ARADA SUB CITY EDUCATTION OFFICE

BIOLOGY MODEL EXAMNATION FOR GRADE 12 STUDENTS IN 2017 E.C

JANURY, 2025

TIME ALLOWED: 2 HOURS

GENERAL DIRECTIONS

IN THIS EXAMINATION, THERE ARE A TOTAL OF **100 MULTIPLE CHOICE** QUESTIONS. CARFULLY SELLECT THE BEST ANSWER AND BLACKEN ONLY THE LETTER OF YOUR CHOICES ON THE SEPARATE ANSWER SHEET PROVIDED. FOLLOW THE INSTRUCTION ON THE ANSWER SHEET AND THE EXAMINATION PAPER CARFULLY. USE ONLY A PENCIL TO MARK YOUR ANSWER. YOUR ANSWER MARK SHOULD BE HEAVY AND DARK, COVERING THE ANSWER SPACE COMPLETELY.

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

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

PLEASE MARK SURE THAT YOU HAVE WRITTEN ALL THE REQUIRED INFORMATION ON THE ANSWER SHEET BEFORE YOU START TO WORK ON THE EXAMINATION.

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

1. The vaccine against terrible cattle disease rind pest was made by _____.
   A. Prof. Beyene Petros
   B. Prof. Tilahun Yilma
   C. Dr. Alipurduar Lemma
   D. Dr. Gebissa Ejetta
2. Which of the following Ethiopian Biologist has been honored by developing high yielding strains of sorghum?
   A. Dr. Tsehaynesh Meselle
   B. Dr. Birhane Asfaw
   C. Dr. Zeresenay Alemseged
   D. Dr. Gebissa Ejetta
3. Ethiopian Biologist who worked on effects of chemical pesticides on human is_____.
   A. Prof. Sebsibie Demisew.
   B. Prof. Legesse Negash
   C. Prof. Yealemtsehay Mekonnen
   D. Prof. Mogessie Ashenafi
4. Ethiopian Biologist who has made a soap berry to eradicate snail which is intermediate host of bilharzia :
   A. Dr. Melaku Werede
   B. Dr. Gebissa Ejetta
   C. Dr. Birhane Asfaw
   D. Dr. Aklilu Lemma
5. Among the following renowned Ethiopian Biologists who discover two 160,000 years old human skulls which have a big impact on the study of human evolution?
   A. Dr. Berhane Asfaw
   B. Dr. Tsehaynesh Meselle
   C. Dr. Zeresenay Alemsged
   D. Dr. Melaku Werede
6. All are the major research areas of EHNRI **except**
   A. HIV vaccine trial
   B. Forestry
   C. Battle against TB
   D. Nutritional state of mothers and baby
7. Ethiopian Biological research center which is involved in mechanized farming is:
   A. EIAR B. ALIPB C. AHRI D. IBC
8. Ethiopian Biological research center which is highly devoted on research related to Leprosy is:
   A. IAR B. AHRI C. IBC D. EHNRI
9. Among the following institutes which one is working on the management of the ecosystem?
   A. ALIPB
   B. EHNRI
   C. IBC
   D. EIAR
10. The resolution power of a microscope used to:
   A. Show objects clearly
   B. Increase the size of objects
   C. Make objects brighter
   D. Make objects look smaller

11. Preparation of specimen to see under the microscope is known as _____.

A. Resolution B Mounting C. Staining D. Magnification

12. Cells that are adapted to carry out a particular body function are:

A. Embryonic stem cells
C. Specialized cells
B. Undifferentiated cells
D. Unspecialized cells

13. A cell with a large number of mitochondria is expected to:

A. Produce more digestive enzymes.
C. Store more food
B. Perform a lot of photosynthesis
D. Make a lot of ATP

14. Which of the following structures of the cell are involved in the synthesis of protein?

A. Chloroplast B. Ribosome C. Golgi body D. Vacuole

15. Which of the following organelle is the site of photosynthesis?

A. Lysosome
C. Chloroplast
B. Centriole
D. Leucoplast

16. The movement of water molecules from a region of high concentration to low concentration is

A. Osmosis
C. Diffusion
B. Passive transport
D. Active transport

17. Which of the following is true about rate of diffusion?

A. Diffusion increases when the temperature decreases
B. Diffusion increases when the temperature increases
C. Diffusion decreases when there is very high concentration difference between two areas
D. Diffusion increases when there is very low concentration difference between two areas

18. The movement of substances from the region of higher concentration to lower concentration along concentration gradient is called _____.

