CHERCHER SECONDARY SCHOOL
BIOLOGY MODEL EXAM FOR GRADE 12, 2016 E.C.

NUMBER OF QUESTIONS: 124 **TIME ALLOWED: 2:00**

DIRECTION : READ EACH QUESTION CAREFULLY THEN CHOOSE THE BEST ANSWER FROM THE GIVEN ALTERNATIVES AND WRITE YOUR CHOICE ANSWER ON YOUR SEPARATE ANSWER SHEET.

1. What is Dr. Tewolde Berhan Gebre Egziabher primarily known for?
A. He developed biological control methods for combating mosquito larvae.
B. He developed sorghum varieties that are drought-tolerant and resistant to Striga.
C. He contributed to biodiversity conservation and sustainable development in Ethiopia.
D. He discovered the remains of a 3.3 million years old Australopithecus afarensis child.

2. What was the initial focus of research at the Armourer Hansen Research Institute (AHRI) when it was established in 1969?
A. Malaria **B.** Leprosy **C.** Tuberculosis **D.** HIV/AIDS

3. Electron microscopes are able to distinguish between two points just a few nanometers apart. This ability of electron microscope is called
A. Staining **B.** Magnification **C.** Resolving power **D.** Resolution

4. Why we need to staining a cell specimen before looking under a light microscope? Because stain used to:
A. protect the cells from decay. **C.** clean the eyepiece and objective lenses.
B. remove undesired contaminants from the sample. **D.** make it easier to see particular cells, or parts of a cell.

5. All of these cells are specialised human cells **EXCEPT:**
A. Embryonic stem cells **B.** Sperm cells **C.** Epithelial cells **D.** Nerve cells

6. Suppose a RBC having an internal salt concentration of 10% was immersed in 90% containing salt solution. Then what would happen within this cell?
A. The cell loses water by osmosis and shrink. **C.** The cell takes in water by osmosis, swell and become turgid.
B. The cells lose water by osmosis and burst. **D.** The cell takes in water by osmosis, swell and burst.

7. Which double sugar is formed by a molecule of glucose joining with a molecule of fructose?
A. Sucrose **B.** Maltose **C.** Lactose **D.** Glycogen

8. Which of the following tests is used to detect the presence of reducing sugars?
A. Iodine test **B.** Benedict's test **C.** Biuret test **D.** Emulsion test

9. After water, which substance makes up the second-highest percentage of the human body?
A. Lipids **B.** Protein **C.** Carbohydrates **D.** Minerals

10. Which of the following conditions is characterized by severe protein deficiency?
A. Scurvy **B.** Marasmus **C.** Kwashiorkor **D.** Rickets

11. All of the following describes the function of lipids in our body **EXCEPT:**
A. Structural component of cell membrane **C.** Energy storage molecules
B. Thermal insulation **D.** Catalyse biochemical reaction

12. Palmitic acid is a straight-chain, 16-carbon fatty acid with no double bonds between carbon atoms. Which term accurately describes this fatty acid?
A. Trans fatty acid **C.** Saturated fatty acid
B. Polyunsaturated fatty acid **D.** Monounsaturated fatty acid

13. Which structure begins the process of digestion by both mechanical and chemical means?
A. Stomach **B.** Esophagus **C.** Mouth **D.** Small intestine

14. Which part of the small intestine receives pancreatic juices and bile to aid in digestion?
A. Duodenum **B.** Jejunum **C.** Ileum **D.** Colon

15. Which structure of the lungs has a thin membrane that allows for efficient gas exchange?
A. Trachea **B.** Alveoli **C.** Bronchi **D.** Bronchioles

16. Which gas is present in higher concentrations in exhaled air compared to inhaled air?
A. Carbon dioxide **B.** Oxygen **C.** Nitrogen **D.** Hydrogen

17. Which chamber of the heart receives blood from the pulmonary veins?

A. Right atrium **B.** Right ventricle **C.** Left ventricle **D.** Left atrium

18. Identify the blood component which is **CORRECTLY** matched with its function in our body?
A. Plasma-transports blood cells **C.** Red blood cells- defend against pathogens
B. Platelets- transport oxygen **D.** White blood cells-clot the blood

19. Which one of the following statements is describes antibiotics **CORRECTLY?**
A. They are chemicals that used to kill micro-organisms from living tissue.
B. They are chemicals that used to kill micro-organisms an inanimate object.
C. They are chemicals that can safely be taken into your body in order to cure bacterial caused diseases.
D. They are chemicals that used to cure fungal caused diseases.

