and plants in terms of zoo and seed bank.
B. Enhancing the use of natural resource in unsustainable way.
C. Promoting the use of forest for construction.
D. Working on barrier to access to natural resources.

52. Which one of the following **is NOT** primary role of biology in food nutrition security?
A. Producing high-nutrient staple crops.
B. Developing new products that can combat malnutrition.
C. Design the manufacturing processes and machinery.
D. Design mechanism of combating global warming.

53. What is the function of Ti plasmid in agriculture?
A. vector of glyphosate resistance gene
B. source of enzyme breakdown of glyphosate
C. enhance plants to produce pesticide
D. enhance the growth of plants

54. Suppose you are a biotechnologist employee in company that process animal feed, which one of the following biotechnological knowledge you apply?
A. Production of Vitamin C by fermentation of *Aspergillus niger*.
B. Production of Spirulina by culture of spiral shaped cyanobacteria.
C. Production of Mycoprotein by fermentation of *Fusarium venenatum*.
D. Production of Pruteen by mass culture of *Methylophilus methylotrophus*.

55. What are genetically modified organisms?

A. Organisms that have received genetic material via recombinant technology.

B. Organisms that have donate genetic material for recipient organisms.

C. Organism that is used as a vector to transmit gene of interest.

D. Organism that is used as a source enzyme to cut gene of interest from source organism

The following lists are stage in beer making

1. a strain of saccharomyces is added and fermentation process proceed
2. malted grain is crushed and mixed with hot water
3. cereal grains are malted
4. a mixture of wort and hops boiled
5. wort is separated from the mix and hops are added
6. yeast is removed and the beer is filtered, pasteurized and bottled

56. Which one is the correct sequence in making beer?

A. 3→ 2→ 4 →5→ 1 →6

B.3→ 2 →5 →1 →4 →6

C. 3→ 2 →1 →5→ 4→ 6

D. 3→ 2 →5 →4 →1→ 6

57. Which one is the correct sequence of contraceptive method from the least to highest failure rate?

A. Depo-Provera → Oral contraceptive → IUD → Diaphragm

B. Diaphragm → Depo-Provera → IUD → Oral contraceptive

C. Oral contraceptive → Depo-Provera → IUD → Diaphragm

D. Oral contraceptive → Depo-Provera → Diaphragm → IUD

58. Four blood samples are taken from individual A, B, C, & D and hormonal level is analyzed and presented below in the table. Based on this observation, which one is the correct menstrual phases of each individuals?

Sample	Observation
A	High level of FSH
B	High level of LH
C	High level of progesterone hormone
D	Low level of estrogen hormone

A. Sample "**A**": Follicular phase, Sample "**B**": Ovulation phase, Sample "**C**": Luteal phase and Sample "**D**": Menstruation phase.

B. Sample "**A**": Ovulation phase, Sample "**B**": Follicular phase, Sample "**C**": Menstruation phase and Sample "**D**": Luteal phase.

C. Sample "**A**": Menstruation phase, Sample "**B**": Ovulation phase, Sample "**C**": Luteal phase and Sample "**D**": Follicular phase.

D. Sample "**A**": Luteal phase, Sample "**B**": Ovulation phase, Sample "**C**": Follicular phase and Sample "**D**": Menstruation phase.

59. In waste water treatment what does high BOD value indicates?

A. high level of degrading microbes

B. less pollutant matter in water

C. high level organic matter to degrade

D. less variety of organic matter

60. Suppose you are observing a typical bacterial cell under electron microscope, which of the following structure you may found outside to cell membrane?

