

**NATIONAL EDUCATIONAL ASSESSMENT AND EXAMINATIONS
AGENCY (NEAEA)
ETHIOPIAN SECONDARY SCHOOL LEAVING CERTIFICATE
EXAMINATION (ESSLCE)**

**BIOLOGY
HIDAR 2013/14 (NOVEMBER 2021)**

BOOKLET CODE: 11
Number of Items: 100

SUBJECT CODE: 06
Time Allowed: 2 Hours

1. The step of scientific method which comes after analyzing results and draw conclusion is
 - A. constructing hypothesis.
 - B. doing background research.
 - C. accepting or rejecting the hypothesis.
 - D. designing and carrying out experiment.

2. In a group of individuals in which group A was a control and group B was an experimental group, a student gave a placebo to the control group, and an unknown drug to the experimental group. At the end, the experimental group got better. Which one of the following is true about the result?
 - A. Placebo has better effect.
 - B. The drug has an effect.
 - C. Conclusion cannot be reached.
 - D. The experiment was wrong.

3. A biologist conducted simple experiment to investigate the effect of pH on salivary amylase. She added 5cm³ amylase solution into 5cm³ starch suspension with a neutral pH in a test tube. After ten minutes, she tested it with iodine reagent and the solution turned into blue-black color. What is the dependent variable of this experiment?
 - A. pH of the solution
 - B. Applying iodine treatment
 - C. Formation of blue-black color
 - D. Adding salivary amylase

4. Which one of the following pairs of biological tools and their functions is **FALSE**?
 - A. Balances-used for measuring mass
 - B. Petri dish -used for culturing microorganisms
 - C. Optical microscope- use beam of light to produce magnified image
 - D. Quadrante- to separate solids from liquids

5. Grade 12 students went to a field and collected plant specimens for identification in the laboratory. They wanted to preserve the plant parts for some times and specimens can be analyzed later. Which one of the following biological tool is used for their activities?
- A. Pitfall traps C. Quadrat
B. Plant press D. Theodolite
6. The relevance and promise of biological sciences can be demonstrated by their contribution in
- A. finding solutions to ethnic conflicts.
B. finding mechanisms to feed the growing human population.
C. advancement of aviation technology.
D. development of housing and construction sectors.
7. All are the roles of biology to combat the spread of HIV/AIDS EXCEPT
- A. breaking the transmission pathway.
B. producing drugs that can stop the virus from reproducing.
C. producing a vaccine against the virus.
D. raising fund for infected people.
8. Which one of the following statements is **INCORRECT** about AIDS? The rate of transmission of AIDS will reduce when
- A. promiscuous sexual intercourse is reduced.
B. the transmission path ways is broken.
C. men and women are circumcised.
D. the number of sexual partners is restricted.
9. Suppose there are two communities in a village. Community A is actively participate in HIV/AIDS awareness creation, HIV prevention and got blood test for HIV whereas community B is frequently request for food aid, participate only in afforestation activities and HIV positive individuals keep the secret to themselves. In which community do you think that the incidence of HIV/AIDS most probably high?
- A. In community B C. In community A
B. In both communities D. Impossible to decide

10. Which property of water is useful for life that it continues in relatively warm water underneath through the cold weather?
- A. High density in its solid form than its liquid form
 - B. High specific heat capacity
 - C. High latent heat of vaporization
 - D. High surface tension

11. Consider the following table which contains organic and inorganic molecules.

No	Organic molecules	Inorganic molecules
1	Lysine, sucrose	Salt, hydrochloric acid
2	Deoxyribose, carbon monoxide	Fructose, sodium chloride
3	Fatty acid, methane	Sodium hydroxide, carbon dioxide
4	Water, calcium carbonate	Stearic acid, starch

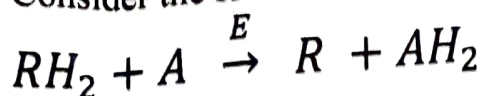
Which rows contain the corresponding organic and inorganic molecules correctly?