20. Which of the following would you use to clean up if your puppy was sick on the floor?
A. Antiseptic **B.** Sterilization **C.** Antibiotic **D.** Disinfectant

21. Suppose if your body had come into contact with a pathogen previously and then you meet that with micro-organism again your body defences are ready and it is destroyed before it can cause the symptoms of disease. What is the possible type of immunity protecting you from the pathogens?
A. Artificial active immunity **B.** Natural active immunity **C.** Natural passive immunity **D.** Artificial passive immunity

22. Which one of the following statements is **NOT TRUE** about malaria?
A. It is a water-borne disease.
B. It caused by Plasmodium parasites.
C. It is spread by the bite of an infected female Anopheles mosquito
D. It can protect by using of insecticide-treated mosquito netting and insect repellents.

23. In biological classification, what does the first part of a binomial name represent?
A. Species **B.** Genus **C.** Family **D.** Kingdom

24. Which division of plants is characterized by seeds enclosed within a protective structure called a fruit?
A. Gymnosperms **B.** Angiosperms **C.** Bryophytes **D.** Pteridophytes

25. Which of the following animals produces fully developed young which are nourished by milk from the mammary glands?
A. Duck-billed platypus **B.** Koala bear **C.** Monkeys **D.** Opossum

26. In the food chain: **Leaves → Grasshopper → Rodent → Leopard**, which of the following statement is **WRONG** about to the position of organisms in this chain?
A. Rodents are secondary consumer. **C.** Leopards are on the quaternary trophic level.
B. Grasshoppers are on the second trophic level. **D.** Leaves are primary consumer.

27. Why for the biomass from one stage of food chain does not all become biomass for the next stage of the pyramid when it is eaten? Because:
A. much is used for respiration to supply energy for life activities and maintaining the body temperature.
B. all material is always lost in waste materials.
C. the whole organism at one stage is eaten by the stage above.
D. most biomass lost as heat from respiration.

28. Which of the following is not an abiotic component of an ecosystem?
A. Sunlight **B.** Rainfall **C.** Parasites **D.** Wind

29. Which one of the following is **NOT** recycling in the ecosystem?
A. Carbon **B.** Energy **C.** Nitrogen **D.** Water

30. Which of the following statements is **NOT TRUE** about biotechnology?
A. Biotechnology is the use of micro-organisms to make things that people want.
B. Biotechnology is based on microbiology.
C. Biotechnology is one of the fastest-growing industries in the world.
D. Biotechnology is a new, modern concept.

31. Which of the following statement is refers the disadvantages of using ethanol as a fuel?
A. It is a carbon-neutral activity.
B. It is much less polluting than conventional fuels.
C. It takes a lot of plant material to produce the ethanol.
D. It can be mixed with conventional petrol to make gasohol.

32. Which technology involves the direct manipulation of an organism's genome to introduce desirable traits in crop plants?
A. Genetic engineering
B. Polymerase chain reaction
C. Agricultural biotechnology
D. Gene therapy

33. Identify the statement that describes meiosis **CORRECTLY**.
A. It is the process that responsible to replace and repair worn-out cells and damage cells.
B. It is the type cell division that resulting two identical daughter cells.
C. It is the type of cell division involves in asexual reproducing organisms.
D. It is a type of cell division introduces genetic variation among daughter cells.

34. How many chromosomes would you expect to find in a normal human sperm cell?
A. 23 **B.** 23 pairs **C.** 46 **D.** 2

35. Among the following Mendlian traits, which one is recessive trait?
A. Short stem **B.** Round seed **C.** Green pond **D.** Purple flowers

36. If you have been crossed two heterozygous rounded seed pea plants. Which one of the following is the possible genotypic probability the offspring?
A. RR :50% **B.** rr: 25% **C.** Rr :75% **D.** Rr:25%

37. All of these human traits are controlled by single gene **EXCEPT:**
A. Albinism **B.** Blood type **C.** Tongue rolling **D.** Earlobes shape

38. What makes nervous system is different from endocrine system? Nervous system:
A. carries only chemical messages.
B. conduct signal slower than hormonal system.
C. usually resulting a long-lived response.
D. affects individual cells, or tissue or organ.