A. Fimbriae and pili

B. Ribosome and flagella

C. Endospore and capsule

D. Slime layer and Nucleoid

The next question is based on the following table about gram positive and gram negative bacteria

	Characteristic	Gram –Positive	Gram-Negative
I	Chemical composition	Lipopolysaccharide	Lipoteichoic acid
II	Outer membrane	No	Yes
III	Periplasmic space	Narrow	Extensive
IV	Porin proteins	Yes	No

61. Which row of the table contains the correct comparisons of Gram-positive and Gram-Negative bacteria?

A. I & IV B. II & III C. I & II D. III & IV

62. Which characteristic feature of Archaea is CORRECT?

A. lack true peptidoglycan in their cell wall
B. has true nucleus and organelles
C. their cell membrane lipids are unbranched
D. all are found in extreme environments

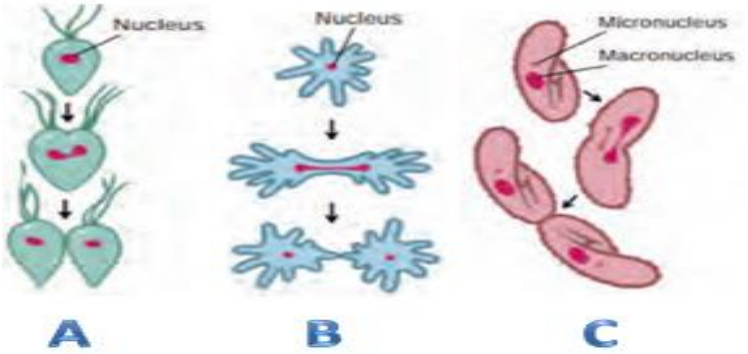
63. Which one of the following tineas correctly matches with anatomical site it affects?

A. Tinea corporis _lower legs
B. Tinea pedis _ scalp
C. Tinea capitis _ beard
D. Tinea unguium _ nails

64. Schizogony is a form of asexual reproduction in protozoa which is common in Sporozoa. How Sporozoa cell divide in schizogony?

A. nucleus divides multiple times before cell divides.
B. cell divides unevenly without nuclear division
C. cell divides evenly to form two new cells
D. the cell divides longitudinally into two

The next question based on the following figure that represents asexual reproduction in protozoa



65. Which form of reproduction letter A, B, and C respectively represent?

A. Longitudinal binary fission, Transverse binary fission and Binary fission
B. Binary fission, longitudinal binary fission and Transverse binary fission
C. Transverse binary fission, Binary fission and longitudinal binary fission
D. Longitudinal binary fission, Binary fission and Transverse binary fission

66. What distinguishes enveloped viruses from non-enveloped viruses?

A. Non-enveloped viruses cannot infect human cells
B. Enveloped viruses have lipid membrane derived from the host cell.
C. Enveloped viruses have a protein coat only
D. Enveloped viruses can live independently of host cell.

67. The following are ways in which normal microbiota exclude pathogens and contribute to health of an individuals
    A. provide binding sites for pathogens
    B. affecting adaptive immunity
    C. both live together as friend
    D. consuming available nutrients
68. What is the mode of transmission of disease that infects the region of the gut?
    A. Droplet infection
    B. Direct contact
    C. Eating contaminated food
    D. Blood- to - blood contact
69. In which sterilization method items to be sterilized are kept in the chamber and are exposed to free-flowing steam at 100ºC for 20 minutes, for each of the three consecutive days?
    A. Flaming
    B. Tyndallization
    C. Incineration
    D. pasteurization
70. Which one of the following mechanism of microbial control **is** antisepsis?
    A. applying a solution of 5% bleaches to examining table
    B. boiling food utensil used by a sick person
    C. Immersing thermometers in an isopropyl alcohol solution between uses.
    D. preparing the skin before surgical incisions with iodine compounds
71. Which of the following statements accurately describes a key difference between anabolism and catabolism?
    A. Anabolism involves energy release, while catabolism requires energy input
    B. Anabolism is the breakdown of molecules, whereas catabolism is the synthesis of molecules.
    C. Anabolism builds complex molecules using energy, while catabolism breaks down complex molecules to release energy.
    D. Anabolism occurs only in plants, while catabolism occurs only in animals.
72. Which one of the following is an example of catabolic process?
    A. Protein synthesis
    B. Cellular respiration
    C. Photosynthesis
    D. fatty acid synthesis
73. Which one of the following is the benefit of photosynthesis for almost all living organism on earth?
    A. Food and oxygen
    B. Energy and carbondioxide
    C. Oxygen and Water
    D. carbondioxide and water
74. What is the primary purpose of the light reaction of photosynthesis?
    A. To produce glucose and carbondioxide used in the later reaction.
    B. To generate ATP and NADPH that drives the stage II reaction
    C. To fix carbon dioxide and incorporate with pre-existing five carbon compound
    D. To release carbondioxide in the atmosphere to maintain its balance.
75. If a green leaf turn blue-black after iodine is applied, what conclusion can be drawn?
    A. The leaf contain starch
    B. The leaf does not contain starch
    C. The experiment was conducted incorrectly
    D. There is no sufficient chlorophyll in the leaf
76. Which of the following statements is true regarding non-cyclic photophosphorylation?
    A. It produces ATP only
    B. It involves photosystem I only
    C. It generates oxygen as a byproduct
    D. It occurs in the stroma of the chloroplast