A. Active transport
C. Passive transport
B. Osmosis
D. Diffusion

19. If an animal cell is put in concentrated salt solution which of the following event will happen?

A. The cell became plasmolysis
C. The cell became shrunk
B. Water moves in to the cell
D. Salt moves into the cell

20. The most common monomer of carbohydrate is a molecule of_____?

A. Phospholipids
C. Glucose
B. Fatty acids
D. Triglycerides

21. When 50 amino acids joined together through condensation reaction, how many peptide bonds are formed and water molecules are released respectively?

A. 48, 50 B. 49, 49 C. 50, 49 D. 49, 50

22. Unsaturated fatty acids are differ from saturated fatty acids **except**_____

A. They have all single bonds
B. They have one or more double bonds
C. They are more common in plants
D. They are liquids at room temperature

23. Which of the following minerals is important constituent of bone and teeth needed for many metabolic processes?

A. Iron B. Calcium C. Sodium D. Phosphorus

24. One of the following vitamins is needed for the formation of connective tissues which holds the body together?

A. Vitamin B_1 B. Vitamin A C. Vitamin C D. Vitamin D

25. Water is crucial in human body for a number of reasons. Which one is **not correct** about their functions?

A. It is a universal solvent in any environment
B. It is involved in the transport of substance around the body
C. It is involved in temperature regulation by lose of heat through sweating
D. It is not involved in any chemical reaction which take place in the body

26. Which one of the following is **not** the part of a balanced diet?

A. Proteins. B. Lipids. C. Cellulose D. Carbohydrate

27. Which one of the following is orders of digestive system that **correctly** illustrates from the beginning to the end

A. Ingestion→digestion→absorption→assimilation→egestion
B. Digestion→absorption→assimilation→egestion→ingestion
C. Assimilation→egestion→absorption→ingestion→digestion
D. Egestion→assimilation→ingestion→absorption→digestion

28. In grade 9 laboratory class, the teacher gives the students a sampler of food and asked them to investigate the presence of glucose. What kind of **test** and **result** will enable the students to confirm the presence of glucose respectively?

A. Benedict's test and orange colour
B. Biuret test and purple colour
C. Emulsion test and milky white colour
D. Iodine test and blue black colour

29. Which of the following factor affecting enzyme activity without denaturing the enzyme molecule?
    A. Low pH
    C. Low temperature
    B. High temperature
    D. High pH
30. The shapes of different teeth in humans are ideally suited to their various functions. Which type of teeth is not correctly matched with their functions?
    A. Premolars→chewing food
    C. Morals→crushing food
    B. Canines→chewing food
    D. Incisors→biting food
31. In a Benedict's test for sucrose, why does the test sample first boil with hydrochloric acid?
    A. To reduce Benedict's solution
    C. To neutralize the solution
    B. Retest mixture with Benedict solution
    D. To hydrolyze non-reducing sugar
32. Which deficient nutrients are correctly paired with their deficiency diseases?
    A. Protein→Scurvy
    C. Carbohydrate→Beri-beri
    B. Iron→Marasmus
    D. Vitamin A→Night blindness
33. When you breathe out during gas exchange, all of the following happens to the breathing movement **except?**
    A. The volume of the thorax decrease
    C. Diaphragm moves up ward
    B. Pressure inside chest cavity decreases
    D. Pressure inside chest cavity increases
34. The muscle that separate the chest cavity from the abdominal cavity is known as _____
    A. Nasal cavity
    C. Diaphragm
    B. Trachoma
    D. Epiglottis
35. Which of the following is the correct path way of breathing from the outer to the inner parts?
    A. Nasal cavity→trachea→bronchus→bronchioles→alveolus
    B. Alveolus→bronchus→bronchioles→trachea→nasal cavity
    C. Alveolus→bronchioles→bronchus→trachea→nasal cavity
    D. Nasal cavity→alveolus→bronchus→trachea→bronchioles
36. While oxygen is carried by the red blood cells, most digested food and wastes are carried by the
    A. Plasma
    C. Platelets
    B. White blood cells
    D. Red blood cells
37. The absolute maximum amount of air you can take into or breathe out of your lungs is called
    A. Tidal volume
    C. Residual volume
    B. Vital capacity
    D. Breathing hygiene

