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OROMIA DEVELOPMENT ASSOCIATION SPECIAL BOARDING SCHOOL

DIRECTIONS: THIS BOOKLET CONTAINS 2014 ACDAMIC YEAR BIOLOGY MODEL EXAMINATION FOR GRADE 12. THE EXAMINATION CONTAINS 100 ITEMS. CHOOSE THE BEST AND MOST COMPLETE ANSWER FROM THE GIVEN ALTERNATIVES AND WRITE THE LETTER OF YOUR CHOICE ON THE ANSWER SHEET PROVIDED. TIME ALLOWED 2:00

1. Which of the following statements can be considered as best definition of the biological concept of behavior?
   A. The reaction of a person or an animal in response to an external or internal stimulus.
   B. The response or reaction or movements that a living plant makes in any situation.
   C. A system of coordinated response by an organism to an external or internal stimulus
   D. A receptor of some kinds of stimulus that an organism has which produces a response
2. Which of the following is **not** one of the assumptions of behaviorist psychology?
   A. All behavior is learnt from the environment (this includes the actions of other people).
   B. All behavior, no matter how complex, is the result of stimulus–response association.
   C. The learning that takes place in other animals is fundamentally different from that which takes place in humans.
   D. When we are born, our minds are a blank slate.
3. The unicellular organism, euglena, swims using its flagellum towards areas of increased light intensity. What is this kind of response to stimulus called?
   A. Negative kinesis C. Positive kinesis
   B. Negative phototaxis D. positive phototaxis
4. Which of the following statements about biological clocks is not true? Biological clocks:
   A. Control circadian rhythms C. control circannual rhythms
   B. are the result of divergent evolution D. can be entrained
5. Suppose a girl, after watching her mother making “injera” on several occasions, successfully did it herself, what type of learning is this
   A. Insight learning C. Habituation
   B. Operant conditioning D. Latent learning
6. Suppose when you first enter a room you notice unpleasant smell which you eventually forget about the presence, what is this behavior called?
   A. Latent learning C. Habituation
   B. Insight learning D. Operant conditioning
7. Among the following human diseases, identify the one that is transmitted through a vector?
   A. Leprosy B. Chancroid C. Gonorrhea D. Leishmaniasis

8. Of the following alternatives, which one could be taken as a better explanation for an organism's innate behavior? The behavior is
   A. Displayed when the organism is subjected to a stimulus that is neither harmful nor rewarding
   B. Seen during the early life of the organism like the emerging chicks that follow the first object they see
   C. Pre-programmed by the organism's genes
   D. Seen when an organism is made to associate an accident with a positively reinforcing reward
9. What is the role of the worker honey bee just after it emerges?
   A. Forage for nectar, pollen and water. C. Guard the hives
   B. Clean out dirty honeycomb. D. Build honeycomb.
10. Which one of the following do bees use to inform other bees about the location and distance of a new source of nectar they discover?
   A. Pheromones C. Buzzing noise
   B. Waggle dance D. Vibration of wings
11. In Pavlov's classical conditioning experiments with dogs, which of the following is the conditioned stimulus?
   A. The sight of food C. The sound of the bell
   B. The small of food D. The salivation of the dog
12. Which of the following sequences best describes the events in a somatic reflex action?
   A. Receptor is stimulated – impulses along motor neuron from CNS – impulses along sensory neuron to CNS – impulses through relay neuron in CNS – effector produces response.
   B. Impulses along sensory neuron to CNS – impulses through relay neuron in CNS – receptor is stimulated – impulses along motor neuron from CNS – effector produces response.
   C. Impulses along sensory neuron to CNS – impulses along motor neuron from CNS – impulses through relay neuron in CNS – receptor is stimulated – effector produces response.
   D. Receptor is stimulated – impulses along sensory neuron to CNS – impulses through relay neuron in CNS – impulses along motor neuron from CNS – effector produces response.
13. Sena went to a field and collected plant specimen for identification in the laboratory. She wanted to preserve the plant parts for some time and specimens can be analyzed later. Which one of the following biological tools is used for her activities?
   A. Quadrat C. Pitfall trap
   B. Theodolite D. Plant press
14. Which one of the following viruses is an RNA virus?
   A. H1N1 B. HIV C. Bacteriophages D. Herpes simplex

