EDUCATIONAL ASSESSMENT AND EXAMINATIONS SERVICE (EAES)
ETHIOPIAN SECONDARY SCHOOL LEAVING CERTIFICATE
EXAMINATION (ESSLCE)

SUBJECT CODE_ 06

BOOKLET CODE_061
TIME ALLOWED: 2 HOURS

GENERAL DIRECTIONS

THIS BOOKLET CONTAINS *BIOLOGY* EXAMINATION. THE CODE FOR THIS SUBJECT IS *06* AND THE CODE FOR THIS PARTICULAR BOOKLET IS *061*. PLEASE COPY THESE CODES ON YOUR ANSWER SHEET WHERE IT *READS SUBJECT CODE AND BOOKLET CODE*.

IN THIS EXAMINATION, THERE ARE A TOTAL OF *100 MULTIPLE CHOICE QUESTIONS*. CAREFULLY SELECT THE BEST ANSWER AND *BLACKEN* ONLY THE LETTER OF YOUR CHOICE ON THE SEPARATE ANSWER SHEET PROVIDED. FOLLOW THE INSTRUCTIONS ON THE ANSWER SHEET AND THE EXAMINATION PAPER CAREFULLY. USE ONLY *PENCIL* TO MARK YOUR ANSWERS. YOUR ANSWER MARK SHOULD BE *HEAVY* AND *DARK*, COVERING THE ANSWER SPACE COMPLETELY. PLEASE ERASE ALL UNNECESSARY MARKS COMPLETELY INCLUDING ANSWERS YOU HAVE CHANGED FROM YOUR ANSWER SHEET.

YOU ARE ALLOWED TO WORK ON THE EXAM FOR *2 HOURS*. WHEN TIME IS CALLED, YOU MUST IMMEDIATELY STOP WORKING, PUT YOUR PENCIL DOWN, AND WAIT FOR FUTURE INSTRUCTIONS.

ANY FORM OF CHEATING OR AN ATTEMPT TO CHEAT IN THE EXAMINATION WILL RESULT IN AN AUTOMATIC DISMISSAL FROM THE EXAMINATION HALL AND CANCELLATION OF YOUR SCORE(S).

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BIOLOGY

BOOKLET CODE: 061
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1. Which of the following is correct about the reproductive cycles of lytic and lysogenic bacteria?
   A. Lysogenic cycle releases new viruses by cell lysis or chronic release.
   B. Lytic cycle inserts the viral DNA into host's DNA.
   C. Lysogenic cycle switches off the host's DNA while replicating viral DNA.
   D. Lytic cycle uses chronic release of new viruses.

2. What is the natural process that allows continuity of supply of nutrients to organisms in an ecosystem?
   A. Photosynthesis
   B. Sedimentation
   C. Respiration
   D. Recycling

3. The nitrogen content of dead plants and animals enters into the nitrogen cycle by a process of
   A. nitrification.
   B. ammonification.
   C. nitrogen fixation.
   D. assimilation.

4. Which of the following is correct about primary and secondary succession?
   A. Secondary succession starts from bare ground and previously uncolonized habitat.
   B. Primary succession takes much longer to be completed.
   C. Secondary succession passes through phases of decline before reaching climax.
   D. Primary succession doesn't attain a climax community.

5. Which one of the following is **NOT** considered as one of the terrestrial biomes?
   A. Boreal forest
   B. Tropical rainforest
   C. Estuarine
   D. Hot desert

6. Our knowledge and understanding of the evolutionary history of extinct animals such as dinosaurs come from the study of bone and other hardened structural remains. What is the category of evidence for such knowledge and understanding?
A. Analogy
B. Palaeontology
C. Comparative biochemistry
D. Comparative physiology

7. The effect of natural selection as a cause of evolutionary changes can be supported by evidence from
A. palaeontology.
B. comparative embryology.
C. comparative biochemistry.
D. animal breeding.

8. The evolutionary process that allows survival of well adapted and successfully reproducing individuals is called
A. natural selection.
B. random selection.
C. differentiation.
D. co-evolution.

