ABOKER PREP. Biology Grade - 12 ENTERANCE EXAM.2000-2009EC

Unit – 1

1. If an HIV patient takes a drug that inhibits the function of the viral reverse transcriptase enzyme, which of the following processes would be primarily affected?
   A. Energy of the virus into the patient's cells C. Copying if RNA into DNA
   B. Copying if DNA into RNA D. Protein synthesis
2. Some countries demand foreign travelers to produce HIV-free certificate before letting them enter the country. What do we call this type of disease control mechanism?
   A. Legislative B. Physical C. Cultural D. Biological
3. Which one of the following statements is **correct** about HIV?
   A. It is a bacteriophage C. It is a DNA virus
   B. It is a retrovirus D. It infects plants and animals alike
4. Identify from the following a biological control method of malaria?
   A. Use of fishes to feed on mosquito larvae
   B. Use of DDT spraying to kill mosquitoes
   C. Using crop rotation system in farms
   D. Hand picking and physical removal of weeds and affected plants
5. Identify the disease that is not correctly paired with the substance whose deficiency causes the disease?
   A. Beriberi –Nicotinic acid C. Night blindness – Vitamin A
   B. Scurvy – Vitamin C D. Rickets- Vitamin D
6. With which type of agricultural crops is nitrogen fixing bacteria more associated?
   A. Legumes B. Cereals C. Vegetables D. Fruits
7. Of the following, which cell type is attacked by HIV
   A. Red blood cell B. Sperm cell C. Egg cell D. T-helper cell
8. If one regulation includes an orange in his daily diet, which deficiency disease would be avoided?
   A. Night blandness B. Pellagra C. Beriberi D. Scurvy
9. Which of the following diseases of the livestock is associated with tsetse flies?
   A. Rinderpest B. Trypanosomiasis C. Blackleg D. Anthrax
10. What is the cause of infectious diseases?

A. The parental C. Carcinogenic substances

B. Microorganisms D. Bad lifestyles

11. Choose the alternative that illustrates the medical application of biotechnology?

A. Bio- fuel production C. Biosensors for testing blood glucose level

B. DNA finger printing technology D. Protein production from single cells

12. Among the following human diseases, identify the one that is transmitted through a vector?

A. Leprosy B. Chancroid C. Gonorrhoea D. Leishmaniasis

13. A number of viruses, including HIV, have more than one strain. This shoes that viruses are?

A. Capable of living outside their hosts C. Capable of mutation

B. Capable of reproduction D. Obligate parasites

14. Which of the following are rod-shaped bacteria?

A. Cocci B. Spirochaetes C. Spirilla D. Bacilli

15. What are bacteriophages?

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

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

A. Pneumonia C. Anemia

B. Opportunistic infection D. malnutrition

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

A. Yellow fever B. Pneumonia C. Cholera D. Typhoid fever

18. Which of the following is the right vector to transfer alien genes to bacteria through genetic engineering?

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

19. Why are T-lymphocytes more vulnerable to HIV infection?

A. Thin cell membrane C. HIV receptor protein

B. gp 120 on their surface D. Large pores in their cell membrane

20. Which of the following statements is **true** about bacteria?

A. Bacteria found in the human body are all parasitic

B. All bacteria are harmful because they spoil foods

C. All bacteria cause diseases to plants, animals and human in some way

D. Some bacteria living in the human body make vitamins needed by the body

21. Which one of the following is the mode of reproduction in bacteria?

A. Mitosis B. Binary fission C. Conjugation D. Lysogenization

22. If AIDS patients are given anti-retroviral drugsthat are targeted against the protease enzyme, which one of the following stages of the HIV life cycle would be inhibited?

A. Entry into the host cell C. Integration of viral parts into a whole virus

B. Reverse transcription D. Their enzymes do not denture at the temperature

23. Choose the disease that is caused by what is known as the “droplet infection”?

A. Flu B. AIDS C. Cholera D. Malaria

24. Which of the following is the best collective name for all bacteria with spherical shapes?

A. Cocci B. Bacilli C. spirochaetes D. Streptococci

25. In which part of the cell do Gram-positive and Gram-negative bacteria differ regarding their staining property with gram’s stain?

A. Cytoplasm B. Cell membrane C. Cell wall D. Nucleus

26. To which of the following groups does HIV belong?

A. Plasmids B. Retroviruses C. DNA viruses D. Bacteriophages

27. What are the individual strands of a fungal mycelium called?

A. Fungus B. Spores C. Hyphae D. Hydra

28. What is the main mode of transmission of diseases such as cholera and typhoid fever?

A. Sexual intercourse C. Blood-to-blood contact.

B. Bites of animal vectors. D. Drinking contaminated water

29. Viruses are better characterized as:

A. Decomposers Producers C. Carnivores D. Parasites

30. Which one of the following steps in the life cycle of HIV is blocked if an antiretroviral drug that inhibits the reverse transcription enzyme is given to an AIDS patient?

A. Formation of DNA from RNA

B. The entry of HIV into CD4 cells

C. The assembly of parts into HIV particle

D. The integration of HIV DNA into host chromosome

31. What are the most frequent causative agents of good poisoning?

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

32. Which of the following human diseases can be prevented by taking proper diets?

A. Degenerative diseases C. Social diseases

B. Genetic diseases D. Deficiency diseases

33. Which of the following practices does **NOT** normally transmit HIV?

A. Sexual intercourse through anus C. Blood transfusion

B. Sharing injection needles D. Shaking hands

34. What is the important role played by microorganisms such as bacteria and fungi in the ecosystem?

A. Antibiotic production C. Forming organic substance

B. Recycling of nutrients D. Supplying energy to the ecosystem

35. To which of the following groups do those bacteriophages that integrate their DNA into the chromosome of their bacterial host belong?

A. Virulent viruses C. Lysogenic viruses

B. Lytic viruses D. Non-parasitic viruses

36. Which group of micro-organisms causes the disease known as athlete's foot?

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

37. Under which of the following groups can the fungi be more conveniently placed?

A. Autotrophs B. Heterotrophs C. Prokaryotes D. Plants

38. What is the advantage of using HAART (highly active anti-retroviral therapy) for the treatment of HIV?

A. It gives a lasting immunity to HIV. C. It prevents re-infection by HIV.

B. It prevents mutation of HIV. D. It helps to break the life cycle of HIV.

39. On which one of the following principles are most of the anti-HIV drugs currently in use working?

A. Inhibition of enzyme action C. Digesting of viral particles

B. Degradation of viral particles D. Phagocytosis of the virus

40. If a new anti-HIV drug is to be developed to prevent the virus from entering the hose cell, which one of the following processes should the drug target?

A. Reverse transcription C. Assembly of viral parts into a whole viral

B. Binding of GP 120 and CD4 D. Integration of viral DNA into host DNA

41. Which of the following groups of bacteria consists of rod shaped cells?

A. Gram-positive B. Bacilli C. Cocci D. Spirilla

42. Which of the following do viruses share with cells?

A. Cell wall B. Cytoplasm C. Nucleic acid D. Protoplasm

43. Which of the following is true about protozoa?

A. They are a group of bacteria C. They represent both plant and animals

B. They are one-celled plants D. They are unicellular animals

44. Choose the characteristics that viruses share with living things.

A. They are made up on of many specialized cells **C**. They contain chlorophyll

B. They contain genetic material D. They reproduce by mitosis

45. 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

46. From which organism is the first antibiotic used in medicine produced?

A. Gram negative bacteria C. Genetically modified protozoa

B. Members of the fungi D. Higher plants

47. What does the absence of chloroplasts in a unicellular organism indicate?

A. Reproduction by sexual means C. Heterotrophic nutrition

B. Autotrophic nutrition D. Complete lack of metabolic processes

48. . Which colour do gram positive bacteria stain with Gram stain?

A. Red B. Purple C. Pink D. White

49. Among the following organisms , which one belongs to the prokaryotes?

A. Paramacium B. Streptococcus C. Spirogyra D. Tapeworm

50. Which of the following features makes human T-lymphocyte cells more vulnerable to HIV attack? Presence of ;

A. Cell membrane B. DNA on the chromosome

C. CD4 on the membrane surface D. Pores in the cell membrane

51. Which of the following group of micro-organisms does not contain parasitic membrane?

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

52. Which one of the following shows the feeding method of decomposers

A. Saprobiotic nutrition B. Autotrophic nutrition C. Parasitic nutrition D. Intracellular digestion

53. The T- lymphocyte cells of AIDS are destroyed by

A. multiplication of HIV inside the cell B. infection of opportunistic organisms

C. the immune system of host orgnism itself D. the CD4 receptors on cell surface

54. Which stage in the life cycle of HIV is disrupted if AIDS patients are treated with adrug that has a protease inhibiting activity?

A. Entry of virus into the host C. Conversion of viral RNA TO DNA

B. Integration of viral DNA into host DNA D. Assembly of viral parts into whole virus

55. Which of the following is a routine method used by clinics to test people for HIV infection?

A. Microscopic examination for the virus C. Counting the number of white blood cells

B. Testing for human anti-HIV antibody D. Measuring the amount of hemoglobin

56. One of the following is true about bacteriophages that have lysogenic life cycle

A. They are RNA viruses

B. They multiply in the host immediately after infection

C. They integrate their nucleic acid in to that of the host

D. Progeny viruses are released by chronic release method

57. . Which of the following disease is correctly matched with its causative agent?

A. Malaria - fungus B. AIDS - virus C. Ringworm - protozoa D. Syphilis - worm

58. Which step in the HIV life cycle is disrupted by an anti-retroviral drug that competitively inhibits the reverse transcriptase enzyme?

A. Entry in the host cell B. Assembly of viral parts in to virus

C. Formation of DNA from RNA D. Integration of viral DNA in to host DNA

59. In what way would AIDS patients benefit from treatment with anti-retroviral drugs?

A. Reduction of HIV replication B. Provision of cure for AIDS

C. Immunizing againest HIV C. Killing of opporunistic infectious agents

60. Which of the following is the best collective name for all bacteria with spherical shapes?

A. Spirochaetes B. Bacilli C. Cocci D. Streptococci

61. Which of the following diseases is transmitted by mosquitoes?

A. Diabetes melitus B. Kaposi's cancer C. Rabies D. Malaria

62. Which micro-organism group belongs to the unicellular fungi?

A. Mushrooms B. Bacteria C. Cyanobacteria D. Yeasts

63. Among the following micro-organism which one is a fungus?

A. Plasmodium B. Yeast C. Paramecium D. Amoeba

64. Which of the following is the common characteristic of all microorganisms?

A. All are microscopic B. All are prokaryotic

C. All are bacterotrophic D. All are autotrophic

65. Which one of the following do viruses share with living organisms?

A. Nucleus covered with a membrane B. Organelles such as ribosome

C. Hereditary information D. Plasma membrane

66. What is the shape of group of bacteria known as bacilli?

A. Spiral B. Rod C. Spherical D. Cork-screw

67. Among the following, which group of micro-organisms is playing the major role in the recycling of nitrogen in ecosystem?

A. Fungi B. Protozoan C. Green algae D. Bacteria

68. Among the following microorganism, which one is NOT considered a true living organism?

A. Bread molds B. Bacteria C. Viruses D. Yeast

69. The type of bacteria found in long chains of spherical organismsis _____.

A.. staphylococcus B. coccus C.. bacillus D.. streptococcus

70. Bacteria are prokaryotes, meaning that _____.

A. they have ribosomes
B. their internal organization is similar to that of our own cells
C. their DNA is stored within a membrane-bound nucleus
D. they have only the cell membrane to carry out complex processes

71. From which of the following diseases can one be protected by sleeping under the cover of a mosquito net?

A. Sleeping sickness B. AIDS C. Malaria D. Athlete's foot

72. Which of the following has the highest risk of HIV transmission?
A. Hand shaking B. needle sharing C. towel sharing D. toilet sharing

73. Which of the following human cell types is attacked by HIV?
A. RBCs B. WBCs C. T-lymphocytes D. leukocytes

74. Which of the following group of viruses copy their RNA to DNA?
A. Bacteriophage B. DNA viruses C. RNA viruses D. Retrovireses

75. In which of the following do we use genetically modified bacteria for purposes other than human health?
A. Production of insulin C. production of herbicides
B. Production of antibiotics D. production of vaccines

Biology Grade - 12

Unit – 2

1. What is the appropriate term that collectively refers to the fungi and bacteria that change the dead organic matter to the small elemental units?
   A. Producers B. Carnivores C. Autotrophs D. Decomposers
2. Which one of the following terms is used to refer to the maximum number of individuals that a given environment can support over a long period of time without degradation of the environmental resources?
   A. Limiting factor B. Carrying capacity C. Climax community D. Density
3. Which biome of the world is characterized by less than 250mm of annual rainfall and plants called ephemerals?
   A. Desert B. Deciduous forests C. Coniferous forests D. Tropical rain forests
4. To which of the following global biomes would you classify the upper part of the bale mountains environment?
   A. Desert biome B. Deciduous forest biome C. Alpine biome D. Savanna biome
5. Which one of the following is true about a population whose size is maintained at the carrying capacity of its environment?
   A. It grows at its biotic potential
   B. It growth rate eventually declines

C. It overshoots the environmental resistance

D. It maintains a dynamic equilibrium with the environment

6. Which one of the following is the starting point of primary succession?

A. Abandoned farm land C. Forests cleared by humans

B. Forests destroyed by fire D. Land never been colonized before by life

7. Which mammalian pest has economic importance in Ethiopia?

A. Quelea B. Beetles C. Rodents D. Desert locust

8. Which of the following sources of energy is renewable?

A. Mineral coal C. Bio-fuel such as ethanol

B. Petroleum D. Natural gases such as methane

9. Which group of two words means the same in meaning?

A. Autotroph and producer C. Autotroph and carnivore

B. Autotroph and consumer D. heterotrophs and producer

10. In which biome of the world are epiphytes and lianas commonly found?

A. Savanna B. Desert C. Tundra D. Tropical rain forest

11. The name given to the pioneer plants that begin primary succession on very dry substratum like bare rock, sand or cooled volcanic lava is:

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

12. In which biome of the world are ephemerals and succulents more common?

A. Savanna B. Desert C. Deciduous forest D. Temperate grassland

13. In order for a population to grow at its biotic potential, which one of the following should be available?

A. Strong environmental resistance C. Maximum density independent effect

B. Maximum density dependent effect D. Unlimited supply of resources

14. One of the following is **true** about mutualistic interaction between two species?

A. One species benefits and the second harmed C. Both species benefit

B. One species benefits and the second remains unaffected D. Both species are harmed

15. In which aspect of biodiversity are such measures like richness abundance and taxonomic diversity in populations commonly applied?