15. Gabisa conducted experiment to investigate the effect of PH on Salivary amylase. He added 5cm3 amylase solution into5cm3 starch suspension with neutral PH in a test tube. After 10 minutes, He tested it with iodine reagent and the solution turned into blue-black color. What is a dependent variable of this experiment?
    A. Formation of blue-black color
    B. Adding salivary amylase.
    C. PH of the solution.
    D. Applying iodine treatment.
16. Suppose a student noticed that many plants in a garden died following the flood because of heavy rain, to which step of the scientific method would this correspond?
    A. Formulation of a hypothesis
    B. Experimentation
    C. Observation
    D. Collecting information to support hypothesis
17. Which of the following is publicly an **undesired** research activity?
    A. Breeding a new crop variety
    B. Synthesis of a new vaccine
    C. Manufacture of a new effective medicine
    D. Breeding a new pathogenic microorganism.
18. When trying to view an object under the microscope and after switching to the high-power objective, which adjustment knob do you use in order to see a clear picture?
    A. The coarse adjustment
    B. The middle adjustment
    C. The fine adjustment
    D. The arm of the microscope
19. What is the reason that Louis Pasteur used a swan-necked flask instead of straight necked one in his experiment designed to disprove the theory of spontaneous generation?
    A. To allow free passage of air to the broth inside the flask
    B. To prevent the escape of any microorganism from the flask
    C. To keep the broth in the flask hot to kill microorganism
    D. To trap particles from the air that might enter the flask before reaching the broth
20. Which of the following is the correct sequence of the steps in scientific research?
    A. Hypothesis formulation → conclusion → experiment → question.
    B. Question → Hypothesis formulation → experiment → conclusion.
    C. Hypothesis formulation → question → experiment → conclusion.
    D. Question → hypothesis formulation → conclusion → experiment.
21. Which of the following is consistent with science?
    A. Proof by investigation of the causes of a phenomenon
    B. Proof by reference of a respected leader
    C. Proof by reference to an unknown object
    D. Proof based on lessons from a person one believes
22. What is the name of a clinical trial in which blood is transfused from recovered COVID-19 patients to a coronavirus patient who is in critical condition?
    A. Plasma Therapy
    B. Johnson and Johnson
    C. Remdesivir
    D. Hydroxychloroquine
23. Choose the characteristics that viruses share with living things.
    A. They are made up on of many specialized cells
    B. They contain genetic material
    C. They contain chlorophyll
    D. They reproduce by mitosis

24. Which of the following are all the tools mainly used in the laboratory rather than in field situation?
    A. Centrifuges, microscopes, measuring cylinders, petri dishes
    B. Flow meters, centrifuges, theodolites, microscopes
    C. Centrifuges, plant presses, flow meters, microscopes
    D. Theodolites, petri dishes, GPS receivers, measuring cylinders
25. In which of the following experiments does temperature acts as a confounding variable?
    A. The effect of fertilizer on wheat plants under greenhouse condition.
    B. The reaction of humans to a new drug under laboratory condition
    C. Analyzing the CO2 uptake of wheat plants under field condition
    D. Analyzing the rate of enzyme activity in humans under controlled environment

Answer Question 26 & 27 based on the following table

Number of Plants	Water given to plant per day (ml/day)	Temperature at which plants were grown (°F)	Number of hours of Daylight	Relative Humidity	Average Number of New Leaves per Week
30	10 ml/day	70	14	83	3
30	10 ml/day	72	14	83	5
30	10 ml/day	74	14	83	7
30	10 ml/day	78	14	83	10

26. Which variable factor(s) were kept constant?
    A. Water and temperature only
    B. Water, temperature, number of hours and relative humidity, only
    C. Number of plants, water, number of hours of daylight and relative humidity, only
    D. Number of plants, water, temperature, number of hours of daylight, relative humidity and number of leaves
27. Plants were grown in different environments to see if temperature affects the number of new leaves per week. Which variable is the dependent variable?
    A. Temperature
    B. Number of daylight hours
    C. Relative Humidity
    D. Average Number of leaves per Week.
28. Which of the following apparatus is laboratory equipment made from a container filled with heated water and used to incubate samples in water at a constant temperature over a long period of time?
    A. Water bath B. Filter paper C. cylinder D. Separatory funnel
29. What is the theory that states disease is caused by microorganisms?
    A. Biogenesis theory
    B. Spontaneous generation theory
    C. Germ theory
    D. Endosymbiotic theory