9. Assume the climate in a certain region gradually became hotter and hotter. Foxes living in this area with thin fur survived better than those which had thick fur that were also severely affected by the heat. Through time, the population was dominated by individuals with thin fur. What was the type of selection that has been operating on this population of foxes?
A. Normalizing
B. Stabilizing
C. Directional
D. Disruptive

10. Regarding human evolution, which hominid was unable to run faster and small brain size as compared to the others?
A. *Home sapiens*
B. *Home neanderthalensis*
C. *Home erectus*
D. *Homo hablis*

11. Identify the shape of bacterium which correctly matches with its example?
A. Bacilli - Borrelia
B. Spiral - Treponema
C. Rod shaped - Streptococcus
D. Spherical - Lactobacillus

12. Assume you are attempting to distinguish gram-negative and gram-positive bacteria using the Gram's staining procedure. At which step of the procedure do you expect purple and pink pigmentation of the gram-positive and gram-negative bacteria respectively?

A. Crystal violet staining
B. Iodine treatment
C. Decolorisation
D. Counter staining

13. The main importance of bacteria in recycling of nutrients is their role in

A. sewage treatment.
B. industrial production.
C. energy transduction.
D. ecosystem functions.

14. What is the main mechanism of disease causing by infectious bacteria? It is through

A. digesting substances in tissues.
B. releasing toxins.
C. disrupting metabolic systems.
D. destroying cells.

15. Which type of industrial production used a culture of special bacterium called *Acetobacter*?

A. Yoghurt production
B. Vinegar production
C. Antibiotic production
D. Beer production

16. If a phagocytic white blood cell is unable to digest bacteria that have been engulfed, which organelles could be failed to do this function?

A. Lysosomes
B. Ribosomes
C. Endoplasmic reticulum
D. Golgi body

17. Which of the following is correct if a molecule is transported across the plasma membrane using active transport involving a carrier protein? The molecule is

A. polar.
B. small size.
C. non - charged.
D. lipid soluble.

18. A student was doing a demonstration to show how water is transported across a semi-permeable membrane. He used a thistle funnel with cellophane to act as the cell membrane. The funnel was filled at different points with 0.2 M, 0.4M, 0.6 M and 0.8 M sucrose solution and immersed in distilled water. At which concentration do you expect the thistle funnel volume will be the highest?

A. 0.6 M
B. 0.4 M
C. 0.8 M
D. 0.2 M

19. Assume you wanted to demonstrate osmosis across a semi-permeable membrane. If you prepare two solutions I and II with 5% and 10% concentration respectively separated by a membrane and left for 1 hour, what results do you expect to show the occurrence of osmosis?

A. Concentration of solution II
B. Dilution of solution II
C. Gain of water by Solution I
D. Dilution of solution I

20. Which of the following is the correct composition of ATP?

A. Adenine, pentose sugar and three phosphate groups
B. Thymine, hexose sugar and two phosphate groups
C. Thymine, pentose sugar and two phosphate groups
D. Adenine, hexose sugar and three phosphate groups

21. What is the ratio of individuals showing both dominant phenotypes resulting from a dihybrid cross of heterozygote pea plants with yellow and round seeds?

A. 12:16
B. 3:16
C. 9:16
D. 1:16

22. Which of the following correctly describes the structure of chromosome? It is a

A. naked DNA that is loosely organized.
B. complex of DNA and histone proteins that is loosely organized.
C. complex of DNA and histone proteins that is densely organized.
D. naked DNA that is densely organized.

23. During cloning of animals such as the famous sheep Dolly,
A. the enucleated egg is stimulated to divide by hormone treatment.
B. somatic cell nucleus from nuclear donor is inserted into enucleated egg of cytoplasmic donor. t
C. he embryonic development starts right after the enucleated cell is implanted.
D. nucleus from an egg cell is inserted into enucleated somatic cell.

24. Which of the following is correct about transcription?
A. Only the antisense strand is transcribed.
B. Both the antisense and sense strands are transcribed.
C. The resulting mRNA will have longer chain than the coding gene.
D. DNA polymerase is used to catalyse the process.

25. Individual traits such as height, eye color and metabolic efficiency are determined by the type of
A. vitamins.
B. lipids.
C. proteins.
D. carbohydrates.

26. A biome characterized by its frozen soil, cold temperature, dry precipitation and inhabited by lichens and migrating animals?
A. Thorn forest
B. Hot Desert
C. Boreal forest
D. Tundra

27. According to the Millennium Assessment (MA) findings, biodiversity loss contributes to "*Increasing vulnerability*". This refers to
A. loss of cultural and religious values that are attached to biodiversity.
B. aggravated natural disasters such as flooding due to loss of trees.
C. wide-spread health problems due to lack of medicinal resources.
D. famine and starvation due to loss of biodiversity.

28. How does agriculture decrease biodiversity? By
A. reducing diversity of insect pollinators
B. reducing nitrogen content of the soil
C. promoting the growth of shrubby and thorny species
D. allowing a single species to dominate.