A. Ecosystem diversity B. Cultural diversity C. Genetic diversity D. Species diversity

16. Which of the following terms is synonymous with a producer?

A. Omnivore B. Herbivore C. Carnivore D. Autotroph

17. Which of the following plant groups is a good pioneer colonizer in primary successions that start with bare rocks?

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

18. Which of the following methods of avoiding predation by animals is mimicry

A. Resembling another organism C. Producing warning colouration

B. Fighting away the energy D. Running away from the energy

19. In an ecosystem, the presence of which of the following groups is essential in order for the others to be present?

A. Autotrophs B. Herbivores C. Decomposers D. Omnivores

20. What is a biome?

A. A group of interacting individuals of the same species

B. The total life zone of the earth's surface

C. A group of populations that interact with the physical environment

D. A region of the earth characterized by distinctive life forms

21. What does the feeding relationship in the ecosystem consists of?

A. Many stages of community succession

B. Always a network of interconnected food chains

C. One organism feeds on another but itself eaten by another one

D. Recycling of solar energy between the source and the trophic levels

22. Which one of the following belongs to the category of heterotrophic organisms?

A. Algae B. Fungi C. Higher plants D. Mosses

23. Which of the following is a mismatch between a biome and what it contains?

A. Savanna – large herbivores C. Desert – cacti

B. Deciduous forest – evergreen trees D. Tropical rainforest – high biodiversity

24. In an ecosystem that consists of grasses, birds, grasshoppers and frogs, Which of the following food chain is possible?

A. Grass → frog → grasshopper → birds

B. Grass → grasshopper → frog → birds

C. Grass → birds → grasshopper → frog

D. Birds → frog → grasshopper → Grass

25. If a forest is protected in order to conserve wild coffee in the forest, what sort of conservation do we call this?

A. In situ conservation B. Ex situ conservation D. On farm conservation D. Cryopreservation

26. Which of the following makes a food web of an ecosystem different from a food chain?

A. Presence of many tropic levels

B. Clear sign of the cycling of materials

C. Presence of many interconnected food chains

D. Presence of many organisms through which energy passes

27. How do plants contribute to the carbon cycle?

A. When they respire, they release CO_2into the atmosphere

B. When they photosynthesize, they consume $CO_2$from the atmosphere

C. They do not contribute to the carbon cycle

D. Only A and B are answers

28. The carbon dioxide produced during the respiratory cycle and other processes is largely absorbed by which of the following?

A. The ozone layer B. Plants C. Animals D. The sky

29. Which one of the following has a unidirectional flow in an ecosystem?

A. Nitrogen B. Carbon dioxide C. Phosphorus D. Energy

30. Which term better capture the concept of variety of organisms present in a whole continent as well as all the genes found in them?

A. Niche B. Biodiversity C. Ecosystem D. Biome

31. All other factors remaining the same, which of the following decreases the size of a population?

A. Birth rate that is greater than death rate

B. Emigration rate that is less than immigration rate

C. Immigration rate that is greater than death rate

D. Emigration rate that is greater than death rate

32. Which of the following is expected to have a positive effect on the biodiversity of Ethiopia?

A. Diverse ecology C. Overgrazing by livestock

B. Extensive deforestation D. Logging and fuel wood removal

33. Which one of the following terms is most appropriate to collectively refer to all plants, animals and micro-organisms found in Muneas Forest in Ethiopia?

A. Ecology B.Ecosystem C. Population D. Community

34. What is biomass?

A. The number of species in a given biome

B. The total weight of living matter in a given area

C. The density of a species in a given area

D. The total energy found in plants and animals in an ecosystem

35. In a given ecosystem, member of Which one of the following feeding groups release nutrients that are locked up in organic molecules?

A. Herbivores B. Producers C. Carnivores D. Decomposers

36. What is the collective name for plants that are well adapted to live in very dry environments?

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

37. In which of the following biomes are epiphytes typically present as characteristic elements?

A. Tundra B. Boreal forest C. Cold desert D. Tropical rainforest

38. Which of the following is more likely to ensure the conservation of all the rest?

A. Soil conservation C. Wildlife conservation

B. Plant conservation D. Watershed conservation

39. How do animals obtain nitrogen?

A. By absorbing nitrates abd ammonia from the soil

B. From the proteins in the organisms they consume

C. By absorbing nitrogen gas from the atmosphere

D. Through a mutualistic relationship with nitrogen-fixing bacteria

40. How is it possible for different species to coexist in an ecosystem?
   A. Each species has a specific biome of its own
   B. Each species occupies a different niche within the ecosystem
   C. There is no competition for resources among species in an ecosystem
   D. All resources are equally shared among species in an ecosystem
41. What is the best term that refers to the maximum number of individuals that a given environment can support over a long period of time without degradation
   A. Density B. Climax community C. Carrying capacity D. Limiting factor
42. In Ethiopia, Which of the following groups of the vertebrates is the most diverse in terms of species number?
   A. Birds B. Mammals C. Reptiles D. Amphibians
43. Which of the following land biomes occupies a large part of Brazil, parts of equatorial West Africa and Southeast Asia?
   A. Acacia forest C. Coniferous forest
   B. Deciduous temperate forest D. Tropical rainforest
44. Which of the following is a threat to the survival of small population?
   A. Habitat destruction C. Disease resistance
   B. Breeding in captivity D. Absence of competition
45. Which one is a biotic factor that can influence a plant?
   A. The PH of the soil C. CO_2 concentration
   B. A pollinating animal D. The amount of radiant energy
46. Which of the following statements is consistent with the concept of the gene pool?
   A. Species with large gene pool have low potential of adaptation
   B. Endangered species usually have small gene pool
   C. Large gene pool is a hindrance for livestock improvement
   D. Species with large gene pool are prone to diseases
47. Which of the following is **NOT** recycled between organisms and the environment in an ecosystem?
   A. Energy B. Carbon C. Nitrogen D. Phosphorus

48. What is the term refers to all parts of the earth where living things are found?

A. Population B. Ecosystem C. Biosphere. D. Environment

49. Which one of the following is **NOT** one of the roles that microorganisms play in ecosystems?

A. Nutrient recycling C. Nitrogen fixation

B. Carbon fixation D. Energy recycling

50. Which one of the following demographic factors affects the number of human population globally?

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

51. Which one of the following is the main source of the greenhouse gases that are concentrating in the atmosphere of the earth?

A. Burning of fossil fuels. C. Plants growing in greenhouses

B. Photosynthesis by aquatic plants. D. Respiration by animals and plants.

52. Which group of organisms found in Ethiopia is represented by the highest number of endemic taxa?

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

53. When do populations of living organisms show exponential growth?

A. When the resources are plentiful.

B. Whenever they enter a new environment.

C. When they face strong competition from other species.

D. When the carrying capacity of the environment is reached.

54. Which of the following terrestrial biomes experiences hot days and cold nights?

A. Tundra B. Tropical rainforest C. Desert D. Grasslands

55. Which of the following statements is true about the nitrogen cycle?

A. Plants fix nitrates from atmospheric nitrogen.

B. The nitrogen used by animals largely comes from plants.

C. Nitrogen is consumed by bacteria and removed from the soil.

D. Nitrogen-fixing bacteria reduce the total amount of available nitrogen

56. What is the average projected rate of loss of biodiversity every 50 years?

A. 5% B.10% C. 20% 50%

57. What could be main reason behind the currently observed slow or stable rate of population growth in the industrialized countries?

A. Good family planning C. Poor health conditions

B. Increasing death rate D. High rate of child death

58. Which alterative contains only crops known to have been domesticated within Ethiopia?

A. Guizotia abyssinica, zea mays, pisum sativum

B. Vicia faba, Carica papaya Musa paradisiacal

C. Oriza sativa, Triticum aestivum solanum tuberosum

D. Coffea arabica Eragrostis tef, Ensete ventricosulum

59. Which stage in a primary ecological succession contains more biodiversity?

A. The third seral stage C. the second seral stage

B. The climax community D. the pioneer community

60. The tropical rainforest largely found in South America and Africa can be best characterized by a combination of which environmental features?

A. Low rainfall and low temperature C. High rainfall and High temperature

B. Low rainfall and High temperature D. High rainfall and low temperature

61. Which of the following terms mean stages in an ecological succession?

A. Pioneers B. Climaxes C. Seres D. Niches

62. Which factors are involved in the determination of climax vegetation?

A. Temperature and precipitation C. Grazing and browsing animals

B. Radiation and reflection D. Predators and preys

63. How do human beings increase biodiversity?

A. By reducing species richness C. By increasing genetic variability

B. By promoting habitat uniformity D. By narrowing ecological variability

64. Which of the following can be given as a good reason for finding large numbers of plant and mammals species in Ethiopia today?

A. Lack of ecological distribution C. Environmental free from predation

B. Presence of many biomes and habitats D. Good ecological and biodiversity management

65. Which component of soil fertility is improved when farmers grow legumes in crop rotation?

A. Phosphorus B. Nitrogen C. Sulfur D. Carbon

66. One of the following biomes in Africa is supporting large wild mammals such as elephants, giraffes and lions.

A. The Congo Rainforest C. The Rain Forest of western Ethiopia

B. The Savanna Grassland D. The Sahara Desert

67. In which of the following aspects is the tropical rainforest biome poor?

A. Species diversity C. Annual precipitation

B. Amount of sunlight D. soil fertility

68. Which of the following is **NOT** usually true as an ecological succession progresses to advanced seral stages?

A. More ecological niches are formed C. Species become more diverse.

B. The depth of the soil increases. D. Less population are supported.

69. In which one of the four phases of population growth is the number of the population the highest?

A. Lag phase B. Log phase C. Constant phase D. decline phase

70. What is the type of community called when it has reached has final and most complex stage of a succession?

A. Pioneer community B. Climax community C. Seral community D. Secondary community

71. Which of the following is an ecosystem?

A. A tropical rainforest C. The African continent

B. All the organisms in a given area D. The non-living components of an environment

72. What is the main reason for the high species richness of plants and mammals observed in Ethiopia?

A. Lack of predatory C. Presence of several biomes within the country

B. Lack of disturbance D. Efficient management of the ecological resources

73. In which of the following are flowers and fruits found?

A. Ferns and relatives C. Mosses and conifers

B. Gymnosperms and ferns D. Monocots and dicots

74. Which one of the following concepts contains all the others?

A. Species B. Genus C. Population D. Community

75. If the age pyramid of a certain country is narrowing at the base, what does this tell about the trend of the population size of the country? The population size is:

A. Declining B. Growing fast. C. Increasing slowly. D. Stablising

76. Which of the following parts of plant roots is harbouring nitrogen fixing bacteria?

A. Root nodule B. Root hair C. Root tip D. Root cap

77. Which of the following statements is true about matter and energy in the ecosystem?

A. Both matter and energy are recycled
B. Matter is recycled; energy is not recycled
C. Matter is not recycled; energy is recycled
D. Energy is recycled more than matter does

78. Which of the following forms of nitrogen is readily utilizable by green plants?

A. Atmospheric nitrogen B. Nitrite C. Ammonium ion D. Nitrate

79. What is the ultimate source of energy for all organisms living on the earth?

A. Water B. Nitrogen C. Oxygen D. The sun

80. In Which one of the following ways the Tundra biome differs from desert biome?

A. It is treeless biome
B. It receives little precipitation
C. It has little biodiversity
D. It has permanently frozen subsoil

81. Which of the following applies to the tropical rainforest?

A. Low rainfall and high temperature
B. High rainfall and high temperatur
C. Low rainfall and low temperature
D. High rainfall and low temperature

82. Which of the following resources is needed by an ecosystem from outside in order to sustain itself?

A. Producers B. Micronutrients C. Stomach D. Large intestinal

83. Among the following which one has little or no contribution to the loss of biodiversity?

A. Overgrazing by domestic animals
C. Clearing forests to grow crops

B. Growing crops of improved varieties D. Growing crops of landraces

84. Which of the following can create strong inter-specific competition if shared by two or more species?

A. Habitat B. Ecosystem C. Niche D. Predator

85. Suppose sites A, B, C and D have simpson's Index of Diversity (d) values of 20, 8, 16 and 3, respectively, which site is dominated by one or just a few species?