39. Which type of neuron carries information from sensory receptors to the CNS?
A. Motor neuron **B.** Interneuron **C.** Sensory neuron **D.** Association neuron

40. Which one of the following parts of neuron is **MISMATCHED** with its function?
A. Cell body → neuron's core.
B. Axon → conduct signal away from cell body.
C. Myelin sheath → speeding up impulse transmission.
D. Dendrites → protect the neurons from danger.

41. When you do this biology exam, which part of your brain help you to answer each question?
A. Cerebellum **B.** Medulla oblongata **C.** Cerebrum **D.** Hypothalamus

42. Which of the following sequence is shows the pathways that involve in reflex action from beginning to ending?
A. stimulus → receptor → co-ordinator → afferent neuron → efferent neuron → effector → response
B. Stimulus → receptor → afferent neuron → co-ordinator → efferent neuron → effector → response
C. Stimuli → effector → afferent neuron→ afferent neuron → co-ordinator → receptor efferent neuron → response
D. Stimulus → receptor → afferent neuron → co-ordinator → efferent neuron → effector → response

43. Which one of the following statement is **TRUE** about the skin?
A. It is vital in controlling your body temperature, water and minerals balance.
B. It involves in your body balance maintaining.
C. It is an organ that allows you to detect smell.
D. It is the main execratory organ of your body.

44. Which one of the following statement is describes sense of test **WRONGLY**?
A. Umami is most recently discovered sense of taste.
B. The sensory receptors of taste are located on the upper surface of the tongue.
C. There are four basic taste sensations.
D. All types of taste buds spread evenly across the tongue.

45. Which one of the following structure of an eye is **INCORRECTLY** matched with its function?
A. Iiris → controlling the amount of light reaching the retina.
B. sclera → focus light on the retina.
C. Cones → respond to colors and give very clear, defined images.
D. Lachrymal gland → kill pathogens and lubricate the eye.

46. How does the eye adjust its focus to see nearby objects clearly?
A. By relaxing the ciliary muscles and rounding the lens. **C.** By contracting the ciliary muscles and flattening the lens.
B. By relaxing the ciliary muscles and flattening the lens. **D.** By contracting the ciliary muscles and rounding the lens.

47. Which is the is the **CORRECT** order of bones in the middle ear, from eardrum inwards?
A. Hammer → Anvil → Stirrup **C.** Anvil → Hammer → Stirrup
B. Stirrup → Anvil → Hammer **D.** Hammer → Stirrup → Anvil

48. The part of brain that act as both parts nervous system and endocrine system is
A. Hypothalamus **B.** Pineal gland **C.** Pituitary **D.** Thalamus

49. What makes endocrine glands are different from exocrine gland? Endocrine glands:
A. release their cellular secretion directly into blood vessels.
B. produce the chemical substance known as enzymes.
C. have their own duct.
D. includes sweat glands, sebaceous glands, salivary glands, tear glands, and mammary glands.

50. All of the following glands are considered as both endocrine and exocrine gland **EXCEPT:**
A. Pancreas **B.** Ovary **C.** Testis **D.** Adreal

51. Which endocrine condition is likely responsible for the symptoms of increased thirst, frequent urination, and unintended weight loss in the patient?
A. Goitre **B.** Diabetes mellitus **C.** Hypothyroidism **D.** Cretinism

52. A couple wants a birth control method that does not interrupt sexual activity and provides long-term protection. Which option offers this combination of convenience and effectiveness?
A. Breastfeeding **B.** Hormone implants **C.** The female condom **D.** Withdrawal method

53. What is one of the main reasons traditionally believed by communities in Ethiopia for practicing female genital mutilation (FGM)?
A. To prevent sexually transmitted infections **C.** To ensure acceptance in marriage by men
B. To decrease excessive bleeding after childbirth **D.** To enhance fertility and sexual pleasure for women

54. In a cold climate region, a person's body undergoes physiological changes to preserve heat & maintain core body temperature. Which adaptation involves the redirection of blood flow to vital organs such as the heart & brain?
A. Shivering **B.** Vasodilation **C.** Piloerection **D.** Vasoconstriction

55. If a patient has a condition that impairs the function of microvilli in the first coiled tubule, what effect would this likely have on kidney function?
A. Increased water reabsorption **C.** Decreased reabsorption of glucose
B. The rate of ultrafiltration rises **D.** Decreased excretion of sodium ions

56. Which one of the following internal structure of leaf is **CORRECTLY** matched with its function?
A. Cuticle - the main photosynthetic tissue of the plant.
B. Palisade mesophyll - the main gas exchange tissue of a leaf.
C. Spongy mesophyll - help prevent water loss.
D. Guard cells- control the size of stomata by altering their shape.