30. Choose the alternative that illustrates the application of biotechnology in food?
    A. Bio- fuel production
    B. Biosensors for testing blood glucose level
    C. DNA finger printing technology
    D. Protein production from single cells
31. Hayat's Biology laboratory group extracted an insulin gene from insulin producing cells of the pancreases and plasmid from bacteria. Then she transferred the insulin gene into the plasmid and the hybrid plasmid was put back into bacteria for insulin production. What enzyme did Elham used to join the insulin gene and bacteria plasmid?
    A. DNA ligase
    B. RNA polymerase
    C. ATP synthase
    D. DNA helicase
32. Which one of the following statements correctly explain gram positive bacteria?
    A. Have much less peptidoglycan in their cell walls.
    B. Have a membrane outside the peptidoglycan cell wall, which Gram- negative bacteria do not have.
    C. Diseases caused by Gram- positive bacteria more difficult to treat.
    D. These bacteria are stained purple by Gram's stain.
33. Which of the following choices contain Examples of diseases caused by bacteria?
    A. Pneumonia, cholera, tuberculosis and gastritis
    B. Pneumonia, measles, tuberculosis and common cold
    C. Measles, malaria, sleeping sickness, tuberculosis
    D. malaria, sleeping sickness, Pneumonia, cholera, tuberculosis
34. Which one of the following statements is correct about the reproductive cycle of lytic and lysogenic viruses?
    A. Lysogenic viruses do not form a protein coat.
    B. Lytic viruses are released by endocytosis
    C. Only lytic virus requires the host DNA for their replication.
    D. The DNA of lysogenic viruses duplicate as the host cell divides.
35. Which one of the following steps of HIV lifecycle comes last?
    A. The reverse transcriptase converts RNA into DNA and incorporates into the DNA of the host cell.
    B. The HIV Virion Attached to the plasma membrane of the t-helper cells.
    C. The RNA, proteins and reverse transcriptase molecule assembled and bud out of the host cell to infect anew cell.
    D. The viral DNA is transcribed into RNA and produce viral proteins including reverse transcriptase.
36. Which of the following is a routine method used by clinics to test people for HIV infection?
    A. Microscopic examination for the virus
    B. Testing for human anti-HIV antibody
    C. Counting the number of white blood cells
    D. Measuring the amount of hemoglobin

37. Bacteria can cause diseases in all of the following mechanisms EXCEPT?
    A. Invading and growing on the tissues of organ.
    B. Releasing toxins as they multiply.
    C. Entering living cells and disrupting metabolic systems.
    D. Changing the genetic structure of the host cell.
38. Which stage in the life cycle of HIV is inhibited by the antiretroviral drug known as integrase- inhibitor?
    A. Conversion of viral RNA to DNA
    B. Replication of the viral genome
    C. Insertion of the viral genome into host genome
    D. Release of the viral progeny from the cell
39. Retroviruses are able to reverse transcribe RNA to DNA in order to:
    A. Command the host cell in the production of genome similar to that of the hosts.
    B. Control the formation of viral protein and RNA that can be assembled into new virus particles.
    C. Replicate without any interruption.
    D. Control the formation of viral protein and DNA that can be assembled into new viral particle.
40. Any person, animal, plant, soil or substance in which an infectious agent normally lives and multiplies is called_____
    A. Reservoir of infection
    B. Carriers of the disease
    C. Germ theory of disease
    D. Koch's postulates
41. During the practice of genetic engineering bacteria are important to
    A. Produce ligase enzyme
    B. Breakdown the recombinant DNA molecule
    C. Produce restriction endonucleases
    D. Provide plasmid
42. Answer this question based on the following steps of the nitrogen cycle?

$$N_2 \xrightarrow{W} NH_4^+ \xrightarrow{X} NO_2^- \xrightarrow{Y} NO_3^- \xrightarrow{Z} N_2$$

    A. Rhizobium, pseudomonas, Nitrobacter, and Nitrosomonas
    B. Klebsiella, Nitrobacter, pseudomonas, and rhizobium
    C. Thiobacillius, Nitrosomonas, Nitrobacter and pseudomonas
    D. Azotobacter , Nitrosomonas, Nitrobacter and pseudomonas
43. Obsa added benedict reagent on food sample and heated the mixture for five minutes. Then He observed a color change. Which one of the following is false about the result?
    A. A red color shows that a reducing sugar is present.
    B. An orange color showed that a non-reducing sugar is present.
    C. A yellow color shows that a reducing sugar is present.
    D. An orange color showed that a reducing sugar is present.