29. Which of the following is a recommended principle of conservation?
A. Protection of individual species should be given priority than conserving their habitat.
B. It is always better to assist ecosystems to recover than to replace them entirely.
C. Small areas should be given equal conservation priority as large areas with similar habitats.
D. The use of natural resources should be avoided as much as possible.

30. What was the population growth control policy used by the USA?
A. Banning the birth of more than one child per family
B. Reserving job opportunities only for those who have one children
C. Compulsory contraception use training before marriage
D. Availability of contraception for free

31. Which one of the following is correct about the evolution and racial divisions of current humans?
A. Human races are unlikely to evolve into separate species due to their creative brain that modifies the environment.
B. Reproductive isolation of human races is expected to lead to speciation.
C. The classification of humans into different races has no genetic basis.
D. They are under continuous selection pressure and expected to evolve into different species.

32. Which of the following is the most accurate definition of behavior? It is
A. the coordinated response of an organism to a stimuli.
B. the way of acting during eating, drinking or mating.
C. a movement of an organism in any situation.
D. an observable response organisms make to any situation.

33. All are the common advantages of studying animal behavior **EXCEPT**
A. improving conditions for breeding of endangered species.
B. avoiding race and ethnic interactions.
C. providing early clues of environmental damage.
D. understanding of social bonding in human societies.

34. Which one of the following activities is categorized in innate behavior?
A. Avoiding contact after a harmful experience
B. Nest building by birds
C. Pressing a button to get a reward by a mouse
D. Dog salivating to the sound of a bell

35. Which types of reflexes are used for protective actions such as withdrawal from heat?
A. Parasympathetic
B. Sympathetic
C. Somatic
D. Autonomic

36. Mutations become more serious and threatening if they occur on genes that regulate
A. lactose metabolism.
B. fatty acid metabolism.
C. hair growth.
D. cell division.

37. Frameshift mutations are those that occur due to
A. substitution or deletion.
B. duplication.
C. addition or deletion.
D. inversion.

38. The origin of life proposed by Oparin and Haldane makes the assumption that the primitive Earth had
A. low moisture.
B. reducing atmosphere.
C. cooler temperature.
D. oxygen rich atmosphere.

39. Which theory proposes the origin of life to be from resistant spores landing on Earth from outer space?
A. Cosmozoan
B. Eternity of life
C. Spontaneous generation
D. Biochemical

40. Which one of the following forms the basis of Darwin's theory of evolution?
A. Individuals of the same species cooperate for co-survival.
B. Acquired characters are inherited by descendants.
C. Varieties that have low reproductive success are eliminated.
D. The frequent use of body parts leads to perfection.

41. If a population showed no change and remained constant, which of the following is the most likely scenario taking place?
    A. Natality is equal to mortality.
    B. Mortality is equal to immigration.
    C. There is no emigration.
    D. There is no natality.

42. Which one of the following is true about arithmetic and exponential growth rates?
    A. In exponential growth, the population increases beyond the carrying capacity.
    B. In arithmetic growth, a uniform rate of growth over the time period is produced.
    C. In arithmetic growth, the population doubles in each time period.
    D. In exponential growth, the numbers increase by the same fixed amount in each time period.

43. Which of the following is correct about the events that take place during the different stages of meiosis?
    A. The final segregation of a chromosome pair with another at meiosis II.
    B. Sister chromatids become genetically different due to crossing over at meiosis I.
    C. Homologous chromosomes end up in the same cell at the end of Meiosis II.
    D. Four daughter cells are produced at the end of Meiosis I.

44. The allele for baldness is found on somatic chromosomes. But it is more expressed in males than females. Consequently, it is taken as
    A. sex-restricted.
    B. sex-limited.
    C. sex-linked.
    D. sex-influenced.

45. What is the total variety of gametes that can be produced by a heterozygote garden pea plant for two traits, seed color and seed shape? (Assume: the genes are linked).
    A. 2
    B. 1
    C. 6
    D. 4

46. Which one of the following behaviors is learnt behavior?
A. Weaving a web by a spider
B. Blinking of the eye to avoid danger
C. Salivation on the sound of a bell
D. Kineses and taxes in simple animals

47. Which type of learnt behavior is developed after a repeated exposure to a stimulus?
A. Insight
B. Sensitization
C. Latent
D. Habituation

48. Which of the following is a correct comparison of innate and learned behavior?
A. Learned behavior is uniform among individuals while innate behaviors are functional at the first time it is used.
B. Both are adaptive and retained as a result of positive selection pressure.
C. Innate behavior is fixed while learned behavior is modifiable.
D. Both are genetically predetermined and common to all members of a species.