- A. 1 and 2
 - B. 2 and 3
 - C. 1 and 3
 - D. 3 and 4
12. Which one of the following statements explains the property of water? It
- A. has the lowest latent heat of vaporization.
 - B. takes less energy to heat water up.
 - C. is highly viscous substance.
 - D. is a transparent molecule.
13. Cellulose is
- A. a polymer of β -glucose molecule.
 - B. a mixture of amylose and amylopectin.
 - C. a polymer of α -glucose molecule.
 - D. a non-reducing monosaccharide sugar.
14. Which organic molecules are formed when two fatty acid molecules are bounded to the glycerol and the place of the third is taken by a phosphate group?

- A. Glycolipids
- B. Waxes
- C. Phospholipids
- D. Triglycerides

15. All are the function of lipids **EXCEPT**
- A. water proofing.
 - B. thermal insulation.
 - C. determines a particular features.
 - D. respiratory substrates.
16. Which one of the following organic molecules is used to make haemoglobin?
- A. Lipids
 - B. Glycogen
 - C. Nucleic acids
 - D. Proteins
17. Which one of the following is the correct formula of maltose?
- A. $C_{12}H_{24}O_{12}$
 - B. $C_6H_{12}O_6$
 - C. $C_{12}H_{22}O_{11}$
 - D. $C_5H_{10}O_5$
18. A grade 11 student added Benedict's reagent on food sample and heated the mixture for 5 minutes. Then he observed a color change. Which one of the following is **FALSE** about the result?
- A. A yellow colour shows that a reducing sugar is present.
 - B. An orange colour shows that a reducing sugar is present.
 - C. A red colour shows that a reducing sugar is present.
 - D. An orange colour shows that a non-reducing sugar is present.
19. In a Benedict's test for sucrose, why does the test sample first boil with hydrochloric acid?
- A. To neutralize the solution
 - B. To reduce Benedict's solution
 - C. To retest the mixture with Benedict's solution
 - D. To hydrolyze non-reducing sugar
20. Which one of the following statements explains the specificity of enzymes?
- Enzymes
- A. speed up a reaction without being used up.
 - B. catalyse one reaction only.
 - C. can be used over and over again.
 - D. can be destroyed by excessive heat.

21. Consider the following chemical reaction below.



Based on the above chemical reaction, in which classes of enzymes does enzyme "E" can be grouped?

- A. Hydrolyases
B. Transferases
C. Oxidoreductases
D. Isomerases
22. Which one of the following enzymes is used as washing powders?
A. Lipases
B. Biochymosin
C. Pectinase
D. Cellulase
23. Which one of the following statements explains how an enzyme lowers the activation energy of a reaction? By
A. making the individual substrate molecules more reactive
B. enabling the reaction to occur at lower physiological temperature
C. changing its tertiary structure into secondary protein structure
D. lowering the kinetic energy of the reacting molecules
24. What happens when the substrate molecule binds to the active site of an enzyme?
A. They form a stable intermediate substance.
B. The substrate and the enzyme will bond permanently.
C. The chemical bonds of the substrate distorted.
D. The amino acids in the active site become unreactive.
25. Which of the following vitamins is used as a component of cofactor?
A. Riboflavin
B. Thiamin
C. Retinol
D. Ascorbic acid
26. Identify the statement that correctly explains the factors of an enzyme activity.
A. Hydrogen ion concentration affects the ionic bonds of an enzyme.
B. Excessive heat breaks the ionic bonds that hold the tertiary structure of the enzyme protein.
C. Inhibitors increase enzyme activity by increasing their turnover rate.
D. Increasing concentration of substrates does not affect enzyme activity.