A. Site A B. Site B C. Site C D. site D

86. Which of the following is the largest ecological unit?

A. A community B. A biome C. A population D. An ecosystem

87. What is the ecological succession in which plant communities establish after an area has been completely demolished by fire?

A. Tree succession C. Primary succession

B. Secondary succession D. Bare rock succession

95. Which group of organisms in ecosystem release nutrients locked up in dead bodies of organisms

A. Parasites B. Decomposers C. Autotrophs D. Carnivores

96. Which of the following crops has its centre of origin and diversity in Ethiopia has become a leading

international commodity of commerce?

A. Teff B. Enset C. Coffee D. Anchote

.97. Which group of animals has the highest numbers of total and endemic species in Ethiopia ?

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

98. Which one of the following processes has a decreasing effect on the concentration of atmospheric carbon dioxide?

A. Cellular respiration B. Combustion of fossil fuel

C. Decomposition of dead organisms D. Photosynthesis

.99. Which of the following is not the correct characteristic of tropical rainforest?

A. Low biodiversity B. High temperature C. Heavy precipitation D. Trees of different heights

100. What is the long term primary effect of the current tree planting activities that Ethiopia is undertaking?

A. It will protect from harmful solar rays C. It will increase the global temperature

B. It will reduce the atmospheric CO_2 D. It will amend the holes in ozone layer

101. What happens when the carrying capacity of an ecosystem is reached?

A. Excretory product accumulates and population numbers increase.

B. Population numbers decline rapidly

C. Population numbers remain more or less constant

D. Resources are plentiful and population shoot up.

102. Which one of the following is a biotic factor operating within an ecosystem?

A. The amount of helium gas in the air C. The rate of flow of water in a river

B. The carnivores that consume other animals D. The type of climate in a given region

103. Which of the following is NOT a true characteristic of the population of most of the developing countries of the world?

A. High fertility rate C. Increasing population size

B. More number of old people than young people D. Birth rate greater than mortality rate

104. What does reason that plants do not use nitrogen directly from the atmosphere

A. Nitrogen concentration is low in the atmosphere

B. The molecular size of nitrogenis too large to pass through the stomata

C. Nitrogen can enter plants only through the root hairs

D. Plants lack the necessary procss to use elementary nitrogen

105. Which of the following biomes of the earth has the greatest diversity of species?

A. Deciduous forest B. Tropical rain forest C. Desert D. Tundra

106. Which of the following organisms usually forms the pioneer community in a primary biological succession?

A. Annual herbs B. Lichens C. Trees D. Ferns

.107. Which of the following industries can reduce more CO_2 emission by shifting to the use of enzymes in the manufacturing process?

A. Bread making B. Cheese making C. Leather making D. Manufacturing cosmetics

108.What are the possible consequences of deforestation of the tropical rainforest?

A. An increase in existing ecological niches B. Reduction in species diversity of an area

C. Increased removal of CO_2 from the atmosphere D. An increase in the amount of nitrogen in the soil

109.If an area is dominated by just one species having very many individuals , what would be its index of diversity?

A. Fluctuating B. High C. Low . D Unpredictable

110.Which of the following terms refers to the movement of individual out of a population?

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

111.Among the vertebrates found in Ethiopia , which class has the highest percentage of endemic species?

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

112.Which of the following processes involved in the water cycle is carried out by green plants.

A. Evaporation B. Precipitation C. Condensation D. Transpiration

113.In which biome are epiphytes typically present as a characteristic element?

A. Tropical montane forest B. Cold deseret woodlands C. The tundra enviroment D. Boreal deciduous forests

114. If a ountry has a larger number of young people relative to the number of old people , to which category of counties does it belong?

A. Industrial B. Hunter - gatherer C. Post-industrial D. Developing

115.Which of the following is an important way by which green plants mitigate the greenhouse effect ?

A. Use of fire ood to replace coal B. Removing CO_2 from the atmosphere

C. Releasing water to the atmosphere D. Releasing oxygen to the atmosphere

116.In Ethiopia animals diversity , which group is represented by the highest number of orders, families, genera and species?

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

117.Why is it that many grassland areas sometimes revert to woodlands or forests?

A. Low rainfall B. Abscence of grazing C. Cold weather D. Intensive browsing

118.Which of the following is NOT a features of eusociality?

A. Co-operative caring for the offspring B. Several generations live in a colony

C. Well defined division of labour D. Co-operative foraging behaviour

119.Which of the following ecosystems is highly dominated by a single species?

A. A maize field B. A grazing land C. A forest D. A lake

120.Which of the following terms best describes the kind of ecological successions that occurs on an abandoned agricultural field?

A. Primary succession C. Pioneer succession C. Ecological evolution D. Secondary succession

121. What is the important role of bacteria in the ecosystem?

A. They cause human disease B. They cause animal diseases

C. They recycle nutrients D. They are used in industry

122. Where would the carbon from a burning forest primarily go to?

A. Atmosphere B. Herbivores C. Vegetation D. Water

123. In a biological succession , which of the following plant types usually form the climax community?

A. Lichens B. Mosses C. Annual herbs D. Trees

124. Among the following factors , which one is becoming the greatest threat to the biodiversity on earth?

A. Carbon emission B. Wildfire C. Pathogens D. Human activities

125. In the process of plant response to stimuli known as phototropism, which component corresponds to auxin production by the plant exposed to unidirectional light source?

A. The receptor cell B. The stimulus C. The coordinating system D. The effectors cells

126. In which caste of the honey bee is there more number of individuals in a given bee colony?

A. Queen B. Juvenile male C. Adult male D. Worker

127. What do we call the place where organisms live in their ecosystem?
A. Abiotic B. Biotic C. Habitat D. Niche

128. Which of the following is NOT recycled in the ecosystem?
A. Sulphur B. energy C. carbon D. phosphorus

129. Which of the following is a type of ecological succession that starts from a cleared forest area?
A. hydrosere B. primary C. secondary D. pioneer

130. Which of the following is the major role played by bacteria and fungi in the ecosystem?

A. Causing diseases B. nutrient cycle C. fixing CO_2 D. producing antibiotics

131. Among the following, which one is held most responsible for the present fast depletion of the world biodiversity?

A. Herbivores B. carnivores C. Grazers D. humans

132. Which of the following demographic factors can increase the size of the world population?

A. Natality B. migration C. emigration D. immigration

133. Which of the following processes is most important to release nutrients from dead organic matter into the soil?

A. Fixation B. decomposition C. excretion D. respiration

134. Which of the following biomes supports the highest diversity of plant and animal life?

A. Tropical rainforest B. deciduous forest C. grassland D. African savannah

135. Biomes where trees predominate are called _____.

A. Polar biomes B. desert biomes C. forest biomes D. grassland biomes

136. The goals of biodiversity conservation includes all of the following EXCEPT

A. Protective individual species
B. Introducing exotic species into new environments
C. Preserving habitats and ecosystem
D. Making sure local people benefits from conservation efforts

137. The maximum growth rate characteristic of a species is called_____.

A. Limiting factor C. carting capacity
B. Biotic potential D. exponential growth pattern

138. The total amount of living tissue within a given tropic level in called

A. Organic mass B. energy mass C. tropic mass D. biomass

139. What mode of feeding do soil organisms that release nutrients from dead organic matter into the soil have?

A. Photoautotrophic B. saprophytic C. chemoautotrophic D. parasitic

140. Which group of bacteria reduces nitrate to nitrogen gas in the nitrogen cycle?

A. Nitrogen fixing bacteria C. denitrifying bacteria
B. Ammonium ion forming bacteria D. photosynthetic bacteria

141. When farmers are using fewer and fewer number of crop varieties, what would happen to the genetic diversity of a crop plants?

A. It would get eroded C. it would be more divers
B. It would be more conserved D. nothing would happen to it

142. Which part of Ethiopia are lions, elephants and giraffes found more commonly?

A. In the afroalpine and subafroalpine zone
B. In the highland areas of northern Ethiopia
C. In the grassland of southwestern Ethiopia

D. In central and northern parts of the rift valley

143. The main of factors that determines the type of terrestrial biomes in a certain geographical area are:

A. Soil and vegetation formation
B. Soil and biological diversity
C. complexity if ecological succession
D. precipitation and temperature

144. Which of the following is the most unlikely action that would be expected from Ethiopians who have been given adequate biological literacy?

A. Engagement in activities resulting in biodiversity loss
B. Supporting activities concerned with food security
C. Awareness about climate change and its problem
D. Engagement in biological resource conservation

145. Which one of the following group of organisms had higher species diversity during the past geologic times than at present?

A. Angiosperms
B. Insects
C. Birds
D. Cytoplasmic streaming

146. The concentration of which of the following gases is on the increase in the atmosphere in recent years than before? A. Carbon dioxide B. Oxygen C. Nitrogen D. Ozone

Biology Grade - 12

Unit – 3

1. Which of the following carcinogenic agents is a common cause of skin cancer in humans?
   A. Ultraviolet radiation B. DNA viruses C. RNA viruses D. Chemical mutagens
2. Which of the following techniques is more appropriate to produce genetically modified organism?
   A. Sexual hybridization
   B. Genetic engineering
   C. Artificial insemination
   D. vegetative propagation
3. What is the name of the process of synthesizing mRNA along a DNA template?
   A. Transformation B. Transcription C. Translation D. Translocation

4. If a cell having 2n = 40 chromosomes divides mitotically, how many chromosomes are expected each daughter cell?

   A. 10 B. 20 C. 40 D. 80

5. During which stage of meiosis do members of homologous pairs of chromosomes separate?

   A. Prophase I B. Anaphase I C. Metaphase II D. Anaphase II

6. The DNA of a certain organism has guanine as 30 percent of its bases. What percentage of its bases would be counted for by adenine?

   A. 10% B. 20% C. 30% D. 60%

7. Scientists successfully transferred and inserted a bacterial gene to rice plants and produced the ‘’Golden rice”, a transgenic rice with very high content of vitamin A the grain. Which research technique did they apply in this process?

   A. Normal breeding C. Protoplast fusion

   B. Grafting bacteria to rice D. Genetic engineering

8. In order to produce progeny that are genetically identical to their parents as well as to each other, which of the following methods is appropriate for breeders to use?

   A. Hybridization B. Inbreeding C. Artificial insemination D. Cloning

9. Suppose in a population at Hardy- Weinberg equilibrium the frequencies of allele A = 0.5, and allele a = 0.5, what are the percentages of genotypes AA, Aa and aa, respectively?

   A. 36%, 16%, 48% C. 25%, 50%, 25%

   B. 16%, 36%, 48% D. 36%, 48%, 16%

10. How many codons are there in the genetic code?

    A. 4 B. 16 C. 64 D. 256

11. In humans’ what are the chances that the body at birth would be a boy or a girl?

    A. 1:1 B. 1:2 C. 1:3 D. 3:1

12. The strand that is complementary to the DNA sequence give as TAACCG:

    A. AUUGGC C. TAAGCG

    B. ATTGGC D. GCCAAT

13. What are GMOs?

A. Processed foods B. Transgenic organisms C. Recombinant DNA D. General marine organisms

14. In a DNA strand of 3000 bases, 40% of the molecules are known to belong to guanine. Base. How many adenine base molecules are present in the same DNA strand?

A. 120 B. 300 C. 600 D. 1200

15. How many sperm cells are formed from 10 primary spermatocytes?

A. 10 B. 20 C. 40 D.80

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

A. Linkage of genes C. Segregation of genes

B. Dominance of genes D. Independent assortment of genes

17. On which of the following evolutionary ideas do Lamarck and Darwin fully agree?

A. Life is a result of natural processes C. Acquired characteristics are inherited

B. Natural selection leads to evolution D. Evolution occurs by the use-and disuse of body parts

18. Which biotechnological process has practical applications in criminal investigation?

A. Bio- fuel production C. DNA finger printing

B. Single cell protein technology D. Using the following to test blood glucose level

19. Choose the cells of the human body that are results of meiosis?

A. Bone cells B. Brain cells C. Egg cells D. Muscle cells

20. Among the following traits of the garden pea studied by Gregor Mendel, identify the one that did not express itself in the F_1 generation?