57. Why we need to boil the leaf in ethanol when conducting an experimental investigation in determining whether photosynthesis has actually taken place in the leaf or not? Because to:
A. kill the leaf and stops all the biochemical processes. **C.** test the presence of starch.
B. removal of the green pigment from the leaf. **D.** make the leaf soften.

58. Identity the **WRONG** statement that describes about plants transporting system.
A. Water and mineral ions transport through xylem by passive process.
B. Root absorbs water by simple diffusion.
C. Food materials transport in phloem by active transport.

D. The main driving pull responsible to moves water up from the roots to the leaves is transpiration stream.

59. Which of the following conditions will **NOT** increase the rate of transpiration in a plant?
A. High humidity in the air **B.** Windy conditions **C.** High light levels **D.** High temperatures

60. Which one of the following hormone is **INCORRECTLY** matched with its function in plant co-ordination?
A. Auxin - stimulates the elongation of the new plants. **C.** Gibberellins help seeds to break their dormancy.
B. Ethylene - causes fruit to ripen. **D.** Cytokinin - inhibits growth and plays a major role in leaf fall.

61. Which of the following statements is **NOT TRUE** about plant response?
A. Shoots are positively phototropic but negatively geotropic. **C.** Shoots are negatively hydrotropic and phototrophic.
B. Roots are both positively hydrotropic and geotropic. **D.** Roots are positively hydrotropic but negatively geotropic.

62. What is the main difference between renewable and non-renewable resources?
A. Renewable resources can be replaced, while non-renewable resources cannot.
B. Renewable resources are non-living, while non-renewable resources are not.
C. Renewable resources are scarce, while non-renewable resources are abundant.
D. Renewable resources are man-made, while non-renewable resources are natural.

63. How do plants contribute to biodiversity in Ethiopia and globally?
A. By supporting diverse ecosystems and habitats. **C.** By being one of the main exports such as coffee.
B. By serving as a source of medicinal compounds. **D.** By being used as a traditional remedy for dysentery.

64. Which air pollutant is primarily responsible for the formation of acid rain?
A. Sulfur dioxide **B.** Carbon monoxide **C.** Ozone **D.** Lead

65. A group of researchers is studying climate change by analysing historical temperature data. Which main step of the scientific method involves reviewing scientific papers and climate reports in the study?
A. Conclusion drawing **B.** Background research **C.** Data analysis **D.** Peer review

66. Why is centrifugation particularly useful in hospitals for stool tests?
A. It can dissolve disease causing particles present in stool samples.
B. It can separate stool samples into different components for analysis.
C. It can amplify the small amount of DNA present in stool samples.
D. It can separate volatile components from a stool based on density.

67. In a field study of insect biodiversity, which tool would a biologist likely use to collect specimens?
A. Petri dish **B.** Dissecting kit **C.** Plastic bags **D.** Nets and trap

68. Which one of the following element is the least abundant than the others in living organisms?
A. Hydrogen **B.** Nitrogen **C.** Carbon **D.** Oxygen

69. Which property of water allows the water to be acts as a transport of medium in living organisms?
A. High surface tension **B.** Ideal viscosity **C.** High specific capacity **D.** Transparency nature of water

70. Which one of the following statement is **TRUE** about starch? It is:
A. a storage form of carbohydrate in animal cells **C.** a polymer of β-glucose.
B. a member of double sugars. **D.** unbranched molecule.

71. Which one of the following statement is **NOT TRUE** about lipids?
A. They includes Triglycerides, Phospholipids and Waxes.
B. They nearly all are contain the elements carbon, hydrogen and oxygen.

