BIOLOGY MODEL EXAMINATION FOR GRADE 12 (2011 E C)

Time allowed: 1:30

Choose the correct answer and write the letter of your choice on the answer sheet.

1. Among the following scientific methods which one comes later?

A .Making observation B. Constructing hypothesis

C. Drawing conclusion D. Carry out an experiment

2. Which of the following paired organelles are membrane bounded and site of energy transfotmation?

A. Ribosome and chloroplast B. Mitochondria and ribosome

C. Ribosome and peroxisome D. Chloroplast and mitochondria

3. In which category of biochemical molecules do enzymes belong?

A. Nucleic acids B. Proteins

C. Lipids D. Carbohydrates

4. Which of the following organisms are pioneer in primary succession that starts with bare rock?

A. Lichens B. Algae C. Liverworts D. Mosses

5. Nitrogen fixing bacterium that lives in the root nodules of legume plants that can fix nitrogen gas is

A. Pseudomonas B. Rhizobium C. Nitrobacter D. Azotobacter

6. Which of the following molecules is known as the energy currency of the cell?

A. Glucose B. Starch C. Pyruvate D. ATP

7. Which one of the following diseases is transmitted by droplet infection?

A. Pneumonia B. Cholera C. Malaria D. Hepatitis B

8. Which of the following are the two major constituents of eukaryotic chromosomes?

A. RNA and lipid B. DNA and carbohydrate

C. DNA and protein D. DNA and RNA

9. Which one is the correct direction of genetic information in most living things?

A. DNA----->Protein----->RNA B. DNA----->RNA----->Protein

C. Protein----->RNA----->DNA D. Protein----->DNA----->RNA

10. Myalgic Encephalopathy is

A. degenerative disease B. social disease

C. functional disease D. genetic disease

11. Suppose in a monohybrid cross 1200 F_2 plants were produced, what is the number of the plants

that are expected to have the dominant and recessive phenotypes?

A. 600 dominant and 600 recessive recessive
B. 800 dominant and 400 recessive
C. 1000 dominant and 200 recessive recessive
D. 900 dominant and 300 recessive

12. Among the following enzymes which one is used to dissolve clots of heart – attack patients?

A. Streptokinase B. Xylanase C. Amylase D. Pectinase

13. From which of the processes of cellular respiration is the majority of the ATP released?

A. Krebs cycle B. Link reaction

C. Glycolysis D. Electron transport chain

14. Suppose a woman has given birth to three girls in a row, what is the probability that her next

Child to bea female?

A. 25% B. 75% C. 100% D. 50%

15. The term used to express the ability of a microscope to show details clearly is----------

A. magnification B. reduction

C. resolution C. enlargement

16. If a cell having 2n=68 chromosomes divide meiotically, how many chromosomes are expected in

each daughter cell?

A. 68 B. 17 C. 34 D. 136

17. Marine biomes include

A. Ocean, pond and coral reef B. Ocean, estuarine and coral reef

C. Ocean, wetland and estuarine D. Ocean, streams and coral reef

18. The sequence of phases in a population growth curve is

A. log-> lag -> decline -> stationary B. lag -> log -> decline -> stationary

C. log -> lag -> stationary -> decline D. lag -> log -> stationary -> decline

19. Which of the following behavioral biologist is known for his study on insight learning in animals?

A. Ivan Pavlov B. W. Kohler C. B.F. Skinner D. Konrad Lorenz

20. Which of the following forms of learning is mainly used in shaping animal behavior?

A. Insight learning B. Classical conditioning

C. Operant conditioning D. Latent learning

21. A biome that is warm, with thin soil and has many different animals and plants is

A. Temperate deciduous forest B. Tropical montane forest

C. Boreal forest D. Tropical rain forest

22. Which of the following contains phosphate group in its molecule?

A. Protein B. Cellulose C. Simple sugar D. Nucleotide

23. In cellular respiration, which of the following molecules enter the Krebs cycle?

A. Glucose B. Lactic acid C. Acetyl CoA D. Pyruvic acid

24. The exchange of a segment of chromosomes between homologous chromosomes in prophase I

of meiosis is

A. Crossing over B. Chiasmata C. Linkage D. Centromer

25. Which of the following is correctly matched?

A. Waxes—fatty acid and long chain alcohols

B. Triglycerid—1 glycerol and 2 fatty acids

C. Phospholipid—1 fatty acid and 3 glycerol

D. Triglycerid—3 glycerol and 3 fatty acid

26. Among the following mating, where the ABO blood genotypes of the parents are shown, identify

the mating in which all the children will have the same blood type.