A. Yellow pod colour C. Round seed shape

B. Violet flower colour D. Axial flower position

21. In the cell cycle, which of the following phases is divided into G2 stages?

A. Interphase B. Prophase C. Metaphase D. Telophase

22. Which of the following does not happen during the cleavage of a zygote?

A. The cells double their contents before division C. The nucleus divides mitotically

B. The ratio of the size of the nucleus to the cytoplasm increase D. Growth occurs

23. Suppose a lady has given birth to four boys in a row. What is the chance that her next child will be a girl?

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

24. Which of the following mechanisms can separate two genes located on the chromosome?

A. Backcrossing B. Crossing C. Segregation D. Independent assortment

25. How do the two strands of DNA combine to form a molecule?

A. A best of one strand pairs with a complementary base of the other strand

B. The phosphate of one strand combines with the phosphate of the other strand

C. The sugar of one strand combines with the complementary sugar of the other strand

D. A ribose sugar combines with a deoxyribose sugar on the same DNA strand

26. What are the three components of a DNA molecule?

A. Glucose, nitrogen and phosphorus C. Sugar, phosphate group, nitrogenous base

B. Protein, carbohydrate and fat with base D. Monosaccharide, disaccharide, polysaccharide

27. Of the following information, which one was most important to the development of the techniques of modern genetic engineering

A. The knowledge about recessive characters C. The discovery of lethal genes

B. The formulation of Punnett squares D. The knowledge about the structure of the DNA molecule

28. Which of the following molecules is capable of mutation?

A. Nucleic acids B. Proteins C. Carbohydrates D. Lipids

29. Maize plant has 2n = 20 chromosomes. What is the number of chromosomes in the endosperm tissue of maize?

A. 10 B. 20 C. 30 D. 40

30. Suppose a lost found baby is claimed by the four families whose blood genotypes are shown. If the baby has blood type O, which of the families is the possible parent?

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

31. For what objective do geneticists engineer the Bt gene of bacillus thuringiensis into crop plants? To make the plant

A. Resistant to insect pests C. Resistant to herbicides

B. Resistant to pesticides D. Produce food of improved quality

32. Which of the following alternatives best defines gene flow?

A. The transmission of genetic information from the cytoplasm to the nucleus

B. The movement of genetic material from the nucleus to the cytoplasm

C. The transmission of genetic information from the cytoplasm to the nucleus

D. The movement of genes from one chromosome to another

33. Regarding seed characteristics, suppose a heterozygous round yellow pea plant of Rr Yy genotype is selfed and produced 128 seeds, how many of the seeds are expected to be round yellow?

A. 72 B. 64 C. 32 D. 16

34. How many daughter cells are produced from a single mitosis division?

A. Two B. Four C. Six D. Eight

35. Which one of the following refers to a change in a gene?

A. Mutation B. Replication C. Protein synthesis D. Transcription

36. Which of the following molecules requires a template molecule for its synthesis?

A. Cellulose B. Protein C. Starch D. Glycogen

37. In the life cycle of sexually reproduction organisms, which of the following processes restores the chromosome number from haploid to diploid state?

A. Fertilization B. Meiosis C. Chromosomes replication D. mitosis

38. Which of the following structures divides the cytoplasm of a plant cell into two halves?

A. Nuclear membrane B. Cell plate C. spindle D. Cleavage furrow

39. In plant hybridization experiment which one of the following is the best way to prevent self-pollination?

A. To remove the stamens C. To cross-pollinate flowers

B. To cover flowers with bags D. To make reciprocal crosses

40. Among the following choices, identify the ones that have identical DNA fingerprints?

A. Parents and children C. Fraternal twins

B. Non-twin sibs D. Monozygotic twins

41. Suppose in a monohybrid cross 80F_2 plants were produced, what is the number of the plants that are expected to have the dominant and the recessive phenotypes?

A. 70 dominant + 10 recessive C.50 dominant + 30 recessive

B. 60 dominant + 20 recessive D.40 dominant + 40 recessive

42. 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 C. They cannot form hybrid zygotes

B. Their hybrid is sterile D. They are ecologically isolated

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

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

44. Choose the breeding method used by humans to produce new and improved varieties of plants and animals?

A. Crossing-over B. Natural selection C. Artificial selection D. Independent assortment

45. If it is known that the total amount of DNA in a cell contains 300 nucleotides and adenine contributes to 80 of these, how many nucleotides go to guanine?

A. 35 B. 70 C. 80 D. 140

46. What proportion of the number of chromosomes found in a normal cell of an angiosperm plant is expected in its endosperm tissue?

A. Half B. Same C. Two times D. Three times

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

A. Protein → DNA → mRNA

B. DNA → Protein → tRNA

C. Protein → RNA → DNA

D. DNA RNA Protein

48. Which one of the following types of mutations is responsible for sickle cell anaemia?

A. Addition of a base pair
B. Deletion of a base pair
C. Substitution of a base pair
D. A shift in the reading frame of the genetic code

49. Which of the following phases of mitosis if blocked would produce a cell with twice as many chromosomes as the mother cell?

A. Interphase B. Prophase C. Anaphase D. Telophase

50. Why is it that the typical diploid chromosome number of many organisms including human beings is an even number?

A. It is only a coincidence
B. Chromosomes duplicate equal number of chromosomes
C. Both parents contribute equal number of chromosomes
D. Meiosis reduces chromosomes number

51. If, due to incomplete dominance, the F_1 plants from a cross of red flowered X white flowered in the F_2 generation?

A. 1 red: 2 pink: 1 white C. 1 red: 1 pink: 1 white
B. 2 red: 1 pink: 1 white D. 3 red: 1 pink: 1 white

52. If it is known that the total number of the purine bases account for 50% of a DNA molecule and if each of the remaining bases are known to have the same proportion, what proportion is accounted for by thymine along in the same molecule?

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

53. How many different kinds of amino acids are there for protein synthesis?

A. Twenty B. Twenty-four C. Twenty-six D. Thirty-two

54. As was shown by Gregore Mendel in garden pea, what percentage of the F2 generation of a monohybrid cross has the recessive phenotype?

A. 75% B. 50% C. 25% D. 12.5%

55. Which group of organisms has a system of protein synthesis in which transcription and translation take place at separate times?

A. In all eukaryotic organisms. C. In multicellular animals only.

B. Only in prokaryotic organisms. D. In both prokaryotic and eukaryotic organisms.

56. What do geneticists call the genotype in which the two alleles of a pair are identical?

A. Dominant B. Recessive C. Homozygous D. Heterozygous

57. Which one of the following is **NOT** a mutation?

A. DNA replication to form two daughter DNAs C. Gain of an extra chromosome by a cell.

B. Deletion of a base pair from DNA. D. Loss of a chromosome b a cell.

58. Which of the following is the best way to check whether an individual having a dominant phenotype is homozygous or heterozygous for the trait?.

A. To cross it to a homozygous recess individual C. To cross it to a heterozygous individual

B. To cross it to a homozygous dominant individual D. To self the individual

59. Which one of the following is referred to as the first law of Mendel?

A. The occurrence of alleles in pairs.

B. The dominance of one allele over the other

C. The equal contribution of alleles by both parents

60. In DNA cloning technology, which of the following molecules serves as a vector of gene of interest to be transferred to be bacterial host?

A. Bacterial DNA. B. Plasmid DNA. C. Nuclear DNA. D. Mitochondrial DNA

61. A genetic cross between two F1 –hybrid pea plants having yellow seeds (dominant) will yield what percent green-seeded (recessive) plants in the F2 generation?

A. 0% B. 25% C. 50% D.75%

62. What would most likely results if mitosis fails to be accompanied by cytoplasmic division?

A. Two cells without nuclei C. One cell without nucleus

B. Two cells each with one nucleus D. One cell with two identical nuclei

63. Which part of the angiosperm flower are both essential for the success of hybridization experiments?

A. Sepal and petal C. Pollen and filament

B. Stamen and petal D. Gynoecium and androcium

64. Among the following couple whose ABO blood genotypes are shown, which one can produce children of A, B, AB, O blood types?

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

65. Before making crosses, which part of the flower did mendel remove to avoid self pollination?

A. Stigma B. Ovule C. Ovary D. stamens

66. Which of the following is the correct F_2phenotypc ratio of a monohybrid cross?

A. 1 : 2 B. 1 : 1 C. 3 : 1 D. 2 : 2

67. One of the following is an important cause of gene mutation.

A. Old age B. Alcoholic drinks C. Smoking D. Radiation

68. How many chromosomes do humans inherit from each of their parents?

A. 23 chromosomes C. 46 chromosomes

B. 23 pairs of chromosomes D. 46 pairs of chromosomes

69. Which of the following is **NOT** true about the gene called SRY?

A. It is found on the Y – chromosomes. C. It determines maleness

B. Testes develop in its presence D, Females have two copies of this gene.

70. The speed ‘dolly’ is an example of which biotechnological manipulation of animals by human?

A. Transgenic animal C. Genetically engineered animal

B. Cloned animal D. Hybrid animal

71. Choose the one that is different from all the others.

A. Genetically modified organisms C. Genetically engineered organisms

B. Pathogenic organisms D. Transgenic organisms

72. Which of the following crops is considered to be the best choice for a better balance of essential amino acids as a human diet?

A. Maize B. Quinoa C. Rice D. Wheat

73. In a cross between heterozygotes what proportion is expected to be homozygous recessive?

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

74. Gene silencing is the function of one of the following molecules.

A. dsRNA B. mRNA C. siRNA D. tRNA

75. Which process is held responsible for chronic myelogenous leukemia?

A. Translocation B. Translation C. Transcription D. Duplication

76. Two parents of genotype Aa are cross-bred. The alleles show complete dominance. What proportion of the offspring will phenotypically look like their parents?

A. 0 B. ½ C. ¼ D. ¾

77. Among the following mating, where the ABO blood genotypes of the partners are shown, identify the mating in which all the children will have the same blood type.

A. AO XBO B. AA x OO C. AB x BO D. BB x AO

78. Suppose the amino acid coding region in a mRNA is 1200 nucleotides long, how long is the protein in terms of amino acid number?

A. 1200 amino acids B. 600 amino acids C. 400 amino acids D. 300 amino acids

79. In some human liver cells there are 92 chromosomes per cell. What is the ploidy level of such cells?

A. Haploid B. Diploid C. Tetraploid D. Hexaploid

80. Which of the following choices shows the end products of a mitotic cell division?

A. Gametes and ordinary cells C. Four genetically different cells

B. Two genetically different cells D. Two genetically identical cells

81. What exactly happens during a substitution mutation?

A. One base is replaced by a different base.

B. An extra base is added during DNA replication.

C. A base is missed out during DNA replication.

D. Changes occur in the arrangement or structure of a chromosome.

82. Which of the following group of animals have males with ZZ and females with ZW sex chromosome constitution?

A. Grasshoppers B. Birds C. Mammals D. Honey bees

83. On some crosses of maize, the progeny produces better yield than the parents. What is this phenomenon known as?

A. Dominance B. Heterozygosity C. Hybrid vigour D. Inbreeding depression

84. Which of the following techniques is used to separate DNA fragments according to their size on a gel?

A. Southern blotting B. Electrophoresis C. Radioactive D. Digestion by restriction enzyme

85. In a cross between round green pea of RRYY genotype and wrinkled yellow pea of rrYY genotype, what is the expected genotype of the F_1?

A. RRyy B. rrYY C. RRYY D. RrYy

86. Which one of the following is the mechanism by which two genes located on the same chromosome are separated?

A. Independent assortment B. Linkage C. Segregation D. Taking care of the larvae

87. During protein synthesis, where in the cell does transcription take place?

A. Ribosome B. Endoplasmic reticulum C. Nucleus D. Golgi apparatus

88. Which of the following is **NOT** a term used to describe organisms that have had foreign genes added to them?

A. Genetically modified organisms C. Transgenic organisms

B. Genetically engineered organisms D, Pathogenic organisms

89. Which field studies the way in which individual traits of organisms are transmitted from one generation to the next?

A. Genetics B. Ecology C. Evolution D. Morphology

90. Which molecules carry the instructions for protein synthesis?

A. Carbohydrates & lipid D.. DNA & RNA C. Amino acids D. Enzymes

91. In protein synthesis, what is produced during transcription?

A. Protein B. DNA C. mRNA D. Polypeptide

92. Which of the following types of chromosome mutations gives rise to an extra chromosome?

A. Inversion B. Translocation C. Deletion D. Non-disjunction

93. Which of the following pairs of individuals have identical DNA fingerprints?

A. Father and son C. Brother and sister

B. Mother and daughter D. Monozygotic twins

94. Which of the following mating produced children all having the same ABO blood phenotypes?

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

95. If a DNA contains 10% thymine, what is the percentage of cytosine in the DNA?

A. 10 % B. 30 % C. 40% D. 90 %

96. Which the following are the two major constituents of eukaryotic chromosomes

A. DNA and RNA B. DNA and Protein C. DNA and Carbohydrate D. RNA and Lipid

97. What is the process called when bacteria directly contact cell to cell and exchange thier genetic information ?

A. Conjugation B.Transformation C. Co - transformation D. Transduction

98. . What do you call a group of genetically identical plants produced by vegetative reproduction?

A. Family B. Clone C. Hybrid D. Genus

99. A cow was found to yield much higher milk than any of the breeds of the parental cattle. What could be the most probable reason for this?