49. Which type of behavioral pattern frequently involves ritual fighting?
A. Mating
B. Territorial
C. Social
D. Courtship

50. Aggregation of a large number of penguins staying close to each other to conserve heat can be an example of a
A. defense behavior.
B. courtship behavior.
C. mating behavior.
D. social behavior.

51. Which of the following is correct about the structural levels of protein molecules? The
A. primary structure is formed by hydrogen bonds.
B. tertiary structure is formed by disulfide bridges.
C. secondary structure is formed by an ionic bond.
D. quaternary structure is formed from ester bonds.

52. Which groups of lipids are bipolar due to the presence of hydrophilic and hydrophobic regions?
A. Phospholipids
B. Steroids
C. Triglycerides
D. Waxes

53. How do you differentiate a Benedict's test for reducing and non-reducing sugar? When the sample is directly tested, the non-reducing sugar
A. acts as reducing agents in alkaline solution.
B. reduces copper (II) ions to copper (I) ions.
C. uses highly concentrated reagent.
D. gives a negative result.

54. A student wanted to test the presence of biological organic molecules in an unknown solution. She took samples from the solution in four separate test tubes, I, II, III, and IV. Then she conducted Benedict's test, Iodine test, Biuret test and Emulsion test respectively. At the end of the test she observed the following:
I=Red color, II=Yellow color, III=Purple color, IV=Dissolved solution

Based on the results obtained, the student can conclude that the unknown solution contains
A. reducing sugar and protein.
B. protein and lipid.
C. reducing sugar and starch.
D. non-reducing sugar and protein.

55. Which one of the following is **INCORRECT** about the properties of enzymes? They are
A. all proteins in their molecular nature.
B. functional under wide range of pH and temperature.
C. not changed during the reaction process.
D. specific in the type of substrate they act on.

56. Which homeostasis process of humans is directly related with the vaporization property of water?
A. Waste excretion
B. Balancing of fat
C. Control of sugar level
D. Temperature regulation

57. This item is based on the following list of biochemical molecules.

1. Carbon dioxide
2. Glycine
3. Calcium carbonate
4. Linoleic acid
5. Water
6. Lactic acid

From the above list, which numbers indicate only organic molecules?

A. 2, 4 and 6
B. 1, 3 and 4
C. 4, 5 and 6
D. 1, 2 and 3

58. Water has high surface tension that results from the

A. low density of water as a liquid than it is as a solid.
B. pulling force of hydrogen bonds is strongest at the surface.
C. low viscosity of water at its surface.
D. hydrogen bonding of water molecules from all directions.

59. This item is based on the following list of the importance of organic molecules.

- Membrane channels
- Thermal insulation
- Energy storage

Which of the following list of organic molecules correctly matches the above functions respectively?

A. Proteins, lipids, carbohydrates
B. Lipids, proteins, carbohydrates
C. Proteins, carbohydrates, lipids
D. Carbohydrates, lipids, proteins

60. Which one of the following monosaccharides can be formed when maltose is hydrolysed?

A. $C_6H_{12}O_6$ and $C_3H_6O_3$
B. $C_5H_{10}O_5$ and $C_3H_6O_3$
C. $2C_6H_{12}O_6$
D. $2C_5H_{10}O_5$

61. Science is a method of acquiring knowledge and understanding nature through

A. religion and belief.
B. conducting experiments.
C. formulating opinions.
D. reasonable guessing.

62. This item is based on the following observations, hypothesis and procedures written on a student note book.

I. Some plants in a maize farm showed wilting.
II. Two groups of maize plants were set aside; one was treated with fungicide and another left untreated.
III. The wilt might be caused by fungal infection.
IV. Treated plants recovered from the wilt while untreated ones didn't.

According to the steps of the scientific method, which of the above notes is correctly ordered?

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

63. Assume you wanted to test the effectiveness of three types of soil fertilizers using plants which are separately grown in a pot. Which one of the following treatments can be considered as the correct application of the scientific method?