C. They contain much less oxygen than carbohydrates.
D. They are polymers

72. Identify the types of proteins that is different from the others?
A. Enzymes **B.** Hormones **C.** Hairs **D.** Antibodies

73. Suppose a food gives a positive result when tested with the Biuret test, and an initial negative result when tested with Bendict's solution. Following acid hydrolysis and neutralisation, the food gave a positive test with Benedict's solution. The given food sample contains:
A. protein and a reducing sugar **C.** protein and a non-reducing sugar
B. protein, a reducing sugar and a non-reducing sugar **D.** Reducing sugar and lipids

74. How many number of peptide bonds and water molecules removed by condensation reactions when 100 amino acids are joined together with one another?
A. 100 peptide bonds and 100 waters **C.** 100 peptide bonds and 99 waters
B. 99 peptide bonds and 100 waters **D.** 99 peptide bonds and 99 waters

75. Which one of the following biochemical molecule is **CORRECTLY** paired with its function?
A. Triglyceride - involves in DNA RNA synthesis. **C.** Proteins - in animal bodies serves as thermal insulation.
B. Pentose sugar - involves in DNA and RNA synthesis. **D.** Cellulose - structural component of cell membrane.

76. Which of the following properties of enzymes makes it possible that one enzyme catalyse only one type of substrate?
A. Enzymes are used over and over again. **C.** Enzymes are biological catalysts.
B. Enzymes are specific. **D.** Enzymes are globular proteins.

77. According to the lock-and-key model of enzyme action, why do substrate molecules bind to the active site of the enzyme? Because they:
A. are attracted to the enzyme's surface charges. **C.** have a different shape from the active site.
B. have a specific complementary shape to the active site. **D.** have a higher activation energy than the enzyme.

78. How does an increase in temperature affect enzyme activity in a biological system?
A. It increases enzyme activity up to a certain point, then decreases due to denaturation.
B. It increases enzyme activity due to faster diffusion of substrates.
C. It decreases enzyme activity by destabilizing enzyme-substrate complexes.
D. It has no effect on enzyme activity as enzymes are temperature-independent.

79. Why does increasing substrate concentration beyond V^{max} have no effect on enzyme activity? Because:
A. all active sites of enzymes are occupied by substrate molecules.
B. enzymes become denatured at high substrate concentrations.
C. enzymes require a minimum substrate concentration to function.
D. enzymes become saturated with inhibitors at high substrate concentrations.

80. What class of enzymes involves in breaking down large and complex food substances such as starch, proteins and lipids into small and simple molecules in your digestive system?
A. Oxidoreductase **B.** Hydrolase **C.** Ligase **D.** Transferase

81. Which of the following statement is **NOT TRUE** about Non-competitive inhibitors?
A. They inhibit enzyme activity by competing with the substrate for the allosteric site.
B. They are often similar in shape to the substrate molecules.
C. They can bind with the active site and prevent substrate molecules from binding.
D. They inhibition can be effectively 'dilutes' and removed by Increasing substrate concentration.

82. Choose the statement which **NOT** included under the modern cell theory.
A. Cells form by free-cell formation.
B. Cell is a structural and functional unit of all living thing.
C. Cells contain hereditary information which is passed from cell to cell during cell division.
D. All cells have basically the same chemical composition.

83. What makes prokaryotic cells are different from eukaryotic cells? Prokaryotic cells:
A. size fall between the range of 10–100 ûm.

B. have lysosomes, mitochondria, endoplasmic reticulum, Golgi bodies and nucleus.
C. have single, circular and not histone bounded chromosome.
D. have complex membrane system throughout their cells.

84. According to endosymbiont theory, which one of the following organelle evolved first than the others?
A. Endoplasmic reticulum **B.** Nucleus **C.** Chloroplast **D.** Mitochondrion

85. Which of the following organelles are most likely to be more abundant in liver cells?
A. Lysosomes and mitochondria
B. Nucleus and ribosomes
C. Ribosome and rough endoplasmic reticulum
D. Mitochondria and smooth endoplasmic reticulum

86. Which one of the following organelles settles out last when homogenized cells are centrifuged?
A. Ribosome **B.** Mitochondria **C.** Nucleus **D.** Chloroplast

87. Identify the organelle that **CORRECTLY** matched with its corresponding function.
A. Lysosomes- digest foreign cells
B. Ribosomes-ATP synthesis
C. Rough endoplasmic reticulum - lipid synthesis
D. Cell membrane -gives cell support and rigidity.

88. Which one of the following statement is state **WRONGLY** the features of fluid mosaic model of cell membrane structure?
A. Phospholipid bilayer is the basis for the membrane.
B. Glycoproteins and glycolipids are lipids that reduces the fluidity of the membrane.
C. Integral proteins is the proteins that span the membrane.
D. Peripheral proteins is the proteins that span only one layer of the membrane.