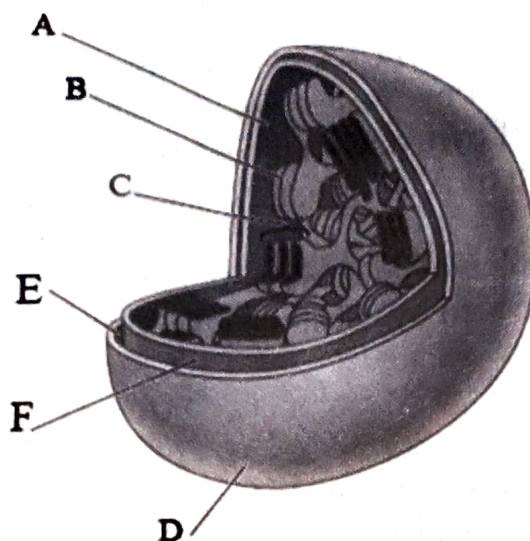
27. Which one of the following is true about allosteric regulation?
- A. Inhibition by competitive inhibitors when it interacts on the allosteric site.
 - B. Enzymes are activated when activators attached on the active site.
 - C. Allosteric inhibition is occurred when inhibitors attached on the active site.
 - D. Activation by activators when it interacts on the allosteric site.
28. If an enzyme from thermophilic bacteria, which catalyses glucose-6-phosphate into fructose 6-phosphate in the process of glycolysis, is subjected to below the optimum temperature, the rate of reaction will be decreased. This is because
- A. the enzyme is denatured.
 - B. the particles have more kinetic energy.
 - C. less enzyme-glucose 6-phosphate complexes formed.
 - D. more collisions between enzyme and glucose 6-phosphate occurred.
29. Cyclooxygenase-2 is an enzyme that catalyzes the conversion of arachidonic acid to prostaglandins, which promote pain and fever in our body. The pain killer ibuprofen, act as non-competitive inhibitor of cyclooxygenase-2, reduces the production of prostaglandins. What would happen if the concentration of the ibuprofen increased?
- A. Production of prostaglandin is increased.
 - B. Pain of the body is decreased.
 - C. Substrate affinity of cyclooxygenase-2 is higher.
 - D. Concentration of arachidonic acid is decreased.
30. Some amino acids are synthesized using transamination process in the cell. This activity more describes the cell's
- A. catabolism.
 - B. replication.
 - C. anabolism.
 - D. energy production.
31. One of the differences of prokaryotic and eukaryotic cells is their cell wall. This is because cell wall of prokaryotic cell is
- A. impermeable.
 - B. the site of energy production.
 - C. made from sugar and amino acid.
 - D. stronger than eukaryotic cells.

32. Consider the following key events in the study of cell biology.
- Hooke describes 'cells' in a cork.
 - Leeuwenhoek discovers protozoa.
 - Schleiden and Schwann propose a cell theory.
 - Jansen builds the first compound microscope.
- Which one of the following represents the correct order from ancient to the recent?
- | | |
|----------------------|----------------------|
| A. IV, I, II and III | C. II, III, IV and I |
| B. I, II, III and IV | D. III, II, I and IV |
33. Consider the following features of cells.
- have pili
 - have chromosome
 - have circular DNA
 - have larger ribosomes
- Which of the above features of cells can be included in eukaryotic cells?
- | | |
|---------------|--------------|
| A. I and II | C. I and III |
| B. II and III | D. II and IV |
34. Which of the following is correct about the structure of the cell membrane?
- Protein molecules form a double layer.
 - Phospholipid molecules form a transport channel.
 - Proteins form the outer layer while phospholipids form the inner layer.
 - The membrane has a fluid nature that is regulated by cholesterol.
35. Which of the following is a correct match of cellular organelles and their corresponding function?
- Mitochondria - ATP synthesis
 - Vacuole - strength and elasticity
 - Golgi body - digesting foreign cells
 - Lysosome - modification of proteins
36. According to the fluid-mosaic model of the plasma membrane
- glycoproteins form a double layer.
 - the membrane has uniform composition of proteins.
 - peripheral proteins are tightly attached on the membrane.
 - phospholipid bilayer forms the basic structure of the membrane.