A. Adding the same amount of each fertilizer in separate pots
B. Mixing different amounts of all fertilizers and adding to each pot
C. Adding different amounts of each fertilizer in separate pots
D. Mixing the same amounts of all fertilizers and adding to each pot

64. Which of the following are commonly used tools in a biology laboratory?

A. Caliper and resistor
B. Ruler and protractor
C. Balance and centrifuge
D. Photometer and electrode

65. Which biological tool uses satellite signals to record the location of a given area?

A. Flow meter
B. Global positioning system
C. Theodolite
D. Data logger

66. Measurement of an enzyme catalyzed reaction rate indicated that the reaction is proceeding at a slower rate than expected. No enzyme denaturation and shortage of reactants was observed. What could be the most probable factor that has been affecting the rate of this reaction?

A. Reversible inhibitor
B. Irreversible inhibitors
C. Extreme pH
D. High temperature

67. Which of the following is correct about feedback regulation of enzyme activity? The first enzyme is inhibited by the final product
A. which binds on the active site.
B. which binds to the allosteric site.
C. irrespective of product concentration.
D. that alters the charge in the active site.

68. Significant change in pH affects enzymatic activity by
A. decreasing the number of substrates in the reaction process.
B. altering the charge on amino acids away from the active sites.
C. strengthening ionic bonds that hold the tertiary structure in place.
D. altering the charge on some of the amino acids that form the active sites.

69. A student was attempting to demonstrate the effect of substrate concentration on the rate of reaction using the enzyme catalase and its substrate hydrogen peroxide. She increased the substrate concentration in a stepwise manner while maintaining enzyme concentration constant and recorded the rate. Accordingly, what pattern of reaction rate is expected to be observed?
A. Sharp increase at the beginning and a constant maximum rate when substrate concentration becomes excess.
B. Sharp increase at the beginning and a decline when the substrate concentration becomes excess.
C. Constant rate at all points of substrate concentration.
D. Constant rate at the beginning and a sharp increase when substrate concentration becomes excess.

70. Which one of the following statements is **NOT** a part of the cell theory?
A. All cells come from pre-existing cells.
B. All cells have basically different chemical composition.
C. Organisms are made of one or more cells.
D. The cell is the basic structural unit of all organisms.

71. The structural characteristics of photosystems is known to be suitable for their function, because they are found closely associated with the
A. outer membrane.
B. electron transport chain.
C. inner membrane.
D. stroma.

72. Which of the following is correct about the Calvin cycle and glucose production by the light independent reactions?
A. GP reacts with CO_2 to produce TP.
B. Two TP are used to produce one glucose.
C. RuBP is reduced by NADPH.
D. GP is produced before CO_2 fixation.

73. If the initial reaction with RuBP of the Calvin cycle is negatively affected, which factor might be taken as a direct cause of this?
A. Dehydration
B. Temperature
C. CO_2 concentration
D. Light intensity

74. Which one of the following is **INCORRECT** about photorespiration? It is a phenomena that
A. occurs due to cold temperature conditions.
B. results from reaction of O_2 with RuBP.
C. is common in hot and dry environments.
D. occurs due to shortage of CO_2.

75. C4 plants are different from C3 plants in that they
A. work best at lower temperature between 15- 25 °C.
B. have chloroplasts with no thylakoids.
C. conduct the Calvin cycle in mesophyll cells.
D. don't need Rubisco enzyme.

76. Traditional fermentation products such as 'Tella' and 'Injera', and modern industrial products such as detergents and textiles generally would not have been possible without the use of
A. metallic cofactors.
B. inorganic catalysts.
C. organic acids.
D. enzymes.

77. Cellular respiration takes place through completion of several reaction steps that involve transfer of hydrogen and oxygen atoms or electrons from one substrate to another. Which groups of enzymes must be involved to catalyze these reactions?
A. Hydrolases
B. Lyases
C. Oxidoreductases
D. Transferases

78. Which one of the following statements is correct about the mechanism of action of enzymes? The
A. induced-fit model explains how activation energy is reduced by formation of the transition state.
B. lock-and-key model is less specific in terms of the range of substrates that can bind to an enzyme.
C. lock-and-key model proposes the binding of substrate molecules produce change of shape in the active site.
D. induced-fit model doesn't explain how the activation energy is reduced.

79. Which of the following is correct about apoenzymes and cofactors?
A. Most apoenzymes end up being incorporated in the product molecule.
B. Enzymes that have cofactors can function only if they exist as holoenzymes.
C. The cofactor is usually a protein with low molecular weight.
D. Apoenzymes function without their cofactors but with a lower rate.