44. Which level of protein structural organization involve two or more polypeptide?
    A. Primary structure
    B. Secondary structure
    C. tertiary structure
    D. quaternary structure
45. Which type of fatty acid is healthier when used as human food source?
    A. Saturated fatty acids
    B. Monounsaturated fatty acids
    C. monounsaturated fatty acids
    D. fatty acids in animal products
46. In a Benedict's test for sucrose, why does the test sample first boil with hydrochloric acid?
    A. To retest the mixture with benedict solution.
    B. To hydrolyze non reducing sugar.
    C. To neutralize the solution.
    D. To reduce benedict's solution.
47. Which of the following DNA sequence pairs are completely complementary?
    A. 5'-CTGACCTGG and 5'-GGTCCAGTC.
    B. 5'-TTGATGACC and 5'-TTGATGACC.
    C. 5'-AGTCTTAGC and 5'-GCTAAGACT.
    D. 5'-GAGCTAATA and 5'-GAGCATTAT.
48. In the comparison of a DNA molecule to a twisted ladder, the upright sides of the ladder are:
    A. Nitrogenous bases linked together.
    B. Hydrogen bonds between bases.
    C. Deoxyribose linked to phosphate.
    D. Nitrogenous bases linked to phosphate.
49. The presence of cholesterol in the plasma membranes of some animals
    A. enables the membrane to stay fluid more easily when cell temperature drops.
    B. enables the animal to remove hydrogen atoms from saturated phospholipids.
    C. enables the animal to add hydrogen atoms to unsaturated phospholipids.
    D. makes the membrane less flexible, allowing it to sustain greater pressure from within the cell.
50. Which of the following types of molecules are the major structural components of the cell membrane?
    A. phospholipids and cellulose
    B. nucleic acids and proteins
    C. phospholipids and proteins
    D. glycoproteins and cholesterol
51. In order for a protein to be an integral membrane protein it would have to be which of the following?
    A. hydrophilic
    B. hydrophobic
    C. amphipathic
    D. completely covered with phospholipids
52. Which class of enzyme inhibitors has similar shape as that of the normal substrate?
    A. Allosteric
    B. Competitive
    C. Denaturing
    D. irreversible
53. The reason starch stains blue or black with iodine is:
    A. The reaction between amylose molecule and iodine
    B. The reaction between amylopectin molecule and iodine
    C. The reaction between cellulose and amylopectin
    D. The reaction between cellulose and amylose

54. Lactose is a disaccharide of glucose and galactose, and its digestion requires the actions of the enzyme lactase to break lactose into monosaccharaides. If lactose is eaten as part of the diet but is not digested by lactase, this sugar is then metabolized by bacteria in the intestine, leading to the symptoms of lactose intolerance. Lactose intolerance, therefore, results from a(n):
    A. Lack of hydrolysis of lactose
    B. Lack of dehydration synthesis of lactose
    C. Low blood lactose level
    D. Inability of the body to produce lactose
55. Which of the followings structure of protein refers to the amino acid sequence of proteins?
    A. Primary B. Secondary C. Tertiary D. Quaternary
56. A change in temperature can affect the rate of enzyme-controlled reaction by
    A. Decreasing the turnover rate of the enzyme
    B. Changing the shape of substrate and enzyme molecule
    C. Altering the charge of amino acids that form the active sites
    D. Increasing or decreasing the probability of collision.
57. If the amount of enzyme is kept constant and the substrate concentration is gradually increased, what will happen to the rate of the reaction? The reaction velocity
    B. remain unchanged; hence it is not influenced by substrate concentration.
    C. increases further as the substrate concentration increases further.
    D. Increases until all the available enzyme active site become saturated
    E. Decreases first but increases after the active site are occupied with the substrate.
58. The following reaction shows enzyme controlled metabolic pathway in a living cell

$$\textbf{Substance W} \xrightarrow{\textbf{E1}} \textbf{substance X} \xrightarrow{\textbf{E2}} \textbf{Substance Y} \xrightarrow{\textbf{E3}} \textbf{Substance Z}$$

What will happen if the concentration of substance z increases beyond the cell's requirement?

    A. E1 and E2 will be inactive until substance Z equals to the normal concentration
    B. E3 will convert substance Y into another substance rather than substance Z.
    C. Substance Z will inhibit E1 and switch off the pathway.
    D. The reaction will take place in the reverse direction.
59. What is the intermediate compound that is formed during an enzyme catalyzed reaction?
    A. Reactants B. substrates C. product D. enzyme- substrate complex
60. How is the process of end product inhibition triggered? By
    A. Change of the active site of the enzyme
    B. Excess production of the last product
    C. Inhibition of the last enzyme.
    D. Low concentration of the first product.