37. Three different cells are in the process of transporting materials across the cell membrane as indicated below:
Cell 1 = water from high concentration to low concentration
Cell 2 = Na^+ from high concentration to low concentration
Cell 3 = glucose from low concentration to high concentration
Which types of transport mechanism do the above cells use, respectively?
- Osmosis, active transport, facilitated diffusion
 - Osmosis, facilitated diffusion, active transport
 - Facilitated diffusion, active transport, osmosis
 - Facilitated diffusion, osmosis, active transport
38. Suppose you took a container and divided it into two halves by a membrane which is permeable to water and labeled the two halves as A and B. Finally, you added hypertonic solution in A and hypotonic solution in B. What will be the expected result of this experiment?
- Rise of the water level in B
 - Rise of the water level in both halves
 - No change in both halves
 - Rise of the water level in A
39. A class of grade 11 students were given two solutions A and B of unknown concentration separated by a semi permeable membrane. The teacher instructed them to observe any changes in the water levels of the two solutions. After few minutes, the students observed the water level in solution A has decreased. What could the students conclude from their observation?
- Solution A had higher water potential.
 - Solution B had positive water potential.
 - Solution A was hypertonic.
 - The two solutions were isotonic.
40. A student did an experiment and found out that catabolism of amino acid produces toxic ammonia in the liver cells which gradually get converted into urea and excreted through urine. What would be the result of the experiment if osmosis was blocked? The liver cells
- excrete more ammonia and urea.
 - gain water and become turgid.
 - become damaged and lose functionality.
 - become over active and produce more energy.

41. Which event of cellular respiration takes place in the cytoplasm of eukaryotic cells?
- A. Reaction of acetyl CoA with oxaloacetate
 - B. Production of pyruvate from glucose
 - C. Reaction of pyruvate with coenzyme A
 - D. Production of ATP through chemiosmosis
42. Suppose two moles of glucose is burned aerobically. How many moles of ATP can be produced by substrate level phosphorylation in Krebs cycle?
- A. 6
 - B. 4
 - C. 8
 - D. 10
43. During alcoholic fermentation, CO_2 is released when
- A. pyruvate is oxidized.
 - B. acetaldehyde is reduced.
 - C. ethanol is oxidized.
 - D. pyruvate is decarboxylated.
44. During anaerobic respiration, reduced NAD is required to
- A. reduce pyruvate to lactate.
 - B. split pyruvate to CO_2 and acetaldehyde.
 - C. reduce pyruvate to acetyl CoA.
 - D. convert lactate into pyruvate.
45. Why do we get tired and fatigued during heavy exercise such as long distance running? It is due to
- A. accumulation of lactic acid.
 - B. accumulation of CO_2 .
 - C. shortage of glucose.
 - D. high rate of aerobic respiration.
46. What structural arrangements make chlorophyll suit for its function?
- A. The fixing of the photosystems and the electron transport chain on thylakoid membrane
 - B. The floating of the photosystems and the electron transport chain in the cytosol
 - C. The long distance between photosystem I and Photosystem II
 - D. The structural differences between Photosystem I and Photosystem II

47. This item is based on the diagram of chloroplast given below.



Which letters represent the site where photolysis and Calvin take place, respectively?

- A. C and E
B. D and F

- C. F and E
D. B and A

48. Why does photorespiration take place in a hot environment? Because plants close their stomata and face

- A. CO_2 shortage.
B. H_2O shortage.

- C. O_2 shortage.
D. O_2 accumulation.

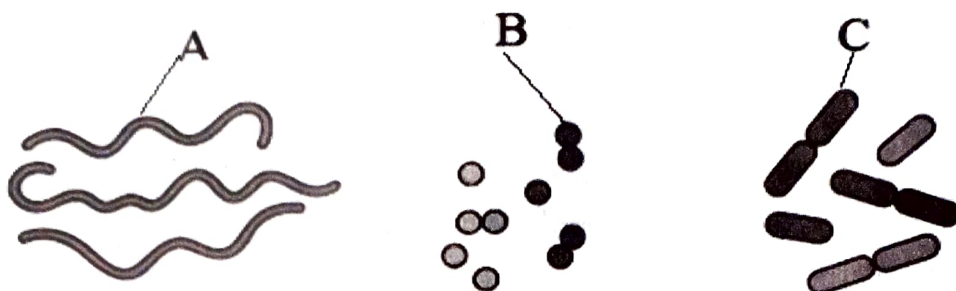
49. Which of the following is correct about the process of glucose production in the light-independent reactions of photosynthesis?