A. AB X BO B. AO X BO C. AA X OO D. BB X AO

27. The low value for the index of diversity indicates

A. Species diversity in an ecosystem B. Few species are successful

C. More stable ecosystem D. All except B

28. If a 0.9% salt solution is isotonic to a certain animal cell, that animal cell will lose more water

when kept in which of the following solutions?

A. 1.7% salt solution B. 0.9% salt solution C. 2.5% salt solution D. 0.2% salt solution

29. Among the following infectious human diseases, identify the one that is caused by a virus.

A. Measles B. Cholera C. Pneumonia D. Ringworm

30. A kind of natural selection which operates in favour of those individuals at one extreme of the

range of values for a feature is

A. disruptive B. stabilizing C. directional D. normalizing

31. The half life of carbon-14 is about 5730 years. If a fossil is 22,920 years old, about what percentage

of its original carbo-14 is still present in the fossil?

A. 50% B. 25% C. 12.5% D. 6.25%

32. The process by which unrelated organisms evolve similar structures, adapted for the same function is

A. divergent evolution B. sympatric speciation

C. convergent evolution D. allopatric speciation

33. Which group of animals has the highest number of endemic species in Ethiopia?

A. Amphibians B. Birds C. Mammals D. Reptiles

34. Which of the following is not true about enzymes?

A. Enzymes are proteins.

B. During catalysis the substrate attach to the active site of the enzyme.

C. An enzyme can catalyze any reaction.

D. An enzyme can be used over and over again.

35. Which group does not contain microorganism?

A. Algae B. Fungi C. Protozoa D. Annlida

36. The movement of materials into or out of a cell against concentration gradient with the expenditure

of energy is known as

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

37. In which of the following is the macromolecule correctly matched with its monomer building blocks?

A. Nucleic acid---Nucleotides B. Lipids---Amino acids

C. Carbohydrate---Glycerol C. Protein---Fatty acids

38. The strand that is complementary to the DNA sequence given as TAACCG is

A. AUUGGC B. ATTGGC

C. ATTGGC D. GCCAAT

39. Which of the following hereditary phenomena was not discovered by Mendel?

A. Independent assortment of genes B. Dominance of genes

C. Segregation of genes D. Linkage of genes

40. Which of the following does not happen during meiosis?

A. Reduction of chromosome number B. Chromosome replication

C. Formation of identical daughter cells D. Recombination of genes

41. Which of the following polysaccharides has no structural function?

A. Cellulose B. Chitin C. Peptidoglycan D. Glycogen

42. Which theory of evolution contains the idea that new characters can be acquired by the

Use-and-disuse of parts of the body?

A. Neo-Darwinian theory of evolution
B. Darwin's theory of evolution
C. Lamarck's theory of evolution
D. Wallace's theory of evolution

43. If the number of chromosomes in a barley egg cell is found to be 7, what is the number of

chromosomes in the cells of the same barley root?

A. 21 B. 7 C. 14 D. 28

44. Which of the following is not true about the light dependent phase of photosynthesis?

A. The reactive molecule of photosystem I is P_{680} .

B. Electrons flow from photosystem II to I.

C. Electrons lost from photosystem II are replaced by electrons from water.

D. ADP is converted to ATP.

45. A student who had encountered a snake on his way to school jumped suddenly when he later saw

a piece of cord lying across his way. What behavior does this exemplify?

A. Sensitization B. Insight C. Habituation D. Association

46. In an ecosystem, between which of the following pairs is intraspecific competition expected to

be strongest?

A. Producers versus herbivores
B. Herbivores versus carnivores
C. Predators versus decomposers
D. Carnivores versus carnivores

47. Which of the following is important to regulate the entry and exit of materials into and out of

plant cells?