A. Dominant genes B. Hybrid vigor C. Recessive genes D. Co-dominance genes

100. When the F1 hybrid of a monohybrid cross is back crossed with the homozygous recessive parent , what percentage of the offspring would be homozygous recessive?

A.0% B. 25% C.50% D. 75%

101. Which of the following is the correct constitution of the sex chromosome of a normal woman?

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

102. Which of the following is true about gene mutation?

A. Altering the DNA sequence of a gene B. Change in the position of a block of genes

C. Addition of genes to a chromosome D. Loss of genes from a chromosome

103.What is the circumstance that causes the health condition known as sickle-cell anaemia?

A. DNA denaturation B. Haemoglobin mutation C. RNA mutation D. Phosphate mutagenesis

104.. Based on similarity in number of amino acide found in haemoglobin, which one of the following animals has closer phylogenetic relations to human beings?

A. Chicken B. Horse C. Frog D. Gibbon

105.Which of the following sequence represents the correct change in number of chromosomes during fertilization?

A. n + n → 2n B. 2n → 2n C. n → n D. 2n → n + n

106.Which of the following is true about sex determination in birds?

A. They have the heterozagotic X and Y chromosomes B. Males have heterozygotic W and Z chromosomes

C. Females have the homozygote WW chromosomes D. They have the heterozygotic W and Z chromosomes

107. What percentage of the F2 progeny of a monohybrid cross is expected to have the recessive phenotype?

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

.108. Which of the following crosses will produce progeny with the phenotype ration of 3 : 1?

A. Crossing the F1 to the dominant parent B. Crossing two homozygote individuals

C. Crossing the F1 to the recessive parents D. Crossing two heterozygote individuas

109. Which one of the following terms refers to the failure of sister chromatids to separate from one another during anaphase?

A. Non- disjunction B. Replication C. Deletion D. Double inversion

110. In cell division , what is the phase that comes following the metaphase called?

A. Extraphase B. Prophase C. Anaphase D. Telophase

111. If a condon on a messenger RNA is UUU, what is the complementary anticondon on the transfer RNA?

A. UUU B. GGG C. CCC D. AAA

112. If a clone is produced by transferring a nucleus of animal A to an enucleated egg of animal B and the egg is then implanted in the uterus of animal C , which animal would the clone resemble most?

A. Animal C B, Animal B C. Animal A D. Other animals

113.If it is known that the total amount of DNA in a cell is 300 units and that adenine alone contributes 70 of these units , how many units go to cytosine?

A. 40 units B. 70 units C. 80 units D. 35 units

114.Suppose two heterozygous round yellow (RrYy x RrYy) pea plants were crossed and seeds were produced , how many of the seeds expected to be heterozygous round yellow?

A. 64 seeds B. 32 seeds C. 96seeds D. 128seeds

115.Which characteristic of RNA makes it suitable for moving out of the nucleus?

A. Inability to replicate B. Absence of thymine C. Its unstable nature D. Smallness of its size

116.Which aspects of biotechnology is considered strictly genetic engineering?

A. Providing gene therapy B. Production of new types of plants

C. Monoclonal antibodies D. Mapping of the human genome

117.How do different nucleotides of nucleic acids from a stand?

A. By hydrolysis synthesis B. By condensation reaction C. By peptide linkages D. By disulphide bridges

118.Supposing that 1000 individuals were produced from a cross between Bb and bb , how many of them are expected to have the Bb genotype?

A. 1000 B. 500 C. 50 D. 0

119. A dihybird cross of round (dominant) yellow (dominant) maize seeds gave all four possible phenotypes. What were the genotypes of the paretal plants?

A. Heterozygous genotypes for the shape and colour B. Heterozygous colour & homozygous shape

C. Homozygous genotypes for shape & colour D. Heterozygous shape & homozygous colour

120. If a plant is known to have a diploid chromosome number of 12, how many chromosomes would each of its male gametes have?

A. 3 B. 6 C. 12 D. 24

121. Individuals of which blood type CANNOT contribute O allele to their children?

A. Type A B. Type B C. Type AB D. Type O

122.The process by which the genetic information contained in a gene is copied into messenger RNA is---------- A. Mutation B. Transcription C. Translation D. Replication

123. Which of the following gives better evidence for resolution of disputed fatherland?

A. Genetic fingerprinting B. Gene cloning technique

C. Antigen-antibody reaction D. DNA hybridization

124. Which one of the following nucleotide pair bonds can be normally found in a DNA molecule?

A. Adenine-Guanine B. Guanine- Cytosine C. Cytosine- Uracil D. Adenine Cytosine

125. Which of the following is true?

A. Two parents with A and B blood groups can have children with type AB only

B. Two of the alleles that determine human ABO blood group are co-dominant

C. A gene may have many alleles but an individual has only one allele per gene

D. A homozygous red bull & a homozygous white cow produce all red offspring when the alleles are incompletely dominant

126. Which of the following biotechnologies has been used by human for thousands of years?

A. Genetic engineering B. Alcohol fermentation C. Monoclonal antibodies D. Gene transfer

127. Which of the following is the sex chromosome constitution of human males?
A. XX B. XY C. ZZ D. ZW

128. Which of the following parts of the flower did Mendel remove from young flowers to prevent self-pollination?
A. Stemen B. sepal C. petals D. Ovaries

129. What kinds of cross is performed to determine whether the parent was homozygous or heterozygous?
A. Monohybrid cross B. dihybrid cross C. back cross D. double cross

130. Among the following ABO blood group genotypes, which one produces two type of antigens?
A. I^AI^O B.I^BI^O C. I^AI^B D. I^BI^B

131. Which of the following methods do animal breeders use to produce domestic animals with hybrid vigor?
A. Feeding with nutritive food
B. Giving proper veterinary
C. mating together related animals
D. crossbreeding their animals

132. When Mendel crossed a tall pea plant with a short plant, the F1 progeny were all tall. What F1 did he obtain when he made the reciprocal cross?
A. Short plant B. tall plants C. extra-tall plants D. plants of average height

133. If a heterozygous tall pea plant (Tt) is crossed with a short pea plant (tt), what percentage of the progeny is expected to be short?
A. 100% B. 75% C. 50% D. 25%

134. Which of the following nitrogenous bases of nucleic acid is a purine base?
A. Adenine B. Uracil C. Cytosine D. Thymine

135. Which of the plant with the following genotypes is heterozygous?
A. BBYY B. BbYy C. bbyy D. YYBB

136. What happened when enzymes become denaturated?
A. They can normally catalyse the reaction
B. Their active site are changed
C. Rate of the reaction increases
D. Bonds holding amino acids are unaffected

137..At which of the following generations of crosses between dominant and recessive homozygote parents are all the progeny heterozygous?

A. P1 generation B. F1 generation C. F2 generation D. F3 generation

138. If in a DNA molecule consisting of 1000 base pairs, there are 300 adenine bases, how many guanine bases will be present?

A. 200 B. 400 C. 600 D. 700

139. Which form of mutation is responsible for the disease known as leukemia?

A. Duplication B. insertion C. inversion D. deletion

140. mutation may be described as:

A. phenotypic change C. change in genetic structure

B. continuous variation D. change due to hybridization

Biology Grade - 12

Unit – 4

1. Some species gradually evolve into a new species without splitting into two or more species. Which mode of evolution is operating in this case?

   A. Allopatric speciation C. Convergent speciation

   B. Sympatric speciation D. phyletic speciation

2. Which one of the following animals is found at a lower level of evolutionary advancement than the rest?

   A. Tilapia B. Hornbill C. Crocodile D. Rat

3. Washing hands with antibacterial soap kills, some bacteria while other bacteria become resistant due to mutation. Which branch of biology is best illustrated by this example?

   A. Feeding of bacteria C. Sexual reproduction of bacteria

   B. Morphology of bacteria D. Evolutionary change in bacteria

4. When a bell-shaped curve results from the analysis of a certain variable in a population, what type of natural selection is probably taking place in the population with regard to the variable?

   A. Disruptive selection C. Divergent selection

   B. Directional selection D. Stabilizing selection

5. Compared to the others, which one of the following plants is found at a higher level of evolutionary advancement?

   A. Conifer B. Moss C. Tree fern D. Grass

6. The many species of Galapagos finches were each adapted to eating different foods. This is an example of:

A. Gene flow C. Adaptive radiation

B. Sympatric speciation D. All of the above

7. Main moths recognize females of their species by sensing chemical signals called pheromones. This is an example of:

A. Behavioral isolation C. Habitat isolation

B. Gamete isolation D. Mechanical isolation

8. Which group of hominids is called the handy human?

A. Homo sapiens B. Homo erectus C. Homo habilis D. Australopithecus

9. Which of the following agricultural practices is expected to impose more genetic changes on crops?

A. Cultivation B. Domestication C. Sowing D. Harvesting

10. Which of the following physiological properties of life is primarily concerned with the perpetuation of species?

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

11. What kind of selection does a bell shaped curve in a variable indicate?

A. Disruptive selection C. Divergent selection

B. Unidirectional selection D. stabilizing selection

12. In the miller and Urey's stimulation experiment to study organic molecules formation in primeval atmosphere of the earth, all the following gases were used except which?

A. Ammonia C. Oxygen

B. Hydrogen D. Methane

13. The bones in human hands, fippers of the whale and wings of the bats are known as what?

A. Linker fossils C. Analogous structures

B. Homologous structures D. Vestigial structures

14. According to Lamarck's theory of evolution, what is the origin of new structures that are necessary for evolution?

A. Mutation C. Natural selection

B. Gene recombination D. Use and disuse of body parts

15. If the DNA of the following animals is hybridized to human DNA, with which one of them would human DNA hybridize more?

A. Horse C. Fish

B. Chimpanzee D. Mice

16. Which alternative best explains speciation

A. Members of a species diverge genetically and produce new species

B. It is characterized by minor extinction events

C. A process that only results from interspecific hybridization

D. Two different species are able to interbreed in captivity

17. Which of the following is expected to produce new combinations of genes?

A. Keeping a male goes and a female sheep in the same room

B. Hybridization of a tall variety of “teff” with a short variety

C. Vegetative propagation of fruit trees

D. Asexual reproduction of unicellular animals

18. Indicate the oldest relative of the modern horses?

A. Equus C. Eohippus

B. Mesohippus D. Piiohippus

19. To which biological species do Neanderthal humans belong?

A. Homo erectus C. Homo sapiens

B. Homo habilis D. Ardi ramidus

20. Among the following fossil forms of the human evolutionary ancestors, which one was the first to develop the ability to walk upright?

A. Homo erectus C. Aradipithecus ramidus

B. Home habilis D. Australopitheus afarensis

21. Which evolutionary evidence was very unlikely to have been used by Darwin in the formulation of the theory of evolution?

A. Comparative anatomy C. Fossils

B. Comparative biochemistry D. Geographical distribution

22. Which fossil shoes the evolutionary link between reptiles and birds?

A. Archaeopteryx C. Cyanognathus

B. Australopithecus D. Semouria

23. Suppose in a certain population natural selection removes individuals with average height, leaving tall and short individuals behind, which of the following modes of selection is in operation?

A. Stabilizing selection C. Directional selection

B. Normalizing selection D. Disruptive selection

24. What percentage of the amount of carbon 14 originally present in a fossil would be left its second half life

A. 75% B. 50% C. 25% D. 12.5%

25. Which one of the following modes of natural selection was responsible for the fast increases in the number of the black form of moths in Europe during industrial Revolution?

A. Stabilizing selection C. Normalizing selection

B. Disruptive selection D. Directional selection

26. According to the theory of evolution as proposed by Charles Darwin, Which one of the following is the most important driving force of evolution?

A. Natural selection C. Genetic recombination

B. Over-reproduction D. Mutation

27. Which group of organisms is found at a lower level of evolution according to the modern principles of biology?

A. Protists C. Animals

B. Fungi D. Plants

28. From which of the following sources did Charles Darwin get the idea that selection can change living organisms? From:

A. The work of plant and animal breeders C. The evolution theory of the Galapagos

B. His observation of the Lamarck D. The book by Malthus

29. Which one of the following is most important for speciation to occur?

A. Hybridization among populations

B. Isolation of the gene pool

C. Migration between populations

D. Free flow of genes between populations

30. Animals without close evolutionary relations are sometimes seen to have similar structures adapted for the same function. Which evolutionary principle is illustrated by this observation?

A. Convergent evolution C. Sympatric evolution

B. Divergent evolution D. Allopatric evolution

31. Which of the following descriptions is **true** about the action of selective pressures in populations? Selective pressure that acts:

A. Around the mean value is stabilizing

B. Around the mean value is disruptive

C. At both ends of the distribution is directional

D. At one ends of the distribution is stabilizing

32. To which genus of human-like organisms does Lucy belong?

A. The genus Homo
C. The genus Sahelaanthrpus
B. The genus Ardipithecus
D. The genus Australopithecus

33. Which of the following ideas is **NOT** a part of Darwin's theory of Evolution?

A. Over reproduction
C. Existence of heritable variation
B. Use-and disuse of body parts.
D. Competition for scarce resources

34. Which of the following fossils is the nearest to the common ancestor of the hominids and the apes?

A. Homo habilis
C. Ardipithecus ramidus
B. Homo erectus
D. Australopithecus afarensis

35. What is the most probable selection pressure responsible for the evolution of green skin colour in frogs inhabiting tropical rain forest?