38. Which of the following products are formed during anaerobic respiration of one glucose molecule in animal cells?
    A. Ethanol, NAD, 2ATP
    B. Lactic acid, CO_2, 2ATP
    C. Alcohol, ADP, 2ATP
    D. Lactic acid, O_2, CO_2
39. Which of the following is the types of blood vessels that carries deoxygenated blood from the heart to lungs is called_____
    A. Systematic circulation
    B. Pulmonary vein
    C. Pulmonary circulation
    D. Pulmonary artery
40. The right side chamber valve which directs the flow of blood by opening and closing is called____
    A. Bicuspid valve
    B. Tricuspid valve
    C. Mitral valve
    D. Vena cava
41. Which one of the following statement is **true** about pulmonary circulation?
    A. Blood flows from the heart to all around the body and back again
    B. Carry only oxygenated blood from the body
    C. Blood flows from the heart to lungs and back again
    D. It transport oxygenated blood from the heart and back again
42. Which organic molecule in our body has functions as antigens & antibodies of immune system?
    A. Lipids B. Nucleic acids C. Proteins D. Carbohydrates
43. The blood group of human being which is commonly referred to as "**universal acceptor**" is
    A. Blood group AB
    B. Blood group O
    C. Blood group A
    D. Blood group B
44. All of the following factors that can be increases the risks of developing hypertension **except**?
    A. Reducing salt intake
    B. Excessive consumption of alcohol
    C. Increasing age
    D. Sedentary lifestyle
45. The modern technological instruments are learnt from nature by the process of____
    A. Sketching
    B. Imitating
    C. Photographing
    D. Drawing
46. The relevance and promise of biology as a field of science can be best explained by its application
    A. Economic growth and urbanization
    B. Reducing security problems
    C. Oil and mineral production
    D. Agriculture and genetic engineering

47. Among the following which one is **incorrect** statement about the importance of nature for imitating technological products?
    A. It is the sources of materials that enable to imitating
    B. Used to develop modern technologies that provide services
    C. Used to develop knowledge of problem solving ability
    D. To provide limited resources and techniques for society
48. Which technological products have been made through imitation of termite mound architecture?
    A. Weaving technology
    B. New drone design
    C. Building technology
    D. Techniques of preserving vaccine
49. Which one of the following are the impact of biology on society and natural world **except?**
    A. Ensuring food security by increasing productivity
    B. Lack of involvement in application of microbial action
    C. Production of antibiotics and treatment for bacterial infection
    D. Achieving better supply of energy and clean water
50. Among which explanation is **correctly** concerned about ethical issue in biology?
    A. It refers about rightness or wrongness use of biological discoveries
    B. Concerned about only ethical treatment of plant species
    C. Encourage issues about wrongly uses of technology against human
    D. Focus on encouraging unethical treatment of research animals
51. Which common characteristics of animals that have balanced arrangement of body parts around a central point or axis?
    A. Multicellularity B. Motility C. Sensitivity D. Body symmetry
52. Which one of the following is the common characteristic of invertebrate animals?
    A. They have closed circulatory system
    B. They have an exoskeleton animals
    C. They are warm-blood animals
    D. They possess a backbone and internal skeleton
53. The form of animal fertilization which young develop within the female by receiving nourishment from mother's blood through placenta is
    A. Viviparity B. Oviparity C. Oviparity D. Viparity

54. During reproduction, some individual insects are develop from unfertilized eggs by the process of

A. Organogenesis. B. Parthenogenesis C. Metamorphosis D. Gastrulating

55. Among which of the following organisms reproduce by external fertilization?

A. Birds B. Rats C. Crocodiles D. Frogs

56. Why temperature is the environmental factors that determine sex during incubation of crocodiles?

A. They have chromosomes C. They do not have chromosomes

B. They can reproduce by asexually D. They have amniotic eggs

57. Which mating system of birds those involve with two or more members of the opposite sex during a reproductive season?