61. How does heavy metal ion reduce the reaction rate of enzyme?
    A. By destroying the 3- dimensional shape of the enzyme active site.
    B. By raising the temperature above the optimum level of the enzyme.
    C. By dropping the pH well below the optimum level for the enzyme.
    D. By inducing mutations that disrupt the function of the enzyme.
62. Identify the statement that correctly explains the factors of an enzyme activity?
    A. Inhibitors increase enzyme activity by increasing their turnover rate.
    B. Increasing concentration of substrate doesn't affect enzyme activity.
    C. Hydrogen ion concentration affects the ionic bond of an enzyme.
    D. Excessive heat breaks the ionic bonds that hold the tertiary structure of enzyme protein.
63. Which of the following is true about allosteric regulation?
    A. Allosteric inhibition is occurred when inhibitors attached on the active site.
    B. Activation by activators when it interacts with the allosteric site.
    C. Inhibition by competitive inhibitors when it interacts on the allosteric site.
    D. Enzymes are activated when activators attached on the active site.
64. If an enzyme from thermophilic bacteria, which catalyze phosphoenol pyruvate to pyruvate in glycolysis last step, is subjected to below the optimum temperature, the rate of reaction will be decreased. This is because
    A. Less enzyme phosphoenol pyruvate complex is formed
    B. More collision between enzyme and phosphoenol pyruvate occurred.
    C. The enzyme is denatured.
    D. The particles have more kinetic energy.
65. Cyclooxygenase-2 is an enzyme that catalyze the conversion of arachidonic acid to prostaglandins, which promote pain in our body. The painkiller ibuprofen, act as non - competitive inhibitors of cyclooxygenase-2, reduce the production of prostaglandins. What would happen if the concentration of the ibuprofen increased?
    A. Substrate affinity cyclooxygenase-2 is higher.
    B. Concentration of arachidonic acid is decreased.
    C. Production of prostaglandin is increased.
    D. Pain of the body is decreased.
66. Which of the following vitamins is used as a component of cofactor?
    A. Retinol B. Ascorbic acid C. Riboflavin D. Thiamin
67. What happen when the substrate molecule binds to the active site of an enzyme?
    A. The chemical bond of the substrate distorted.
    B. The amino acid in the active site become unreactive.
    C. The substrate and the enzyme will bond permanently.
    D. They form stable intermediate substance.
68. Which of the following energy-generating processes is the only one that occurs in almost all living organisms?
    A. Glycolysis B. Photosynthesis C. Krebs Cycle D. Chemiosmosis

69. After being formed by ribosomes on the endoplasmic reticulum, what is the next organelle to which a protein might be transported?

A. Mitochondria C. Nucleus

B. Smooth endoplasmic reticulum D. Golgi apparatus

70. The Industrial use of enzyme is helpful for the environment as it contributes to reduction of CO2 emission. In which of the following is there more mass of CO2 emission saved per ton of product by using enzyme technology rather than traditional methods?

A. Bread making C. paper making

B. Manufacturing of antibiotics D. cheese making

71. In an experiment, you measure the concentration of a polar molecule inside and outside the cell and find that the concentration of this molecule is gradually increasing inside the cell. You also measure the concentration of ATP inside the cell and find that it is dropping. Which of the following processes are you likely to be observing?