A. Climates
C. infection by pathogens
B. Reproduction
D. predation

36. Which of the following is true about the evolutionary origin of groups of organisms?

A. The dinosaurs appeared before the origin of the land plants.
B. The earliest Homo sapiens appeared before the flowering plants.
C. The first photosynthetic organisms appeared before the oldest eukaryotes.
D. The first animals appeared before the formation of free O_2 in the atmosphere.

37. Why are fossils of soft-bodied organisms usually rare in the environment

A. They are generally small in size
B. Their bodies decompose readily
C. They all lived in environments where sedimentation did not occur.
D. They were never common in environments in which they lived.

38. Carbon 14 has a half life of about 5730 years. Suppose a fossil contains only 12% of the amount of Carbon 14 normally present in living organisms, how old is the fossil?

A. 5730 years
B. 17190 years
C. 11460 years
D. 22920 years

39. What does the structural similarity between the flipper of whales and arms of humans show?

A. Whales evolved from the human species
B. Whales are older than the human species
C. The human species began life in the oceans
D. Whales and humans had a common ancestry

40. Which of the following pairs of molecules can give information about how much two species are evolutionary related to one another?

A. DNA and proteins
B. Lipids and carbohydrates
C. starch and cellulose
D. carbohydrates and proteins

41. Which are the most likely causes of variations within species?

A. Mitosis and asexual reproduction
B. Overpopulation and overproduction
C. Vegetative propagation and cloning
D. Mutations and sexual reproduction

42. In which hominid species did scientists find the smallest brain size (cranial capacity)?

A. Homo sapiens
B. Homo habilis
C. Homo erectur
D. Homo neanderthalensis

43. When two species are compared, which of the following sources of evidence is least information about the degree of relationships between the species?

A. Nucleotide sequence of DNAs
B. Glucose sequence of polysaccharide
C. Amino acid sequences of proteins
D. DNA – DNA hybridization

44. What is the reproductive isolating mechanism called f two species of frogs do not interbreed because they cannot understand the mating calls of one another

A. Seasonal isolation
B. Behavioral isolation
C. Temporal isolation
D. Isolation by distance

45. Which of the following theories explains evolutionary change of living things in terms of changes in their allele frequencies?

A. Darwin's natural selection
B. Spontaneous generation
C. Inheritance of acquired characteristics
D. Meo-Darwinism

46. Among the following, which one of the best criterion to show that two populations belong to same species?

A. Morphological similarity C. Inhabiting the same geographic area

B. Physiologically similarity D. Production of fertile offspring

47. In the process of the evolution of life on earth, which of the following four processes evolved last?

A. Photosynthesis C. Chemosynthesis

B. Aerobic respiration D. Photo-autotrophism

48. Which of the following characteristics can show the evolutionary relationships among organisms?

A. Structures having similar functions C. Structures having common origin

B. Structures having same size D. Structures having different origins

49. If a new mutant allele arises in a certain population, which of the following factors determines if the allele is going to be adaptive or non-adaptive?

A. The environment in which the population lives.

B. The rate at which the gene mutates.

C. The population in which the gene is found.

D. The use and disuse of the gene by the population.

50. Which of the following factors **NOT** important for evolutionary change of a population?

A. Over reproduction C. Insufficiency of natural resources

B. Existence of heritable variation D. Survival of all that are born

51. During the course of evolution. Which of the following events came before all the others?

A. Origin of dinosaurs and other reptiles.

B. Availability of free oxygen in the atmosphere.

C. Origin of the oldest eukaryotic organisms.

D. Origin of the first multicellular animals and plants.

52. What kind of natural selection is at work in a situation where individuals at both extreme ends of the range get better survival advantages than those around the middle?

A. Stabilizing selection C. Directional selection

B. Disruptive selection D. Selection that removes the extremes

53. In which geologic period does the fossil record show more diverse and relatively higher forms of organisms?

A. Devonian B. . Jurassic C. Cretaceous D. Permian

54. Which of the following can be taken as case for evidence of evolutions from the field of plant & animal breeding?

A. Artificial breeding always creates new species

B. Artificial breeding only produces new organisms with higher yield

C. Artificial breeding shows that natural selection can produce variations

D. Artificial breeding can produce new variations in organisms

55. If a radioactive substance that weighs one kilogram has a half-life of 100 years, what would be the percentage of the substance left after 300 years?

A. 50 B. 30 C. 25 D. 12.5

56. According to Lamarck's theory of evolution, what is the mechanism by which evolving organisms acquire new structures?

A. Mutation C. Use- and – disuse of parts of the body

B. Hereditary variation D. Recombination of ancestral genes

57. What do you call structures that have the same evolutionary origin but now are different in structure or have different functions?

A. Endemic B. Homologous C. Analogous D. indigenous

58. Which of the following is prevented from taking place if populations are separated by a geographic barrier?

A. Mutation B. Evolution C. Gene flow D. Natural selection

59. The half-life of carbon-14 is about 5730 years. If a fossil is 17200 years old, about what percent of its original carbon-14 is still present in the fossil?

A. 75% B. 50% C. 25% D. 12%

60. Which of the following pairs are analogous structures?

A. Wing of a bird & wing of a butterfly C. Wing of a bird & wing of a bat

B. Front leg of a horse & a human arm D. Front leg of a frog & wing of a bat

61. Among the following fossil hominid species, which one is the oldest of all?

A. Homo erectus C. Ardipithecusramidus

B. Australopithecus afarensis D. Australopithecus africanus

62. Which of the following conclusion can be drawn from the structural similarities observed between the flippers of whales and the arms of humans?

A. The human species began life in the ocean

B. The human species and whales share a common ancestry

C. Whales are older than the human species

D. Whales have evolved from early humans that went back to the ocean

63. Which of the following did the early heterotrophs do that probably assisted the origin of autotrophs?

A. They added oxygen and chlorophyll to the environment

B. The added carbon dioxide to the environment

C. They stored energy in the bonds of inorganiccompounds

D. They manufactured food from carbon dioxide and oxygen

64. Which of the following is consistent with the understanding of human evolution A. Bipedalism was never important in human evolution. B. Larger brain size had no contribution to the evolution of the human species

C. Human ancestry had no relation whatsoever with that of the chimpanzees

D. Fossils of Lucy and Ardi provided evidence for human origin.

65. Which of the following is true about mutations that occur in normal body cells?

A. They never lead to cancerous cells. C. They never pass to the next generation

B. They never damage the affected cells. D. There is one way that they kill the affected cells.

66. Why is it that mutations are considered as one of the raw materials of evolution ?

A. They contribute to new variations in organisms.

B. They are usually related to the environment in which they appear

C. They are mostly benefited to the organism in which they appear

D. They usually become the causes for species extinction.

67. From evolutionary view points , which of the following animals is expected to hemoglobin proteins that least similar to that of human?

A. Ape B. Cow C. Chicken D. Frog

68. Which of the following is an evolutionary requirement for two sub-population of a species to evolve into independent species?

A. Free exchange of genes C. Geographical isolation

B. Free migration between population D. Absence of natural selection

69. Which of the folloing expression is more related to the phrase " survival of the fittest"?

A. Natural selection B. Mendelian inheritance C. Gene mutation D. Inheritance of acquired characteristics

70. If a substance that weighs 2,000 grams and has a half -life of 100 years is left with only 250 grams , for how long has the radioactive decaying activity been undergoing?

A. 200 years B. 250 years C. 300 years d. 500 years

71. Suppose a fossil initially contains 100,000 atoms of a contain radioactive element whose half life is 10,000 years , after how many years would the number of atoms be 12500?

A. Ten thousand years B. Twenty thousand years C. Thirty thousand years D. Forty thousand years

72. Which of the following came first in the course of organic evolution ?

A. Photosynthetic organisms C. Land plants

B. Free oxygen in the atmosphere D. Multicellular organisms

73. Which of the following is true ?

A. Recessive alleles are only expressed in the homozygote.

B. Dominant alleles are expressed only in the heterozygote.

C. Recessive alleles are expressed in the heterozygote

D. Genetically modified organisms are never used to manufacture vaccines

74. What do you call structures that have same evolutionary origin even though they may now have different structural make ups or functions?

A. Endemic B. Analogous C. Homologous D. Indigenous

75. Which of the following changes that happened during human evolution had the most contribution to the evolutionary success of *Homo sapiens?*

A. Proportionately big brain size to the body size B. Big body parts big overall body mass

C. Long legs , arms and more upright body posture D. Fast running ability and overall physical strength

76.Why are mutations considered important in evolution?

A. They are usually related to the environment B. They contribute to new variation in organisms

C. They are always beneficial to the organism D. They become causes for species migration

77.Which of the following pairs are **ANALOGOUS** structures?

A. The human arm and the front leg of a mule B. The front leg of a frog and the wing of a bat.

C. The wing of a bird and the wing of a butterfly. D. The wing of a bat and the wing of a bird.

78.Choose the one that had the LEAST contribution to human evolution ?

A. Development of bipedalism B Adaptation to flight

C. Attaining opposable thumb D. Increasing brain size

79. How many years have passed since Darwin's book on the theory of evolution was published?

A. About 50 years B. About 160 years C. About 120 years D. About 100 years

80. Which of the following can be understood about living things from the study of how breeders improve domesticated plants and animals.

A. Living things tendd to over- reproduce B. Natural resources are limited supply

C. Living things can be improved through selection D. Individuals compete for resources

81.What does an evolutionary selective pressure that acts around the mean do?

A. It stabilizes B. It terminates C. It converges D. It disrupts

82. In his theory of evolution, the cause of which of the following concepts was MISSING in Darwin's explanation?

A. Over-reproduction B. Struggle for survival C. Hereditary variation D. Survival of the fittest

83.Suppose a piece of wood initially contains 100 grams of a radioactive substances , how many grams remain radioactive after 30 000 years provided that its half life is 10 000 years?

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

84.Which of the following is the idea contained in Neo- Darwinism which was not present in the original version of Darwin´s theory of evolution?

A. Organisms tend to over-reproduce B. Hereditary variation is caused by alleles

C. Organisms compete for scarce resources D. Fit individuals survive and produce more offspring

85. What kind of natural selection results in the removal of members of the population that are found just at one end of the range?

A. Stabilizing selection B. Directional selection C. Disruptive selection D. Normalizing selection

86.Among the following ,whose evolutionary theory is based on the idea of natural selection?

A. Darwin B. Aristotle C. Lamarck D. Redi

88. Which of the following types of evolution would occur when unrelated populations happen to occupy similar niche in different geographic area?

A. Divergent evolution B. Convergent evolution C. Sympatric evolution D. Adaptive evolution

89. Which of the following embryonic structures do the embryos of all vertebrates develop during their early development?

A. Gill slits B. Teeth C. Gill D. Fins

90. Who suggested that living organisms can adapt themselves to their environment by modifying parts of their body through use -and disuse?

A. Darwin B. Wallace C. Lamarck D. Haldane

91. Which of the following process contributes the least for evolution to take place?

A. Geographic barrier B. Hereditary variation C. Mutation D. Asexual reproduction

92. During the evolution of the hominids, which of the following features developed before all the rest as evidenced from fossil records?

A. Bipedalism B. Larger brain C. Ability to make tools D. Shorter arms relative to legs

93. Which of the following criteria strongly supports that all human races belong to a single , *Homo sapiens* ?

A. Larger brain size B. Bipedal gait C. Pentadactyl limbs D. Inter - fertility between races

94. Which of the following hominids had brain size comparable to that *Homo sapiens*?

A. Lucy B. Ardi C. Neanderthalman D. Homo habilis

95. Which of the following do biologists consider ancestral to the higher organisms of today?

A. Plantae B. Animalia C. Fungi D. Protista

96. Which of the following reproductive isolating mechanisms keeps the horse and donkey as the two independent species?

A. Hybrid inviability C. hybrid infertility
B. Ecological isolation D. habitat isolation

97. Which of the following groups are believed to be the first photosynthetic organisms to evolve on earth?

A. Green plants B. green algae C. blue green algae D. lichens

98. Which of the following factors brings about change both during evolution and breeding of plants and animals?

A. Limited resource C. selection

B. Production of excess progeny D. competition

99. Which of the following was the most possible mode of evolution by which many species of Darwin's finches evolved on the Galapagos Island?

A. Phyletic evolution C. convergent evolution

B. divergent evolution D. sympatric evolution

100. Which of the following the result of similarity observed between the wings of bird and a pterodactyl?

A. convergent evolution C. stablising selection

B. directional selection D. divergent evolution

101. For which of the following can divergent evolution be taken as an alternative name?

A. Allopatric speciation C. sympatric speciation

B. Adaptive radiation D. disruptive selection

102. Among the following four processes, identify the one that probably evolved before all the other?

A. Aerobic respiration C. oxidizing atmosphere

B. Anaerobic respiration D. photosynthesis

103. Which of the following played an important role in the evolution of human being?

A. Emergence of wings in addition to limbs

B. Development of even toes in the forearms

C. Development of feathers and hollow bones

D. Development of opposable thumb to grasp

104. Which of the following species isolating processes could lead to the evolution of a new species by the mechanism known as sympatric speciation?