A. Cell wall B. Central vacuole C. Cell membrane D. Nucleus

48. Which of the following steps in cellular respiration can take place in the absence of oxygen?

A. Krebs cycle B. Electron transport chain C. Glycolysis D. Link reaction

49. Which of the following processes release oxygen to the atmosphere?

A. Respiration B. Photosynthesis C. Transpiration D. Burning of fossil fuels

50. The process in photosynthesis that can occur both in the light as well as in the dark is

A. Excitation of electrons from the pigments. B. Photolysis of water

C. ATP production D. Glucose formation

51. Which of the following physiological properties of life is primarily concerned with the perpetuation

of species?

A. Reproduction B. Respiration C. Excretion D. Response to stimuli

52. In which of their constituents do the nucleotides of DNA and RNA differ from each other?

A. In the purine bases B. In the pyrimidine bases

C. In the phosphate group D. In all of the above

53. What is true about the rate of an enzyme catalysed reaction if the enzyme concentration is

kept constant and the substrate is supplied in excess? The rate would

A. rise continuously B. decline sharply C. stay constant D. None of the above

54. Which biotechnological process has practical application in criminal investigation?

A. Bio-fuel production B. DNA fingerprinting

C. Cloning D. Use of biosensors to test blood glucose level

55. What happens to a human red blood cell when it is placed in a hypotonic solution?

A. It might lose water and shrink B. It becomes turgid

C. It might swell and burst D. It will remain unchanged

56. What is the final electron acceptor in the electron transport chain during aerobic respiration

of eukaryotic cells?

A. NADP B. H_2O C. CO_2D. O_2

57. Which organelle of the cell has a function of modifying proteins for secretion?

A. Endoplasmic reticulum B. Lysosome

C. Golgi apparatus D. Ribosome

58. In a honey bee colony, which one of the following is not the duty of the worker?

A. Guarding the hive B. Rearing the young C. Foraging D. Reproduction

59. What makes phospholipid molecules arrange themselves into a bilayer in water medium?

A. The double bonds of the fatty acids.

B. The presence of hydrophilic and hydrophobic regions.

C. Their high solubility in water.

D. The length of the fatty acid chains.

60. Regarding seed characteristics, suppose a heterozygous round yellow pea plant of RrYy genotype

is selfed and produced 256 seeds how many of the seeds are expected to be round yellow?

A. 144 B. 48 C. 72 D. 36

61. If the DNA of the following animals is hybridized to human DNA, with which one of them

would human DNA hybridize more?

A. Dog B. Mouse C. Horse D. Chimpanzee

62. Among the following, which one can be an example of prokaryotic organism?

A. Paramecium B. Virus C. Bacteria D. Amaeba

63. Which one of the following is the major killer of AIDS patients?

A. Anaemia B. Pneumonia

C. Malnutrition D. Opportunistic infections

64. In Pavlov's classical conditioning experiment on dogs, which one of the following is the

conditioned response?

A. The sound of the bell before presenting food.
B. The salivation of the dog at the sight of food.
C. The salivation of the dog at the sound of the bell.
D. The sight of the food from far away.

65. The unicellular organism, *Euglena*, swims using its flagellum towards areas of increased

light intensity. This kind of response to stimuli is called

A. positive kinesis B. negative phototaxis C. positive phototaxis D. negative kinesis

66. What is the collective name of plants that are well adapted to live in a very dry environment?

A. Xerophytes B. Hydrophytes C. Epiphytes D. Mesophytes

67. In some human liver cells there are 92 chromosomes per cell. The polyploidy level of this cell is

A. diploid B. triploid C. tetraploid D. pentaploid

68. If an enzyme is provided its normal substrate and another molecule having the same size and shape

as the substrate, which one of the following would happen?

A. Allosteric inhibition C. End product inhibition

B. Competitive inhibition D. Irreversible inhibition

69. C_4photosynthesis is most efficient in conditions of

A. high light intensity B. low carbon dioxide concentration

C. high temperature D. All of the above

70. Which class of enzymes join two molecules together by formation of new bonds?

A. Isomerase B. Lyase C. Ligase D. Hydrolase

71. Divergent evolution is an alternative name for

A. allopatric speciation B. adaptive radiation

C. sympatric speciation D. disruptive selection

72. Which of the following is the correct constitution of the sex chromosome of abnormal male?

A. XY B. XO C. XX D. XXY

73. The hormone that promotes human sleepfulness in darkness and controls the sleep-wake cycle is

A. adrenaline B. thyroxin C. melatonin D. insulin

74. Which of the following demographic factors can decrease size of the world population?

A. Natality B. Emigration C. Mortality D. Immigration

75. Which of the following is the right vector to transfer alien genes to bacteria through

genetic engineering?