A. Osmosis C. Active Transport

B. Facilitated diffusion D. Simple diffusion

72. Mitochondria and chloroplasts share all of the following characteristics EXCEPT that they:

A. Are capable of ATP synthesis.

B. Capture the energy of sunlight to meet metabolic demands.

C. Possess their own DNA

D. Are surrounded by a double membrane

73. Which of the following statements about prokaryotes is incorrect?

A. Prokaryotes appeared on earth before eukaryotes

B. Prokaryotes have circular pieces of DNA within their nuclei

C. Prokaryotes contain cytoplasm

D. Prokaryotes contain ribosomes

74. Which of the following cell organelles contains RNA?

A. Mitochondria B. Plastids C. Lysosomes D. Ribosomes

75. Which cell organelle is present in the prokaryotic and eukaryotic cells?

A. Endoplasmic reticulum B. Mitochondria C. Nucleus D. Ribosome

76. Which of the following cell organelles does not contain DNA?

A. Nucleus B. Lysosomes C. Chloroplast D. Mitochondria

77. In the comparison of a DNA molecule to a twisted ladder, the upright sides of the ladder are:

A. Nitrogenous bases linked together. C. Deoxyribose linked to phosphate.

B. Hydrogen bonds between bases. D. Nitrogenous bases linked to phosphate.

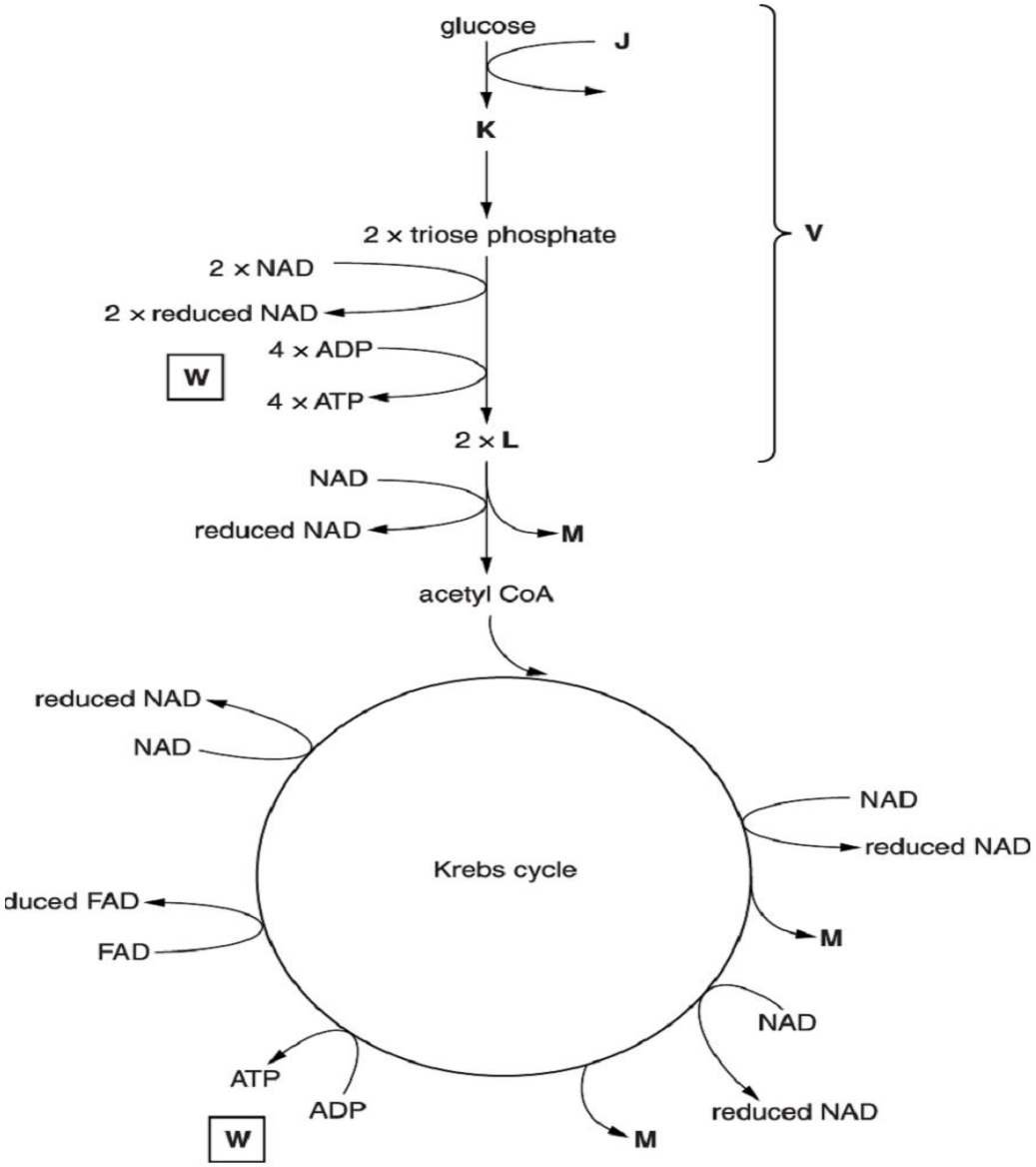
78. _____ is involved in the synthesis of phospholipids.