89. Which one of the following statement is defines best conservation biology?
A. A field focused on exploiting natural resources for human benefit.
B. A study of the geological processes involved in resource formation.
C. A discipline aimed at protecting and restoring biodiversity.
D. An analysis of economic strategies for resource extraction.

90. Which one refers the application of genetic engineering in environment?
A. Degrading solid waste.
B. Identifying criminals and the real parents of a child when the identity is in doubt.
C. Extracting minerals from less concentrated ores.
D. Producing climate change resistance animals.

91. What is the purpose of using microorganisms in wastewater treatment?
A. To oxidize organic waste mater
B. To release toxins
C. To produce oxygen
D. To increase water acidity

92. What is the main application of pectinases in the food industry?
A. Removing hair from animal hides
B. Clarification of fruit juices
C. Tenderizing meat
D. Production of glucose from starch

93. How do biopesticides contribute to sustainable pest management?
A. By harming non-target organisms
B. By eliminating all pests indiscriminately
C. By reducing the need for synthetic alternatives
D. By increasing the use of chemical pesticides

94. Choose the statement that describes microorganisms **WRONGLY:**
A. They are organisms too small to be seen clearly by the naked eye.
B. They all are prokaryote.
C. They vary in size ranging from 10 nm to 100 mm.
D. They include viruses, bacteria, protozoa, some fungi, and some algae.

95. What makes Gram Positive bacteria different from Gram Negative bacteria? Gram Positive bacteria:
A. lose the purple crystal violet stain.
B. have cell wall made from peptidoglycan, teichoic acid and lipoteichoic acid.
C. have extensive Periplasmic space

D. thin and multilayer of peptidoglycan.

96. The features that distinguish Archaea from bacteria are:
- **A.** Archaea lack true peptidoglycan in their cell wall.
- **B.** Archaea are prokaryote.
- **C.** Archaea are inhabitants of some of the most extreme environments.
- **D.** Archaea lack membrane bounded nucleus and membrane bounded organelles.

97. All of the following statements describe the general characteristics of fungi **EXCEPT:**
- **A.** They all are chemoheterotrophic.
- **B.** They have rigid cell wall composed of primarily of chitin and glucans.
- **C.** They included Amoeba, Euglena and Paramecium.
- **D.** They all are achlorophyllous.

98. Which one of the following statement is **NOT** describe the common characteristics of viruses?
- **A.** They cannot be grown on artificial cell free media.
- **B.** They do not have cellular organization.
- **C.** They are obligate parasite.
- **D.** They independently carry out metabolic process.

99. All these are the role of Robert Koch in the development of Germ theory **EXCEPT:**
- **A.** He proved that microorganisms can cause disease through experiment.
- **B.** He identified the micro-organisms that cause anthrax, tuberculosis and cholera.
- **C.** He developed of germ theory that contains four postulates.
- **D.** He was the first to see and discover microorganisms.

100. Which compound serves as the starting substrate for the Krebs cycle?
A. Citrate **B.** Acetyl CoA **C.** Pyruvate **D.** Oxaloacetate

101. What is the primary reason glycolysis can continue to function under anaerobic conditions?
- **A.** Activation of the citric acid cycle
- **B.** Inhibition of ATP synthase activity
- **C.** Regeneration of NAD from its reduced form
- **D.** Accumulation of oxygen in the cytoplasm

102. During which stage of aerobic respiration is most of the carbon dioxide produced?
A. Glycolysis **B.** Krebs cycle **C.** Link reaction **D.** Electron transport chain

103. How does aerobic respiration differ from anaerobic respiration?
- **A.** Aerobic respiration produces lactic acid.
- **B.** Aerobic respiration occurs in the absence of oxygen.
- **C.** Aerobic respiration begin & end in cytoplasm.
- **D.** Aerobic respiration produces more ATP.

104. What happens to the pyruvate molecules produced during glycolysis in aerobic respiration?
- **A.** They enter the Krebs cycle
- **B.** They are converted into ethanol
- **C.** They are stored as glycogen
- **D.** They are oxidized to form acetyl-CoA

105. What is the primary metabolic fate of the ATP molecules produced during aerobic respiration?
- **A.** They are used to power cellular activities.
- **B.** They are stored as glycogen
- **C.** They are used to synthesize glucose
- **D.** They are converted into carbon dioxide and water

106. In which spectrum of light, rate of photosynthesis is maximum?
A. Red and Blue **B.** Green and Orange **C.** Violet and yellow **D.** Indigo and Red

107. Among the following photosynthetic pigments, which is the main photosynthetic pigment involved in photosynthesis?
A. Chlorophyll a **B.** Chlorophyll b **C.** Xanthophylls **D.** Carotenoids

108. Which one of the following statements is WRONG about light dependent reaction?
- **A.** It takes place in the thylakoid membrane.
- **B.** It produces H^+, O_2, ATP, and NADPH.
- **C.** It is the stages where carbon dioxide reduced to glucose.
- **D.** It is the stages responsible to converts light energy to chemical energy.