A. Polygyny B. Polygamy C. Monogamy D. Polyandry

58. Which developmental processes of germ layers later develop into organs and organ system?

A. Organogenesis B. Cleavage C. Blastula D. Partinogenesis

59. All of the following are considered as a beneficial aspects of insects **except?**

A. Effective pollinators C. Biological control agents

B. Sources of useful product and protein D. Non -edible type of animals

60. Which one of the following is **true** about harmful aspect of insect in agriculture?

A. Damaging crops and reducing production

B. Used as pollinators in crop reproduction

C. Production of various medicines

D. Production of cosmetics and dyes

61. 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. Conditioning B. Reflex C. Imprinting D. Habituation

62. The Ethiopian wolf lives and hunt in packs. During patrolling their habit, both male and female wolves of the group maintain their area with urine containing pheromone. This pattern of behavior is an example of

A. Operant behavior C. Learned behavior

B. Territorial behavior D. Courtship behavior

63. A quick withdrawal of your hand from a hot plate is an example of

A. Learned behavior B. Biological clock C. Key stimulant D. Innate behavior

64. An increase in blood sugar level causes the pancreases to release of the hormone insulin; insulin lowers blood sugar level, restoring the body to its original blood glucose level by converting glucose to glycogen. This is an example of

A. Positive feedback mechanism
C. Neutral feedback mechanism
B. Negative feedback mechanism
D. Homeostatic imbalance

65. Which one of the following statement explains the specificity of enzymes?

A. It can be destroyed by excessive heat
B. It can be used over and over again
C. It catalyze one reaction only
D. Speed up a reaction without being used up

66. Which protein structures have three-dimensional arrangement and unique shape of all amino acids in a single polypeptide chain?

A. Quaternary structure
C. Tertiary structure
B. Primary structure
D. Secondary structure

67. Which enzyme-substrate model that shows a change in shape of active site of an enzyme?

A. Lock and key model
C. Allostric enzyme
B. Induced-fit model
D. Regulatory enzyme

68. The type of inhibitor that blocks the binding of the substrate to the active site by competition is

A. Non-competitive inhibitor
C. Uncompetitive inhibitor
B. Competitive inhibitor
D. Irreversible inhibitor

69. If an enzyme depends on a cofactor for its activity, then the enzyme become active and functional when it is found in the form of

A. Holoenzyme B. Coenzyme C. Apoenzyme D. Mineral ion

70. Which of the following is **true** about feedback inhibition?

A. The end product binds to the active site of enzyme
B. The end product binds to the allosteric site of enzyme
C. The shape of the active site is not changed
D. It cannot prevent enzyme performance activity

71. Which commercial fermentation uses of enzyme that is important for clarification of fruit juices?

A. Lipases B. Amylases C. Protease D. Pectinases

72. Which type organic molecules that are mainly derived from vitamins?

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

73. In an enzyme catalyzed reaction, the substance that is used again and again is

A. An enzyme C. The product

B. The substrate D. The enzyme-product complex

74. The process of heating treatment of germinated grain to dry the green malt and prevent from further germination is known as

A. Steeping B. Kilning C. Germinating D. Malting

75. Which one of the following involves cutting back the shoots of plants to about 10-15 cm above the ground and allowing the stumps to regrow and Produce more branches?