A. Mitochondria C. Smooth Endoplasmic Reticulum

B. Ribosome D. Rough Endoplasmic Reticulum

79. A plant has a unique photosynthetic pigment. The leaves of this plant appear to be reddish yellow. What wavelengths of visible light are being absorbed by this pigment?
    A. Red and yellow
    B. Blue and violet
    C. green and yellow
    D. green, blue, and yellow
80. The correct pair of organelles and their function is_____
    A. Mitochondria: Transport of materials from the nucleus to the cytoplasm.
    B. Golgi apparatus: Modification and glycosylation of proteins.
    C. Endoplasmic Reticulum: Selective barrier for the cell.
    D. Lysosomes: Membrane bound organelles that convert fat into sugars
81. An animal cell lacking oligosaccharides on the external surface of its plasma membrane would likely be impaired in which function?
    A. Transporting ions against an electrochemical gradient
    B. Cell-cell recognition
    C. Maintaining fluidity of the phospholipid bilayer
    D. Attaching to the cytoskeleton
82. You are working on a team that is designing a new drug. In order for this drug to work, it must enter the cytoplasm of specific target cells. Which of the following would not be a factor that determines whether the molecule enters the cell?
    A. size of the drug molecule
    B. charge on the drug molecule
    C. similarity of the drug molecule to other molecules transported by the target cells
    D. lipid composition of the target cells' plasma membrane
83. What is the correct sequence of organelles for the export of material out of a cell?
    A. Rough ER - Smooth ER - Golgi apparatus
    B. Smooth ER - Rough ER - Golgi apparatus
    C. Rough ER - Golgi apparatus - Smooth ER
    D. Golgi apparatus - Rough ER - Smooth ER
84. What is the significance of the conversion of pyruvate to lactate during fermentation?
    A. Pyruvate becomes available to enter the mitochondrial matrix
    B. The citric acid/Krebs cycle is initiated
    C. NAD+ is regenerated for use in glycolysis
    D. ATP is produced
85. Which of the following groups of plants carry out light dependent and light independent reactions of photosynthesis in separate cells?
    A. C-3 plants
    B. CAM plant
    C. C-4 plant
    D. Plants without chlorophyll
86. Plants that follow CAM photosynthesis pathway carryout the two stages of photosynthesis at different times. Which of the following products are formed during the night?
    A. ATP and NADPH
    B. CO_2 and sugar
    C. Malate and sugar
    D. Oxaloacetate and malate

87. ATP is produced in cells by the process of respiration. Some of the reactions involved in the process of respiration are outlined in the figure. Answer the following questions based on the figure.



Identify compounds K, L, and M

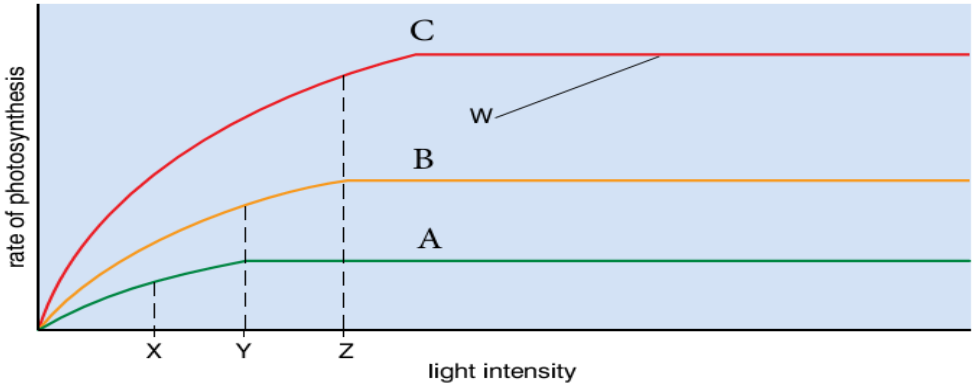
A. Pyruvate, Glucose-6- Phosphate, and CO2
B. Glucose-6- Phosphate, Pyruvate, and CO2
C. CO2, Pyruvate, Glucose-6- Phosphate
D. pyruvate, Glucose-6- Phosphate, CO2

88. Process V, W, and M are respectively

A. Glycolysis, substrate level phosphorylation and decarboxylation
B. Glycolysis, oxidative phosphorylation, and dehydrogenation
C. Glycolysis, link reaction and Krebs cycle.
D. Glycolysis, oxidative phosphorylation and decarboxylation.

89. Assume a thylakoid is somehow punctured so that the interior of the thylakoid is no longer separated from the stroma. This damage will have the most direct effect on which of the following processes?
    A. The splitting of water
    B. The absorption of light energy by chlorophyll
    C. The flow of electrons from photosystem II to photosystem I
    D. The synthesis of ATP

90. The Figure Below shows the effect of light intensity on the rate of photosynthesis at different concentrations of carbon dioxide and at different temperatures. Question 81 relate to this graph.



Which region of the graph, W, X, Y or Z, represents conditions in which light intensity is not limiting the rate of photosynthesis?

A. W B. X C. Y D. Z

91. The biochemical mechanism by which chlorophyll absorbs light energy is efficient because
    A. The different pigment molecules in the antenna complex absorb the same wavelength of light
    B. The molecules of photosystem and ETCs are fixed in the membrane of thylakoid
    C. The same pigment molecules in the antenna complex absorb different wavelength of light.
    D. The molecules of photosystems and ETCs are flouting around in a solution.