A. A river that change its course for many years

B. A new mountain range that was created many years ago

C. Population of a species having different breeding seasons

D. A land mass that separated two water bodies for many years

105. Which of the following characteristics can show the evolutionary relationship?

A. Structure having similar functions C. presence of homologous structures

B. Presence of analogous structures D. structure having different origins

106. Which of the following is NOT true about the nature of the first form of organisms on earth? They are

A. A. prokaryotic B. unicellular C. aerobic D. anaerobic

Biology Grade - 12

Unit – 5

1. Which one of the following types learned behaviours requires a critical period to learn in the animal's life?
   A. Important C. insight learning
   B. Habituation D. operant conditioning
2. A chick that just emerged from an incubator tended to follow the person that it saw first. Which one of the following is the correct term for this kind of animal behavior?
   A. Innate C. Imprinting
   B. Kinesis D. Positive tasxis
3. A goose was observed rolling the egg back to its nest. What kind of behavior is this?
   A. Tropism C. innate behavior
   B. Learned behavior D. Social behavior
4. We do not usually notice that we are wearing clothes ever though the clothes are continuously touching our body. To which type of learned behaviors does this belong?
   A. Innate behavior C. Habituation
   B. Imprinted behavior D. Operant conditioning
5. 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
6. In a honeybee colony, which one of the following is the duty of the queen?
   A. Foraging C. Guarding the hive
   B. Rearing the young D. Reproduction

7. 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
8. When is a behavior referred to as stereotyped?
   A. An animal responds similarly to all stimuli
   B. All members of a species respond in the same way to a stimulus
   C. A behavior is easily earned
   D. An animal ignores a stimulus because it is familiar with it e
9. Suppose a girl, after watching her mother making "injera" on several occasions, successfully did it herself, what type of learning is this
   A. Sensitization
   C. Habituation
   B. Imprinting
   D. Latent learning
10. Which of the following is **true** about innate behavior?
   A. It is a non-adaptive behavior
   B. It is learned behavior
   C. Members of a species behave similarly
   D. It is environmentally determined
11. Which one of the following disciplines is studied in ethology?
   A. Heredity
   C. Reproduction
   B. Physiology
   D. Behavior
12. 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. Negative phototaxis
   B. Positive kinesis
   D. positive phototaxis
13. What is the plant growth substance which causes them to bend towards the light?
   A. Starch
   C. Auxin
   B. Photosynthesis
   D. Chlorophyll
14. In Pavlov's classical conditioning experiment on dogs, which one of the following is the unconditioned response?
   A. The sound of the bell before presenting food
   B. The sight of the food from far away
   C. The salivation of the dog at the sight of food

D. The salivation of the dog at the sound of the bell

15. It is said that a goat mother accepts and nurses as her own kid and young that she smalls at a certain critical period, and rejects all others. This is an example of:

A. Habituation C. Insight learning

B. Imprinting D. Sensitization

16. Among the following which one is a learned behavior?

A. Reflex action C. Imprinting

B. Habituation D. Fixed action pattern

17. With which of the following is true about hibernation?

A. Hibernation is a means Pf surviving severe drought

B. Animals in hibernation stop breathing completely

C. Only poikilothermic animals hibernate

D. Both poikilothermic and homeothermic animals hibernate

18. Wood lice increase their movement in different directions in response to increased light intensity. This is an example of which of the following?

A. Positive taxis C. Kinesis

B. Negative taxis D. Phototropism

19. What is the role of the worker honey bee just after it emerges?

A. Forage for nectar, pollen and water. C. Guard the hive

B. Clean out dirty honeycomb. D. Build honeycomb.

20. During seasons of reproduction, the males of some species of birds produce colourful feathers to attract females what do ethologists call this method of communication in animals?

A. Visual B. Chemical C. Auditory D. Touch

21. Which of the following types of movements in response to a stimulus has no specific direction?

A. Taxis B. Kinesis C. Gravitropism D. Phototropism

22. In the classical conditioning experiment performed by Pavlov on dogs, which of the following alternatives is the unconditioned stimulus?

A. The sound of the bell C. The smell of the food

B. The salivation at the sound of the bell D. The salivation at the smell of the food

23. Why is it that the woodlice are typically found under log, stones, bark and amongst leaf litter?

A. To be sheltered in a dry windy environment

B. To run away from the area where the air is humid

C. To make sure that they are in the hottest place all the time.

D. To reduce the rate at which water is lost from their bodies

24. 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 B. Waggle dance C. Buzzing noise D. Vibration of wings

25. Which of the following is **NOT** classified as a learned behavior?

A. Insight B. Innate C. Latent D. Conditioned

26. What do we call the learned behavior if a mouse that had just escaped from the mouth of a cat jumped violently at a slight touch by a trivial object?

A. Latent learning B. Sensitization C. Conditioning D. Imprinting

27. The group of the Ethiopian wolf which does **NOT** contribute to territory marking with their urine containing pheromones is _____

A. Adult males B. Adult females C. Sub-adult males D. Sub-adult females

28. Which of the following is the correct route that connects a stimulus and a response?

A. Receptor → coordinator → effector

B. Coordinator → receptor → effector

C. Receptor → effector → coordinator

D. Effector → receptor → coordinator

29. To what kind of animal behavior can the spinning of a web by a spider be classified?

A. Learned behaviour C. Experiential behaviour

B. Instinctive behavior D. Accidental behavior

30. An experimental animal stopped responding to a stimulus that has been repeated so many times. What type of learned behavior is this?

A. Latent learning B. Habituation C. Imprinting D. Operant conditioning

31. Behavior that is repeated on a daily basis is referred to as:

A. Lunar B. Circadian C. Circannual D. Seasonal

32. Which of the following is more true about the male of the honey bee?

A. It has no father B. It is diploid C. It is sterile D. It regulates the colony

33. In which of the activities of the honey bee colony are worker been involved?

A. Laying eggs C. Reproductive functions

B. Serving as queens D. taking care of the larvae

34. Which of the following behavioral biologist is known for his study about imprinting behavior in animals ?

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

35. Baby ostriches tend to follow the first moving object that they see as they hatch out of the eggs. What kind of animals behavior does this demonstrate ?

A. Positive B. Innate behavior C. Positive D. Learned behavior

36.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 B. Insight learning C. Habituation D. Operant conditioning

37. Which one of the following is an example of an orientational innate behavior?

A. Kineses in woodlice C. Sudden withdrawal of limbs from hot objec

B. Blinking of the eyes D. Nest building by weaver birds

38. In Pavlov´s experiment on the classical conditioning of dogs, what does the reaction of the dogs to the sound o the bell represents?

A. The conditioned stimulus C. The conditioned response

B. The unconditioned stimulus D. The unconditioned response

39. Which of the following is not true about innate behaviors?

A. Can be improved by trial and error B. Common to all members of the species

C. Present at birth or on hatching D. Do not have to be learned

40. To which one of the following classes of stimuli do pheromones belong?

A. Auditory B. Smell C. Visual D. Touch

41. Woodice are observed avoiding light and heat by quickly moving to moist and darker areas. Which behavior of these animals helps them to detect differences in light intensity and move to darker and moist part of the habitat?

A. Instinctive leaning B. Negative phototaxis C. Positive phototaxis D. Insight learning

42.If someone suddenly removes his/her hand from a very hot object, which of the following types of behavior is manifested?

A. Reflex action B. Imprinting C. Learned behavior D. Sensitization

43. Which of the following involves trial and error learning?

A. Operant conditioning B. Habituation C. Sensitization D. Classical conditioning

44. Which of following is a learned behavior?

A. Sucking of a new born at mother's breasts B. Salivation by conditioned dogs at the sound of a bell

C. Withdrawal of hands suddenly from hot objects D. Blinking the eyes when something gets into them

45. In classical conditioning experiment , what do e call the salivation behavior of dogs at the sight of food?

A. Conditioned stimulus B. Conditioned response C. Unconditioned stimulus D. Unconditioned response

46. Which of the following is NOT true about a learned behavior?

A. It is adaptive B. It varies among individuals

C. It can be changed through experience D. It is learned differently by different individuals

47. If one moves his living place to a noisy street , he gradually gets used to the street noise. What type of learning is this behavior

A. Operant conditioning B. Habituation C. Imprinting D. Sensitization

48. Which type of animal behavior happens without learning?
A. Innate B. Latent C. Insight D. Conditioned

49. A reflex action that involves internal organs such as the heart is referred to as_____?
A. Somatic reflex B. external reflex C. spinal reflex D. autonomic reflex

50. Which of the following activities of an organism do we call a behavior?
A. Reception of external stimulus C. reception of internal stimulus
B. Responding to stimulus D. lack of receptors to receive stimulus

51. Which of the following organs serves as a coordinating system in a reflex action?
A. Spinal cord B. sense organs C. nerve cells D. muscle

52. To which category of behavior does the human behavior that involves the strengthening of existing responses or the formation of new responses to existing stimuli that occur because of practice or repletion belong?

A. Learned B. instinctive C. innate D. inborn

53. Which of the following is not grouped under genetically pre –programmed patterns of behavior.

A. reflex action in human C. conditional behavior
B. orientational behavior D. instinctive behavior

54. Which of the following statements can be considered as better definition of the biological concept of behaviour?

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

55. If any actively growing potted seedling is kept horizontally, which of the following would eventually happen to the seedling?

A. The shoot would bend upward C. the seedling would stop growing
B. The root would bend upward D. the seedling would grow horizontally

56. Which of the following is not a learned behavior?

A. Imprinting B. habituation C. conditioning D. trial & error

57. Which of the following social insects use the waggle-dance to communicate the distance and direction of food source to other member of their colony?

B. A. Termites B. Red ants C. Black herbs D. Bees

ABOKER PREP . Biology Grade – 11 ENTERACE EXAM. 2000-2009

Unit – 1

1. Anti-HIV/AIDS clubs are today common in schools and colleges. What is their main contribution in the fight against the pandemic?

A. Provide medication for AIDS patients
B. Encourage the boys to have girl friends
C. Encourage the girls to have boy friends
D. Raise awareness about the problem among students

2. Suppose a student noticed that many plants in a garden died following an excess application of a certain fertilizer, 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

3. Suppose in an experiment designed to test a hypothesis that water is essential for seed germination, equal number of soaked seeds were placed in vials A, B and C (group I) and dry seeds in vials D and E (group II), Which one of the following is **NOT** true about this experiment?

A. Vials A, B and C are replications
B. Group I is the experimental group
C. Vials D and E are replications
D. The experimental lacks a control group

4. What is a theory in biology?

A. A statement without proof
B. Hypothesis that has been supported by many experiments and/or observations.
C. Proof that a hypothesis is true and that it is ready to conduct experiments to prove or disprove the hypothesis
D.. An statement or educated guess

5. Which are of biology studies how organisms undergo growth, differentiation and morphological changes?

A. Physiology B. Development C. Taxonomy D. Cytology

6. Which of the following types is true about the meanings contained in the name HIV and AIDS?

A. HIV refers to the symptoms that characterize the condition C. AIDS refers to symptoms
B. AIDS refers to the causative agent D. HIV refers to its probable origin from chimpanzees

7. Using the following information, choose the alternative that shows the correct sequence of the scientific method:

A. Forming a hypothesis C. Identifying the problem
B. Performing an experiment D. Observation

8. Which of the following corresponds to the first step of the scientific method?

A. Analyze the data collected C. Identify a topic to be studied
B. Undertake the research D. State the results

9. 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 C. The fine adjustment
B. The middle adjustment D. The arm of the microscope

10. If you observe a piece on which several small squares are drawn, under which of the following magnifications of the microscope do you count more number of the squares?

A. 40X B. 100X C. 400X D. 1000X

11. If, after dividing plant materials into two groups, an experimenter has applied a fertilizer to group “A” plant and not to group “B” plant, what are group “B” plants called?

A. Control group C. Test group
B. Experimental group D. Variable group

12. In the scientific method, which one of the following is used to test a hypothesis?

A. Observation B. Theory C. experiment D. Prediction

13. What does an ornithologist study?

A. The biology of mammals C. the biology of fishes

B. The biology of frogs and reptiles D. the biology of birds

14. Which one of the following best defines modern biology?

A. The study of animals C. The study of plant and animals
B. The study of living things D. The study of transfer energy

15. What is the total magnification power of a microscope with a 10X ocular lens and 25X objective lens?

A. 2.5X B. 35X C. 250X D. 2,500X

16.A field biologist who studies the behavior of primates in the forest is most likely expected to frequently use which method of data collection?

A. Experiment B. Animal dissection C. Observation D. Comparative

17.Which one of the following objective and ocular combinations of the light microscope, respectively, gives the greatest magnification?

A. 10X and 10X C. 40X and 12X
B. 4X and 10X D. 100X and 10X

18. . What is the term used to express the ability of a microscope to show details clearly?