77. If a researcher wanted to develop a new crop variety that combines traits from C4 and CAM plants, which characteristic would be most beneficial to incorporate for enhancing drought resistance?
    A. The ability to perform photosynthesis solely during the day.
    B. The reliance on high levels of chlorophyll for maximum light absorption
    C. The capacity for enhanced photorespiration rates
    D. The mechanism of night time stomatal opening to reduce water loss while fixing carbon dioxide.
78. Which of the following best explains why C4 plants have a lower rate of photorespiration compared to C3 plants?
    A. C4 plants perform light reaction and Calvin cycle in the same cell of bundle sheath
    B. C4 plants have more chlorophyll that C3 plants
    C. C4 plants utilize PEP carboxylase which has higher affinity for CO2 than RubisCO.
    D. C4 plants perform photosynthesis at night time.
79. How does photosynthesis contribute to mitigating global warming?
    A. by producing oxygen as a byproduct
    B. by absorbing carbondioxide from the atmosphere
    C. by decreasing plant biomass
    D. by increasing atmospheric carbondioxide
80. In which parts of the cell, the reactions of cellular respiration occur?
    A. Cytosol and mitochondria
    B. Cytoplasm and ribosome
    C. Cytosol and ribosome
    D. Mitochondria and chloroplast
81. Which of the following stages of aerobic cellular respiration produces the highest ATP?
    A. Glycolysis
    B. Krebs cycle
    C. Electron transport
    D. Link reaction
82. Which of the following is not end product of pyruvate oxidation?
    A. Acetyl CoA B. CO2 C. NADH D. FADH2
83. Which of the following is the first stage of cellular respiration?
    A. Krebs cycle
    B. Glycolysis
    C. Electron transport chain
    D. Fermentation
84. What is the primary purpose of glycolysis in cellular respiration?
    A. To produce ATP and NADH from glucose
    B. To generate carbon dioxide and water
    C. To synthesize glucose from pyruvate
    D. To transport electrons to the ETC
85. Which of the following statements accurately describes the relationship between the Krebs cycle and the electron transport chain?
    A. The electron transport chain occurs before the Krebs cycle in cellular respiration.
    B. The Krebs cycle produces ATP and water, while the electron transport chain does not.
    C. The Krebs cycle generates NADH and FADH2, which are used by the ETC to produce ATP.
    D. The Krebs cycle and electron transport chain are independent processes that do not interact.
86. If a cell is undergoing anaerobic respiration due to a lack of oxygen, which of the following processes is most likely occurring?
    A. Glucose is being synthesized from pyruvate
    B. The Krebs cycle is fully operational
    C. Glycolysis is followed by fermentation.
    D. The ETC is producing large amounts of ATP.
87. Imagine you are designing an experiment to determine the efficiency of different substrates (like glucose, fatty acids, and proteins) in cellular respiration. Which combination of stages would you monitor to assess overall ATP production?
    A. Glycolysis, Krebs cycle, and ETC
    B. Only the electron transport chain
    C. Only glycolysis
    D. Glycolysis and Krebs cycle