A. Mosquitoes B. Plasmids C. Bacteria D. Snails

76. In the nitrogen cycle, nitrogen gas is returned to the atmosphere by

A. nitrogen-fixing bacteria B. ammonifying bacteria

C. nitrifying bacteria D. denitrifying bacteria

77. Which of the following is not recycled in the ecosystem?

A. Water B. Energy C. Carbon D. Sulphur

78. In spite of their ability to form hybrids when mated, which one of the following factors is

more important to keep the horse and the donkey as separate species?

A. Their hybrid is not viable.
B. Their hybrid is sterile.
C. They cannot form hybrid zygote.
D. They are ecologically isolated

79. What is removed from pyruvate during its conversion into an acetyl group?

A. CO_2B. ATP C. H_2O D. oxygen

80. Which of the following is not the possible cause or isolating mechanism for the formation

of sympatric speciation?

A. Geographical isolation C. Temporal isolation

B. Behavioural isolation D. Seasonal isolation

81. Which one of the following is not included in Darwin's natural selection?

A. Variation B. Fecundity

C. Struggle for existence D. Inheritance of acquired characteristics

82. What do we call a scientist who specializes in studying animal behavior?

A. An entomologist B. An ecologist

C. A paleontologist D. An ethologist

83. Among the following scientists who contributed to the cell theory, identify the one who stated that

, a cell can arise only from another cell like it'

A. Robert Hooke B. Rudolf Virchow C. Theodor Schwann D. Mathias Schleiden

84. Which of the following field equipment is used to determine an exact location of a place?

A. Theodolite B. Field microscope

C. Global positioning system D. Field PH kit

85. Which of the following practices does not normally transmit HIV?

A. Sexual intercourse through anus B. Sharing injection needles

C. Blood transfusion D. Shaking hands

86. How many carbon atoms are contained in a single molecule of sucrose?

A. 6 B. 24 C. 12 D. 48

87. In which one of their structural parts do different molecules of amino acids differ from one another?

A. In their carboxyl group B. In their amino group

C. In their R group D. In their alpha-carbon group

88. In the case of enzymatic chemical reaction, what do we call the substance that is acted upon by

an enzyme?

A. Coenzyme B. Polypeptide C. Apoenzyme D. Substrae

89. If two species are known to belong to the same order, they must also belong to

which taxonomic category?

A. Family B. Genus C. Species D. Class

90. Which test is suitable for checking the presence of proteins in food stuffs?

A. Emulsion test B. Biuret test C. Benedicts test D. Iodine test

91. Theconversion of one molecule of glucose to two molecules pyruvate results in the net formation of

A. three molecules of ATP B. two molecules of ATP

C. thirty eight molecules of ATP D. four molecules of ATP

92. The shape of an enzymes active site and its substrate are

A. complementary B. similar C. related D. the same

93. Choose the structure whose typical function is synthesis of proteins

A. Vacuole B. Nucleus C. Ribosome D. Centriole

94. The induced-fit model of enzyme action suggests that, when enzyme and substrate bind, there is

a conformational change in

A. the active site
B. the substrate
C. both substrate and active site
D. neither substrate nor active site

95. The process that produces messenger RNA during protein synthesis is

A. translation B. replication C. mutation D. transcription

96. Which group of microorganisms causes the disease known as athletes foot?

A. Protozoa B. Fungi C. Bacteria D. Viruses

97. If the size of a cell increases, which one of the following gets smaller?

A. The volume of the cell.

B. The surface area of the cell.

C. Surface area to volume ratio of the cell.

D. Volume to surface area ratio of the cell.

98. The word science comes from the Latin word '*scientia*' meaning what?

A. Knowledge B. Study C. Experiment D. Life

99. Glycolysis occurs in the----------

A. mitochondria B. nucleus C. chloroplast D. cytoplasm

100. In an experiment designed to test the effect of different concentrations of a fertilizer on the growth rate of a plant, which one of the following is the dependent variable?

A. The growth rate of the plant.

B. Plants assigned to the control group.

C. Concentration of the fertilizer applied.

D. Plants assigned to the experimental group