- A. CO_2 reacts with GP to form RuBP.
B. A total of 9 ATP molecules are synthesized.
C. GP is reduced to TP by reduced NADP.
D. One TP is directly converted to one glucose molecule.

50. Which of the following is a correct description of the CAM pathway of photosynthesis?

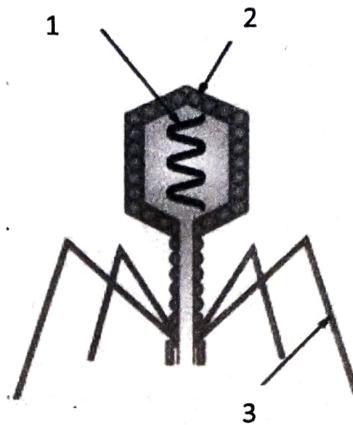
- A. The Calvin cycle takes place during the night.
B. CO_2 is stored in the form of malate during the night.
C. CO_2 is stored in the bundle sheath cells during the night.
D. The Calvin cycle takes place in the bundle sheath cells during the day.

51. Which one of the following features is unique to bacteria?
- A. Being unicellular
 - B. Presence of permeable membrane
 - C. Having flagella for locomotion
 - D. Absence of nuclear membrane
52. This item is based on the diagram which shows the different shape of bacteria below.



- What is the correct name of the shape of bacteria represented by letters A, B and C, respectively?
- A. Sphere, rod, spirochaete
 - B. Rod, spirochaete, sphere
 - C. Spirochaete, sphere, rod
 - D. Flagellated bacilli, clusters, spirilla
53. It is possible to produce human insulin in a bacterial strain. The insulin gene should be inserted in a plasmid and the recombinant DNA plasmid should be inserted into a bacterium. What is the role of the bacterium in this process?
- A. The source of plasmid and insulin production
 - B. The source of insulin and modification
 - C. Joining the gene of insulin with the gene of plasmid
 - D. Multiplying the recombinant DNA molecule
54. Bacteria can cause diseases in all of the following mechanisms **EXCEPT**
- A. entering living cells and disrupting metabolic systems.
 - B. changing the genetic structure of host cells.
 - C. invading and growing on the tissues of organs.
 - D. releasing toxins as they multiply.

55. Functional diseases differ from infectious diseases in that they
- A. occur in the brain and heart.
 - B. are caused by microorganisms.
 - C. show no signs of damage on the organ.
 - D. are common in females than males.
56. This item is based on the drawing of a bacteriophage given below.



In the above diagram of a bacteriophage, DNA and Protein coat are respectively represented by

- A. 1 and 3.
 - B. 2 and 3.
 - C. 2 and 1.
 - D. 1 and 2.
57. The social impact of AIDS can be mainly revealed by
- A. loss of appetite.
 - B. fear of stigmatization.
 - C. loss of body weight.
 - D. reduced labor force.
58. Which one of the following is a DNA virus?
- A. HIV
 - B. Herpes complex
 - C. H1N1
 - D. Hepatitis C
59. Which one of the following is a correct comparison of lytic and lysogenic cycles of virus multiplication?
- A. Lytic cycle involves incorporation of viral DNA into the host DNA.
 - B. Lysogenic cycle releases new viruses using only chronic cycle.
 - C. Both cycles damage the host cell DNA following infection.
 - D. Lytic cycle releases new viruses only by splitting the host cell.

60. In an HIV/AIDS community screening, students were asked to take part in voluntary testing. The following discussion presents the views of four grade 12 students named A, B, C and D towards HIV testing.

Student A: I should not take the testing; it is simply boring.

Student B: We should take the testing, since we are educated; we should be exemplary.

Student C: If we get tested and got positive, what should we do? So, let us not get tested.

Student D: You know, this HIV/AIDS testing is simply a business. We should not be cheated.

Which student do you think is correct?