109. What is the similarity between non-cyclic photophosphorylation and cyclic photophosphorylation? In both process:

A. both PSI and PSII are involved.
B. ATP molecules are produced.
C. the electrons that lost from chlorophyll return to it.
D. the flow of electron is in a single direction.

110. What is the initial three-carbon compound produced during the Calvin cycle?

A. Dihydroxyacetone phosphate (DHAP)
B. Ribulose-1,5-bisphosphate (RuBP)
C. 3-phosphoglycerate (3-PGA)
D. Glyceraldehyde-3-phosphate (G3P)

111. In the Calvin cycle, what enzyme catalyses the carboxylation of ribulose-1,5-bisphosphate (RuBP)?

A. PEP carboxylase **B.** ATP synthase **C.** Rubisco **D.** Phosphoglycerate kinase

112. What is the fate of the majority of the G3P molecules produced in the Calvin cycle?

A. They are converted into glucose
B. They are released as waste products
C. They are transported to the mitochondria
D. They are used to regenerate RuBP

113. In which environmental conditions are C4 plants typically more advantageous compared to C3 plants?

A. Low humidity
B. High CO_2 concentration and drought
C. Low light intensity
D. High temperature

114. Which theory of the origin of life states that life on Earth originally came from elsewhere in the Universe?

A. Spontaneous generation **B.** Special creationism **C.** Cosmozoan theory **D.** Eternity of life

115. On which of the following evolutionary idea do Darwinism and Neo-Darwinism fully agree?

A. Mutation is the raw material for evolution.
B. Natural selection is one of the major mechanisms that results in evolution.
C. Acquired traits are inherited
D. The sources of the genetic variation in gene pool.

116. If two species share more similar hemoglobin sequences, this confirms that they are closely related and share recent common ancestor. Which evidence of evolution support this condition?

A. Comparative biochemistry **B.** Comparative anatomy **C.** Comparative embryology **D.** Comparative palaeontology

117. If some palms survive better in volcanic acidic soils whereas others perform better in calcareous basic soils but not in intermediate soil. Which type of natural selection act on these palm plants?

A. Directional selection **B.** Disruptive selection **C.** Stabilizing selection **D.** All can be answers

118. What makes Allopatric speciation different from Sympatric speciation? Allopatric speciation is:

A. occurs when a population is split into two or more isolated groups by a geographical barrier.
B. the type of speciation more common in plants than in animals.
C. involving as result of developing different breeding strategies.
D. occurs when two diverging populations may inhabit the same area.

119. In the revolutionary history of primates, which group was evolved first from the others?

A. Hominins **B.** Hominids **C.** Modern human **D.** Hominoids

120. Which of the following is **TRUE** about importance of Lucy in resolving debate about human evolution?

A. Bipedalism came before big brain.
B. Big brains come before bipedalism.
C. Lucy was partially an arboreal primate.

D. Lucy showed that both modern humans and chimpanzees evolved from a common ancestor.

121. All of these are anthropogenic cause of climate change **EXCEPT:**

A. Burning fossil fuel **B.** Farming livestock **C.** Cutting down forest **D.** Volcanic eruption

122. Which one of the following types of greenhouse gases and their major sources is **MISMATCHED**?

A. Nitrous oxide-Digestive tract of cattle and ship
B. Carbon dioxide- Fossil fuel combination
C. Methane - rice field paddies
D. Hydrofluorocarbon - semiconductors manufacturing and other industrial process

123. Global warming will cause all of the following direct problem **EXCEPT:**

A. Shrinking of glaciers **C.** Raising of sea level
B. Economic crisis **D.** Rising maximum temperature of atmosphere

124. Which one of the following is the most important log lived components of greenhouse gases and the main cause of global warming?

A. Carbondioxide **B.** Methane **C.** Sulphur hexafluoride **D.** Perfluorocarbons

~ The End ~