88. You are presented with two cells: one that primarily relies on aerobic respiration and another that relies on anaerobic respiration. Which statement best evaluates their efficiency in energy production?
    A. The anaerobic cell produces more ATP than the aerobic cell.
    B. The aerobic cell produces more ATP due to complete oxidation of glucose.
    C. Both cells produce equal amounts of ATP.
    D. The anaerobic cell has a higher rate of ATP production due to faster processes.
89. What is the function of hydrogen ion come from oxidation of NADH and FADH2 during oxidative level of ATP synthesis?
    A. it is used to spine the rotor of ATP synthase
    B. it is used to reduce molecular oxygen
    C. it is used to regenerate FAD and NAD+
    D. it is used to create electrochemical gradient
90. In electron transport chain the NADH and FADH2 formed during glycolysis, link reaction and citric acid cycle, give up their electrons to reduce molecular O_2 to
    A. Glucose B. CO_2 C. H_2O D. ATP
91. What is the most widely accepted definition of evolution?
    A. The process by which organisms develop new traits in response to environmental challenges
    B. The change in genetic composition of a population over successive generations
    C. The creation of new species through genetic engineering
    D. The belief that all species were created spontaneously
92. Who conducted the famous experiment in 1953 that simulated early Earth conditions to test the origins of life?
    A. Louis Pasteur
    B. Alexander Oparin
    C. Charles Darwin
    D. Stanley Miller
93. Which of the following best describes the concept of "survival of the fittest" in the context of natural selection?
    A. Only the strongest individuals survive.
    B. The individuals best adapted to their environment are more likely to reproduce.
    C. All individuals have an equal chance of survival.
    D. Fitness is determined solely by physical strength.
94. How did Lamarck's theory of evolution differ from Darwin's theory?
    A. Lamarck believed in natural selection; Darwin did not.
    B. Lamarck proposed that traits acquired during an organism's lifetime could be passed to offspring, while Darwin focused on natural selection.
    C. Both theories suggest that species do not change over time.
    D. Lamarck's theory was based on genetic evidence; Darwin's was not.
95. Who is known for proposing the theory of inheritance of acquired characters?
    A. Charles Darwin
    B. Gregor Mendel
    C. Jean-Baptiste Lamarck
    D. Alfred Russel Wallace
96. What do homologous structures indicate about two species?
    A. They share a common ancestor.
    B. They evolved independently due to similar environmental pressures.
    C. They have no evolutionary relationship
    D. They are adapted to different environments.

97. How could you use embryological evidence to support the theory of evolution?
    A. By showing that all species have identical embryonic stages.
    B. By proving that similar embryonic features suggest common ancestry among different species.
    C. By providing that embryos develop faster in some species than others.
    D. By comparing adult forms rather than embryonic stages.
98. Imagine you are studying a bird species with varying beak sizes. If both very small and very large beaks are advantageous for different food sources, what type of natural selection is this an example of?
    A. Stabilizing selection
    B. Directional selection
    C. Disruptive selection
    D. Artificial selection
99. Plants achieve their co-ordination and responsiveness through a system of hormones. Which one of the following plant hormone is **CORRECTLY** matched with its role?
    A. Auxins: Apical dominance
    B. Gibberellin: General plant growth
    C. Cytokinin: fruit repining
    D. Ethylene: cell division
100. Which one of the following is CORRECT regarding the impacts of IAA hormone on the growth of shoot and root in horizontally placed seedlings?
    A. The downward growth of the root is resulting from higher accumulation of IAA in the upper side of the root.
    B. The buildup of IAA on the underside of the shoot promoted more growth and resulted in the stem growing upwards
    C. The buildup of IAA on the underside of the shoot inhibits growth in the lower side and resulted in the stem growing upwards.
    D. Accumulation of IAA on the underside of the plant root has no growth effect.

The End!