- | | | | |
|----|-----------|----|-----------|
| A. | Student A | C. | Student C |
| B. | Student B | D. | Student D |
61. What is the major difference that viruses have with free living cells?
Viruses
- A. lack genetic material of their own.
 - B. reproduce only asexually.
 - C. lack locomotary structure.
 - D. do not function outside of a living cell.
62. Why is nutrient recycling important in an environment? Because
- A. it adds new types of molecules into the environment.
 - B. the amount of nutrients in the environment is limited.
 - C. nutrients should be exchanged between the earth and other planets.
 - D. nutrients in an environment will be depleted if recycled.
63. Which one of the following orders of life processes correctly illustrates occurrence of the nutrient cycle?
- A. feeding → excretion → respiration and breathing → death and decomposition
 - B. feeding → death and decomposition → excretion → respiration and breathing
 - C. respiration and breathing → feeding → excretion → death and decomposition
 - D. death and decomposition → feeding → excretion → respiration and breathing

64. Which of the following processes in the phosphate cycle **DOES NOT** return phosphate ions to the soil?
- A. Use of fertilizers
B. Weathering of rocks
C. Cellular respiration
D. Decomposition of dead animals
65. A previously bare land was gradually occupied by lichen and mosses, annual herbs, perennial herbs, shrubs and finally by forests. Which one of the following best describes the process indicated above?
- A. Succession
B. Afforestation
C. Natural Selection
D. Climax community
66. The terrestrial biome characterized by cold temperature, dry precipitation, frozen soil and inhabited by migrating birds is
- A. deserts.
B. boreal forests.
C. tundra.
D. tropical montane forests.
67. This item is based on the table below.

Biome	Soil	Animals
Desert (hot)	L	M
Tropical montane forest	N	O

Select the correct representatives for L, M, N and O, respectively

- A. Poor, sparse, fertile, many animals
B. Fertile, many animals, poor, few animals
C. Medium, ants and spiders, poor, polar bears
D. Fertile, migratory animals, poor, drought and fire adapting animals
68. Which one of the following explains biodiversity?
- A. The large number of human races in the world.
B. The variability among living organisms, within species, and of ecosystem.
C. Large number of organisms in the same ecosystem.
D. The similarity and difference of organisms which live in different ecosystems.

69. This item is based on the table below which shows an 'invented' ecosystems.

Species	Number of organisms of each species		
	Area 1	Area 2	Area 3
A	86	16	23
B	5	17	25
C	2	16	27
D	3	17	5
E	1	17	12
F	3	17	8

In which area of the above table does all of the species are more or less equally successful?

- A. Area 1
B. Area 2
C. Area 1 and 3
D. Area 1 and 2
70. A major factor in controlling the population size that helps to minimize predators and recover prey's number is
- A. predation.
B. disease causing organisms.
C. intra-specific competition.
D. inter-specific competition.
71. This item is based on the table below.

Condition	Population size
Natality exceeds mortality	X
Mortality exceeds natality	Y
Mortality and natality are equal	Z

The population number of X, Y, and Z, respectively will

- A. increase, decrease, remain the same.
B. decrease, increase, remain the same.
C. remain the same, increase, decrease.
D. decrease, remains the same, increase.
72. Suppose a heterozygous brown eye father is married with a blue eye mother. What would be the proportion of homozygous children for eye color?(Hint: Brown is dominant over blue)
- A. 100%
B. 50%
C. 25%
D. 75%

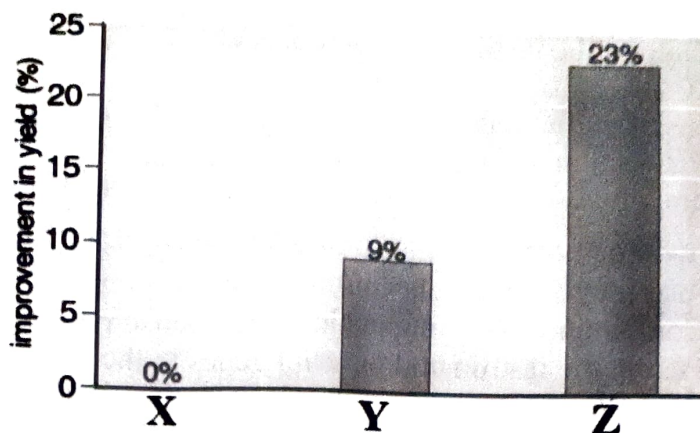
73. This question is based on the table below which shows population growth trend.