A. Sawing B. Grafting C. Coppicing D. Cloning

76. The first vitamin Produced by the fermentation process of bacteria was _____.

A. Vitamin K B. Vitamin D C. Vitamin B D. Vitamin C

77. The state in which all people have physical, social and economical access to sufficient, safe and nutritious food is. A. Food security B. Nutrition security C. Nutrition science D. Balanced diet

78. Recently discovered biosensor can detect all except

A. Pathogens B. Herbicides C. Lactic acid D. Toxins

79. All are correct about genetic fingerprinting **except**

A. It is based on RNA analysis

B. It is unique to individuals except identical twins

C. It is made by gel electrophoresis in the PCR machine

D. It is used for crime investigation

80. Which one of the following is the characteristic of bacteria?

A. Their DNA is contained within the Cytoplasm of the cell

B. They are larger than eukaryotic cell.

C. They have membrane enclosed organelle.

D. They have cell wall made up of lipoprotein.

81. Which one of the following archea can live in extremely hot temperature?

A. Acidophiles C. Psychrophiles

B. Hyperthermopiles D. Psychrotrophs

82. Which one of the following fungi has been used as a test in organisms to determine Mg, Cu, Zn and MO in the soil?

A. Aspergillus flavus
C. Claviceps perpurea
B. Aspergillus parasitic
D. Aspergillus niger

83. Which one of the following protozoa causes changes disease?

A. Trypanosoma cruzi
C. C. Toxoplasma gondii
B. B. Trypanosoma brucei
D. D. Plasmodium falciparum

84. All are correct about lysogenic cycle **except**

A. DNA of the virus integrates in to the host DNA
B. DNA of the virus doesn't integrate in to the host DNA
C. May or may not kill the host cell
D. It takes time

85. Which one is the viral symmetry refers to the shape with 20 triangular faces and 12 corners?

A. Complex B. Helical C. Icosahedral D. Cylindrical

86. Which of the following soil bacteria produce powerful protein toxin that used to kill insect pests?

A. Metarhizium anisophle
C. Beaveria bassinet
B. Verticillum lecanni
D. Bacillus thuringinesis

87. All are correct about catabolism **except**

A. It occurs during cellular respiration
C. It is destructive phase of metabolism.
B. It is energy releasing reaction.
D. It is energy absorbing reaction.

88. Where the light-independent stage of photosynthesis is does take place?

A. Grana B. Thylakoids C. Lamina D. Stroma

89. Which one of the following photosynthetic pigments absorbs mostly blue and yellow light?

A. Chlorophyll "b" B. Chlorophyll "c" C. Chlorophyll "a" D. Carotenoids

90. Which one of the following photosynthetic pigments found only in the photosynthetic members of Chromista and Dinoflagellates?

A. Chlorophyll "a" B. Chlorophyll "c" C. Carotenoids D. Phycobilins

91. All are correct about photosystem II **except**

A. Consists of a pair of Chlorophyll "a" molecules with an absorption peak at 700nm
B. Consists of a pair of Chlorophyll "a " molecules with an absorption peak at 680 nm
C. It passes its electrons to photosystem I
D. It replenishes its lost electrons from photolysis of water

92. Which one of the following is incorrect about light independent reaction?

A. It is purely enzymatic

B. It is slower than the light reaction

C. It is the first step in the mechanism of photosynthesis

D. It is the second step in the mechanism of photosynthesis

93. Which one of the following processes occurs during light independent reaction of photosynthesis?

A. Change solar energy to chemical energy

B. Carbon Fixation

C. Splitting of water molecules

D. Reduced NADP to NADPH

94. The first stage of cellular respiration that takes place in the absence of oxygen is called _____.

A. Krebs cycle C. Link reaction

B. Electron transport chain D. Glycolysis

95. The amount of net ATP that glycolysis provides to a cell is:

A. 38 B. 2 C. 36. D. 4

96. 96) In the mitochondrial matrix pyruvic acid reacts with a molecule of coenzyme A to form

A. Ethyl alcohol B. Lactic acid C. Acetyl coA D. NAD

97. A biochemical pathway that breaks down Acetyl CoA is_____.

A. Krebs cycle B. Pyruvate oxidation C. Link reaction D. Glycolysis

98. The final electron acceptor in the electron transport chain is _____.

A. Water B. Oxygen C. ATP D. ADP

99. The electron transport chain and the enzyme ATP synthase are embedded in the

A. Thylakoid membrane B. Grana C. Stroma D. Cristae

100. All of the following occurs during Lactic acid fermentation **except?**

A. Releasing of ethyl alcohol

B. Lactic acid accumulates in muscle cells

C. Liver converts Lactic acid to pyruvic acid

D. NADH oxidized

THE END