80. Which one of the following vitamins is commonly used to make coenzymes?
A. Niacin
B. Tocopherol
C. Calciferol
D. Thiamine

81. Which one of the following matches of a stage of cellular respiration and its location in the cell is correctly paired?
A. Krebs cycle - inner mitochondrial membrane
B. Link reaction - cytoplasm
C. Chemiosmosis - mitochondrial matrix
D. Glycolysis - cytoplasm

82. Use of acetyl-CoA, production of ATP by substrate level phosphorylation and formation of reduced NAD are characteristics of which stage of aerobic respiration?
A. Glycolysis
B. Krebs cycle
C. Link reaction
D. Chemiosmosis

83. What is the main significance of lactate fermentation during short distance race? To
A. produce ATP quickly over a short period of time
B. metabolizes glucose as energy source in the blood
C. convert glucose into lactic acid in the muscle
D. allow aerobic respiration to produce the ATP at its lower rate

84. Suppose 7NADH and 6$FADH_2$ oxidized by NADH dehydrogenase complex and ubiquinone respectively to pump proton down into mitochondrial inner membrane space. Then, how many ATP molecules are generated?
A. 26
B. 33
C. 13
D. 46

85. The light-independent reactions of photosynthesis take place in which part of chloroplasts?
A. Outer membrane
B. Inner membrane
C. Stroma
D. Thylakoid

86. The structure of specimens can be studied after they are freshly collected using a
A. field microscope.
B. data logger.
C. flow meter.
D. theodolite.

87. Grade 11 students were reading chapters of a biology text book on plant adaptation in water, decomposition in bacteria, the causes of breast cancer and biotechnology. These chapters respectively represent the relevance and promises of biology in
A. agricultural production, health, cures for genetic diseases and environmental protection.
B. agricultural production, health, environmental protection and cures for genetic diseases.
C. agricultural production, health, cures for genetic diseases and environmental protection.
D. agricultural production, environmental protection, health, and cures for genetic diseases.

88. Which one of the following may **NOT** be directly linked to application of biology in the fight against HIV/AIDS? The effort to
A. design the mechanisms of protection
B. understand the mechanism of invasion
C. discover a vaccine or a cure
D. provide moral support to patients

89. Which one of the following practices is a part of a responsible community engagement in the fight against HIV/AIDS?
A. Sharing needles only with close friends
B. Maintaining a monogamous relationship
C. Washing hands after shaking HIV positive individuals
D. Avoiding circumcision

90. What is the best practice for youngsters to avoid HIV infection?
A. Having few sexual partners
B. Polygamous relationship
C. Abstinence from sex
D. Use of condoms

91. Identify the lowest level of organization from the following options?
A. Circulatory system
B. Cardiac muscles
C. Blood cells
D. Heart

92. Assume you wanted to estimate the size of cheek cell samples. At the required level of magnification, the field of view was determined using a ruler which was equal to 3 mm. If 10 cheek cells were counted under similar magnification, what is the estimated size of the cells?
A. 330 µm
B. 3.3 µm
C. 300 µm
D. 30 µm

93. Which one of the following cellular structures is common to both eukaryotic and prokaryotic cells?
A. Ribosome
B. Nucleus
C. Chloroplast
D. Mitochondria

94. One of the main functions of the plasma membrane is regulation of
A. cell support.
B. material transport.
C. cell division.
D. protein synthesis.

95. According to the fluid mosaic model of membrane structure
A. the membrane has cholesterol that is responsible for cell recognition.
B. the membrane has peripheral proteins that transport charged particles.
C. different types of proteins are embedded on the phospholipid bilayer.
D. proteins are arranged as a layer over the phospholipid bilayer.

96. What is the role of bacteria in recombinant DNA technology? To
A. serve as a sources of nuclear donor
B. isolate desired genes of interest
C. receive recombinant DNA
D. create recombinant plasmids

97. What are the two main structural components of a virus?
A. Capsid and genetic material
B. Genetic material and lipid membrane
C. Protein shell and lipid membrane
D. Capsid and lipid membrane

98. *Herpes simplex* is a type of
A. bacteriophage.
B. RNA virus.
C. retrovirus.
D. DNA virus.

99. Which class of HIV anti-retroviral drugs binds to T-cells in order to inhibit joining of the virus with its receptor?
A. Non-nucleotide reverse transcriptase inhibitors
B. Nucleotide reverse transcriptase inhibitors
C. Entry inhibitors
D. Protease inhibitors

100. The only common characteristics viruses have with free-living cells is the possession of
A. nucleus.
B. genetic material.
C. plasma membrane.
D. ribosomes.

THE END