Time period	Numbers in population	
	X	Y
0	5	40
1	10	80
2	15	160
3	20	320
4	25	640
5	30	1280
6	35	2560
7	40	5120

Which one of the following is correct about X and Y?

- A. X and Y cannot be compared because each of them grow differently with incomparable proportion.
- B. X is exponential growth because the numbers increase by the same fixed amount in each time period and Y is arithmetic growth because the population doubles in each time period.
- C. Both X and Y are exponential growth since each of them increase regularly without interruption.
- D. X is arithmetic growth because the numbers increase by the same fixed amount in each time period and Y is exponential growth because the population doubles in each time period.
74. *Drosophila melanogaster* are convenient experimental animals in genetics. Because they
- A. are small animals with a short life cycle.
- B. have 23 pairs of chromosomes per cell.
- C. have chromosomes that can't be easily detected.
- D. are too cheap to breed in large numbers.
75. How does crossing over during meiosis bring variation in species? By
- A. combination of genes in the gametes that are not found in either parent
- B. increasing the amount of genes in one of the parents during meiosis
- C. creating genes that are not found in both parents due to meiosis
- D. combining sex and somatic cell chromosomes

76. The following question is based on the figure that shows the gains in productivity from hybrid vigour.



In the above diagram, what best describes the breeding condition represented by letter X, and Z, respectively?

- A. X involves inbreeding and Z involves cross breeding.
 - B. X involves cross breeding and Z involves inbreeding.
 - C. Both X and Z represent inbreeding.
 - D. X represents natural selection and Z represents artificial selection.
77. Consider the DNA molecule containing:
Strand 1: T A C G T A
Strand 2: A T G C A T
What will be the sequence of the new DNA if the DNA replicates semi-conservatively?
- A. TACGTA
ATGCAU
 - B. ATGCAT
UACGUA
 - C. TACGTA
ATGCAT
 - D. ATGCAT
ATGCAT
78. How does our body synthesize some of the amino acids in our body? From
- A. intermediate molecules of different path ways
 - B. fatty acids we consume
 - C. biological breakdown of our own cells
 - D. breaking down of pre-existing proteins

79. This item is based on the following list of events during cloning of an insulin gene into plasmid.
- Obtaining insulin producing cells and plasmid from organisms
 - Cutting the insulin gene and plasmid
 - X
 - Inserting the recombinant plasmid into bacteria
 - Production of insulin by bacteria
- Which one of the following best represents the steps listed as "X"?
- Inserting the insulin gene into a bacterium
 - Inserting the open plasmid into a bacterium
 - Combining the insulin gene into the opened plasmid
 - Fusing the insulin and plasmid genes to the cell wall of bacteria
80. During translation the
- ribosome moves forward over two codons at a time.
 - tRNA serves as a template of the DNA molecule.
 - tRNA with complementary anticodon binds on the codon of mRNA.
 - mRNA brings amino acids into the ribosomes.
81. If one base in the six triplets of the gene coding for one of the four polypeptides in the haemoglobin molecule alters the triplet from GAG to GTG, which one of the following biological terms best describes the above phenomenon?
- | | |
|-------------|------------------|
| A. Cloning | C. Transcription |
| B. Mutation | D. Translation |
82. Which one of the following is the basic characteristic of mutation? It is
- | | |
|-----------------|--------------|
| A. planned. | C. expected. |
| B. spontaneous. | D. regular. |
83. The theory that suggests "life can evolve autonomously from non-living objects" is known as
- spontaneous generation theory.
 - cosmozoan theory.
 - eternity theory.
 - biochemical theory.