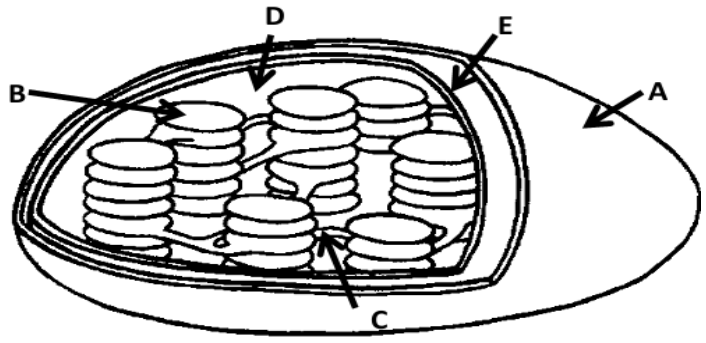
92. A green plant is kept in a brightly lighted area for 48 hours. What will most likely occur if the light intensity is then reduced slightly during the next 48 hours?
    A. The rate at which nitrogen is used by the plant will increase.
    B. Photosynthesis will stop completely.
    C. The rate at which oxygen is released from the plant will decrease.
    D. Glucose production inside each plant cell will increase.

93. The enzyme that is involved in Carbon fixation and Calvin cycle in a C4 plant is respectively
    A. Only RuBP oxidase
    B. Only PEP Carboxylase
    C. PEP Carboxylase and RuBP Carboxylase
    D. PEP Carboxylase and PEP Carboxylase

94. The cells of C3 plants in the tropics close their stomata to minimize water loss, as a result concentration of CO2 in the leaves falls. when C3 plants face such problem, ribulose bis phosphate react with oxygen and produce
   A. Oxaloacetate and water in the peroxisome
   B. Triose phosphate and sugar in mitochondria
   C. Glycerate phosphate and phosphoglycolate in the chloroplast
   D. H_2O_2 and CO_2 in the mitochondria

95. The correct sequence of flow of electrons in the light reaction is
   A. PSII, plastoquinone, cytochromes, PSI, ferredoxin
   B. PSII, PSI plastoquinone, cytochromes, ferredoxin
   C. PSI, ferredoxin, PSII,
   D. PSI, plastoquinone, cytochromes, PSII, ferredoxin

96. When CO2 is added to PEP, the first stable product synthesized is:
   A. Pyruvate
   B. Glyceraldehyde-3-phosphate
   C. Phosphoglycerate
   D. Oxaloacetate



97. Based on the above figure, the inner membrane is labeled as ____ .
   A. E B. B C. C D. D

98. Thylakoid membranes within chloroplasts contain chlorophyll. The Calvin cycle occurs in the stroma of the chloroplasts. How are these processes occurring within the Calvin cycle and the thylakoid membrane connected?
   A. The Calvin cycle uses high-energy molecules formed within the thylakoid membrane to convert CO2 into sugar molecules.
   B. The Calvin cycle uses sugar molecules formed within the thylakoid membrane to generate high energy molecules.
   C. The processes in the thylakoid membrane use high-energy molecules formed during the Calvin cycle to convert CO2 into sugar molecules.
   D. The processes in the thylakoid membrane use sugar molecules formed during the Calvin cycle to generate high-energy molecules.

99. One bean plant is illuminated with green light and another bean plant of similar size and leaf area is illuminated with blue light. If all other conditions are identical, how will the photosynthetic rates of the plants most probably compare?

A. Neither plant will carry on photosynthesis.
B. The plant under the blue light will carry on photosynthesis at a greater rate than the one under the green light.
C. Photosynthesis will occur at the same rate in both plants.
D. The plant under the green light will carry on photosynthesis at a greater rate than the one under the blue light.

100. Proteins which are found in both thylakoid and inner mitochondrial membrane are ___?

A. Reduced NAD dehydrogenase and ubiquinone
B. Cytochrome complex and ATP synthase
C. RUBISCO and ATP synthase
D. Cytochrome complex and ubiquinone.

Answer sheet

Name _____ Grade & Section_____ Ro//No_____

1.	21.	41.	61.	81.
2.	22.	42.	62.	82.
3.	23.	43.	63.	83.
4.	24.	44.	64.	84.
5.	25.	45.	65.	85.
6.	26.	46.	66.	86.
7.	27.	47.	67.	87.
8.	28.	48.	68.	88.
9.	29.	49.	69.	89.
10.	30.	50.	70.	90.
11.	31.	51.	71.	91.
12.	32.	52.	72.	92.
13.	33.	53.	73.	93.
14.	34.	54.	74.	94.
15.	35.	55.	75.	95.
16.	36.	56.	76.	96.
17.	37.	57.	77.	97.
18.	38.	58.	78.	98.
19.	39.	59.	79.	99.
20.	40.	60.	80.	100.