84. Which one of the following is true about neo-Darwinian theory?
- A. All species tend to produce more offspring than can possibly survive.
 - B. There is a natural variation in features and variations which are heritable.
 - C. Development of new feature is important for survival.
 - D. It takes into account genetics and animal behavior to understand evolution.
85. Which one of the following statements describes the evolutionary theory of Lamarck?
- A. Structures commonly used become more developed.
 - B. Acquired characteristics cannot be inherited.
 - C. Species started complex and gradually become simple.
 - D. Origin of species happens only through natural selection.
86. If organisms share very similar molecules such as DNA, then they must be closely related evolutionarily. Which evidence of evolution supports the above information?
- A. Comparative anatomy
 - B. Comparative embryology
 - C. Comparative biochemistry
 - D. Comparative physiology
87. Which one of the following **CANNOT** be used as an evidence of evolution through palaeontology?
- A. Teeth
 - B. Stomach
 - C. Bones
 - D. Hair
88. The process in which individuals with a particular heritable trait survive better than the other is
- A. evolution.
 - B. adaptation.
 - C. natural selection.
 - D. selective breeding.
89. Which type of selection favors individuals at both extremes of a range to have some advantage over those displaying the mean value?
- A. Directional selection
 - B. Stabilizing selection
 - C. Disruptive selection
 - D. Natural selection

90. Which one of the following is true about the human evolution?
- A. Humans evolved from chimpanzees.
 - B. Humans and chimpanzees both evolved from a common ancestor.
 - C. Humans evolved from great apes.
 - D. Humans evolved from different line of evolution than great apes.
91. Which one of the following is true about the importance of Lucy in resolving debates about human evolution?
- A. Lucy had a brain size of 1.8% of her body mass.
 - B. Big brains came before bipedalism.
 - C. Lucy was partially an arboreal primate.
 - D. Bipedalism came before big brains.
92. Which one of the following can best explain behavior? It is
- A. the tendency for parts of plants to grow towards light.
 - B. the coordinated response of an organism to an internal or external stimuli.
 - C. a cell or group of cells that receives and processes stimuli.
 - D. the actions or reactions of a person or animal in response to external or internal stimuli.
93. The quick withdrawal of your hand from a hotplate is an example of
- A. innate behavior.
 - B. fixed action pattern.
 - C. key stimulus.
 - D. biological clock.
94. Which one of the following processes describes a biological clock?
- A. The growing of plants towards light
 - B. Removal of one's thumb from hot objects quickly
 - C. Kinesis and taxes of woodlice and other simple animals
 - D. Circannual migration of birds from temperate to tropical areas
95. Identify learned behavior from the following.
- A. Honey bee making honey.
 - B. Dog trained to hunt.
 - C. Ants making nest.
 - D. Child withdraws hand from hot things.

96. The behavior which trainers look, if modified, could lead to the desired behavior and reward such a behavior is
- | | |
|--------------|-------------|
| A. instinct. | C. operant. |
| B. innate. | D. reflex. |
97. Which one of the following examples of behavior describes when an animal stops responding to stimulus or cue after a period of repeated exposure?
- | | |
|---------------|-----------------|
| A. Reflex | C. Conditioning |
| B. Imprinting | D. Habituation |
98. A police man trained a dog on how to find explosive materials through sniffing; on another instant the same police man observed a week old puppy following him on the roadside. Which one of the following is correct about the behaviors of the animals in the observation?
- | |
|--|
| A. Both of the cases indicate natural behavior of the animals. |
| B. The first case is genetically encoded and the second is adaptive. |
| C. The first cases develop through trial and the second genetically coded. |
| D. Both of the cases indicate learned behavior of the animals. |
99. Which one of the following behaviors is a courtship behavior?
- | | |
|------------------|--------------------|
| A. Scent marking | C. Defending a den |
| B. Touch | D. Ritual fighting |
100. The Ethiopian wolf (*Canis simensis*) lives and hunt in packs. During patrolling their habitat, both male and female wolves of the group maintain their area with urine containing pheromone. This pattern of behavior best exemplifies
- | | |
|--------------------------|----------------------|
| A. territorial behavior. | C. learned behavior. |
| B. courtship behavior. | D. operant behavior. |

THE END