A. Enlargement B. Reduction C. Magnification D. Resolution

19. A scientifically accepted, well –tested hypothesis is known as:

A. Theory B. Guess C. Prediction D. All of the about

20. Which of the following is **not** an important unifying theme in biology?

A. The evolution of life C. The diversity and unity of life
B. The interdependence of living organisms D. The variation in climatic factors

21. Which tool of the biologist is more suitable for culturing bacteria in the laboratory?

A. Test tubes B. Microscopes C. Petri dishes D. Beakers

22. Which of the following corresponds to the being step of a scientific work?

A. Testing hypotheses C. Conducting experiments
B. Making observations D. Drawing conclusions

23. In an experiment that is testing the effect of temperature on the germination rate of certain seeds, in which one of the following should the experimental and thee control groups differ?

A. The amount of water the receive C. The age of the seeds assigned to them.
B. The number of seeds assigned to them. D. The temperature at which they are kept.

24. Which of the following laboratory equipment is used to separate the organelles of the cell according to their density?

A. Incubator B. Centrifuge C. Measuring cylinder. D. Filer paper with fine pores

25. Which one of the following types of microscopes is the best to show the details of the surface of an object?

A. Optical microscope. C. Compound microscopes
B. Scanning electron microscope. D. Transmission electron microscope.

26. Which of the following is **NOT** in agreement with the scientific method?

A. Putting forward testable hypotheses C. Carrying out experiments in duplicates.
B. Putting forward personal value judgments. D. Analyzing results and drawing conclusions

27. To which major area of relevance and applications of biology is the production of transgenic organisms related? A. Agriculture B. Environment C. Biotechnology D. Medicine

28. A cell was examined under a compound light microscope with an eyepiece lens marked 13X and an objective lens marked 40X. How many times larger would the cell appear to the viewer?

A. 40 times B.53 times C. 400 times D. 520 times

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

A. The growth rate of the plant.
B. Concentrations of the fertilizer applied.
C. Plats assigned to the control group
D. Plats assigned to the experimental group

30. 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

31. A biologist applied the scientific method repeatedly, gathered a large amount of supporting experimental data and finally described a pattern or relationship between different factors. What is the best term that refers to facts established in this way?

A. Theory B. Hypothesis C. Prediction D. Law

32. Which of the following is true about the antiretroviral drugs currently used to treat AIDS patients?

A. They cure AIDS
B. They stop HIV transmission
C. they serve as anti-HIV vaccines
D. they slow down HIV multiplication

33. Which of the following steps in the scientific method comes following observation?

A. Prediction B. Hypothesis C. Experiment D. Theory

34. What is the specialist in biology called if he/she studies fossils to generate new knowledge on the origin and evolution of living things of part geologic periods?

A. Geneticist B. Ecologist C. Paleontologist D. comparative Biochemist

35. Which of the following practices does **NOT** normally transmit HIV?

C. Sexual intercourse through anus
D. Blood transfusion
C. Sharing injection needles
D. Shaking hands

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

A. Theodolite B. Global positioning system C. Field microscope D. Field PH kit

37. What is a theory in biology?

A. The outcome of an experiment
B. A proof that shows the hypothesis is true
C. A hypothesis supported by experiments and/or observations
D. An opinion or educated guess resulting from observations

38. For which of the following is a theodolite used in biology education?

A. Measuring the height of trees C. Recording positions where a species is found.
B. Measuring the rate of flow of water in a cell. D. Measuring the pH of water or soil.

39. What is the advantage of using HAART (highly active anti-retroviral therapy) for the treatment of HIV?

C. It gives a lasting immunity to HIV. C.It prevents mutation of HIV.
D. It prevents re-infection by HIV. D. It helps to break the life cycle of HIV

40. On which one of the following principles are most of the anti-HIV drugs currently in use working?

C. Inhibition of enzyme action C. Degradation of viral particles
D. Digesting of viral particles D. Phagocytosis of the virus

41. Which of the following is a recently developed active area of research in biology today?

A. Taxonomic study C. Ecological research
B. Study about the cell theory D. Stem cell research

76. While conducting research, which of the following should a biologist do first?

A. Generate hypothesis C. Conduct experiments
B. Communicate the results D. Identify a research question/problem

42. What is the branch of biology that studies about the origin and gradual changes of living things?

A. Microbiology B. Evolution C. Mutation D. Reproduction

43. Suppose in an experiment conducted to test a new drug, 20 people were given the drug and 20 people a placebo. What is the control of the experiment?

A. People who received the placebo
C. People who received the new drug
B. The new drug itself
D. The new drug and the placebo

44. What is the difference between HIV and AIDS?

A. AIDS is the virus and HIV is the disease
C. Both AIDS and HIV refer to the disease
B. AIDS is the disease and HIV is the virus
D. Both AIDS and HIV refer to the virus

45. Biotechnology can be applied in environmental remediation. To which of the major application areas of biotechnology is this most related?

A. Medicine and nutrition
C. Medicine and industry
B. Biodiversity and industry
D. Agriculture and environment

46. . Which of the following steps of scientific methods comes before all the rest?

A. Hypothesis B. Experiment C. Conclusion D. Reporting the result

47. . What do we call a scientist who specializes in studying insects?

A. An ecologist B .An entomologist C. A paleontologist D. A microbiologist

48.. Which of the following is formulated as a possible outcome of an experiment ?

A. Hypothesis B. Prediction C. Data analysis D. Recording the data

50. In scientific method, what is the importance of a background research for a given problem?

A. To formulate a hypothesis
C. To make a prediction
B. To prepare report of result
D. To make a conclusion

51. 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. Theodor Schwann C. Mathias Schneider D. Rudolf Virchow

52. In which of the following ways do retroviruses differ from other RNA viruses?

A. Their genetic material is DNA C. Their genetic material in RNA

B. They copy RNA toDNA molecule D. They copy RNA from DNA molecule

53. What is the ultimate source of all scientific knowledge?

A. Observation B. Guessing C. Trial and error D. Observation and experimentation

54. What did Francesco Redi prove through his experiment?

A. Maggots appear spontaneously on foods placed anywhere

B. Maggots do not appear in foods kept in jars that are protected with a cover

C. Maggots do not appear in foods kept in open air.

D. Flies appear spontaneously on rotting meat kept in closed or open jars.

55. What an ethologist study?

A. Insect diets B. Soil types C. Fossil fuel D. Animal behavior

56. What do you call the reasoning technique in science where general principles are used to analyze specific cases?

A. Induction B. Deduction C. Pseudo-deduction D. Pseudo-induction

57. The following are Simpsom´s Index of species diversity calculated or four areas containing the same types of species, Which index value is from the area dominated relatively by a few number of species?

A. 8,00 B. 6.00 C. 3.5 D.2.5

58. Choose the step comes at the last step in the scientific method

A. Proposing the hypothesis C. Formulation of a scientific theory

B, Conducting experiment D. Making prediction

59. Which of the following is a worthwhile biological problem for scientific investigation?

A. Estimation of the amount of carbon in a forest ecosystem

B. How a crying dog can tell who among elders of the village is going to die next

C. How witchcraft inflict bad health by cursing a healthy person

D. How the traditional medicine men/women cure a possessed person

60. 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

61. Which of the following types of cancer is known to mostly developed in AIDS patients?

A. Cervical cancer B. Stomach cancer C. Kaposi's sarcoma D. Breast cancer

62. Who was the person that first observed living cells moving around when he examined drops of water under the microscope?

A. Robert Brown B. Robert Hooke C. Anton van Leeuwenhoek D. Theodor Schwann

63. For what purpose do biologists use the GPS receiver?

A. To produce area maps B. To measure tree heights C. To estimate tree ages D. To count tree rings

64.In an experiment designed to study the effect of temperature on the rate of seed germination , which of the following the experimenter vary?

A. Seed number B. Water quality C. Temperature D. Seed size

65. "Rats can be produced by keeping rags and grains at a corner of a room". Which of the following line of thinking supports this statement?

A. Darwinian evolution B. Spontaneous generation C. Alternation of generation D. Sexual reproduction

66. What is the specific name of biological scientists who do research that tries to find evidence of life on other planets in solar system?

. A. Neurobiologists B. Paleontologists C. Astrobiologists D. Biogeographers

67. Which of the following is NOT a universal property of all living things?

A. Heritable characters B. Reproduction C. Phoiosythesis D. Growth and development

68. How does a simple microscope differ from a compound microscope?

A. A simple microscope has no lens B. A simple microscope has got two lens

C. A simple microscope uses mirrors as lens D. A simple microscope has only one lens.

69. Which of the following is the major mechanism by which AIDS is transmitted?

A. Mother to fetal transmission B. Heterosexual intercourse

C. Homosexual intercourse D. Contaminated blood transfusion

70. Which of the following types of microscopes is most suitable for a detailed study of surface structure of an object?

A. Field microscope B. Optical microscope C. Scanning electron microscope D. Dissecting microscope

71. Why does sucrose give a negative result when mixed and heated with Benedict's solution?

A. Because it is not a sugar molecule B. Because it is a reducing sugar

C. Because it is a non - reducing sugar D. Because it is not a monosaccharide

72. 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

73. 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

74. Which of the following cellular structures is NOT found in gram-positive bacteria?

A. Outer membrane B. Plasma membrane C. Perplasmic space D. Peptidoglycan

75.What color is expected upon hearing a mixture of glucose and Benedict´s solution?

A. Blue black B. Brick red c. Yellow D. Light blue

76.Which research can most likely discover a vaccine that may be used against AIDS?

A. Agricultural research B. Biological research C. Social research D. Space research

77. What is the good thing about having a control group in scientific experimentation?

A. It reduces the validity of experimental results by reducing the factors

B. It reduces the reliability of the experimental results by adding more samples

C. It provides a means for correcting experimental data & adjust to expectations

D. It provides a standard against which the experimental results can be compared

78. Which tool of the biologist is expected to be found in a standard dissecting kit?

A. A magnifying glass B. An insect net C. A pitfall trap D. A centrifuge

79. Suppose you have observed a spot where somebody had urinated is swarmed by ants , Which of the following would you do first if you want to study the reason in a scientific manner?

A. Making prediction B. Formulating hypothesis

C. Carrying out experiments D. Gathering background information

80. In scientific investigation , which of the following variables CANNOT be controlled by the experimenter?

A. Independent variable B. Dependent variable C. Confounded variable D. Experimental variable

81. Which of the following equipment is used by field biologists to estimate the abundance of organisms in an area?

A. Quadrant B. Theodolite C. Plaint press D. Global positioning system (GPS

82 In which of the following health problems can the signal for the final stage of HIV/AIDS infection be found?

A. Nervous system B. Digestive system C. Circulatory system D. Immune system

83.Which protein structure found in antibodies is responsible for the ability of a protein to bind to a specific antigen and destroy it during antigen-antibody reaction?

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

84. The word science comes from the Latin word ‘scienta’ meaning what?

A. Study B. experiment C. life D. knowledge

85. Which of the following laboratory tools is LEAST accurate to measure 1ml of liquid?

A. Pipette B. Measuring cylinder C. Burette D. Beaker

86.In a report of a scientific experiment, description of which of the following comes before all the other?

A. Procedure B. result C. hypothesis D. conclusion

87.From among the following, chose the field which is a branch or parts of biotechnology.

A. Parasitology B. immunology C. phycology D. genetic engineering

88. Which of the following laboratory glassware is used for culturing bacteria?

A. Petri dish B. Test tube C. Filter paper D. Measuring cylinder

89. Which of the following is publicly an UNDESIRED research activity?

A. Breeding a new crop variety C. synthesis of new vaccine

B. Manufacturing of a new medicines D. breeding a new pathogenic microorganism

Biology Grade – 11

Unit – 2

1. Which of the following elements occur more abundantly in living organisms than the others?
   A. Aluminum B. Phosphorus C. Lead D. Zinc
2. Both plant and humans keep in their bodies the stored forms of carbohydrates. What are these stored forms called, respectively?
   A. Glycogen, starch B. Starch, cellulose C. Starch, glycogen D. Cellulose, glycogen
3. In which of the following is the macromolecule correctly matched with its monomer building blocks?
   A. Carbohydrates – Glycerol C. Lipids – Amino acid
   B. Proteins – Fatty acids D. Nucleic acids – Nucleotides
4. How many carbon atoms are contained in two molecules of glucose?
   A. 6 B. 12 C. 16 D. 24
5. Of the constituents of protoplasm, which one is inorganic in nature?
   A. Starch B. Protein C. Water D. None of the above
6. Which of the following is the most abundant form of carbohydrate on earth?
   A. Starch B. Cellulose C. Glycogen D. Chitin
7. In which of their constituents do the nucleotides of DNA and RNA differ from each other?
   A. In the purine bases C. In the phosphate group
   B. In the pyrimidine bases D. In all of the above
8. Which one of the following elements is found in protein and nucleic acids but does not occur in carbohydrates?
   A. Carbon B. Nitrogen C. Oxygen D. Hydrogen
9. Which of the following molecules is known as the energy currency of the cell?
   A. Glucose B. Starch C. Fat D. ATP
10. What is the stored form of sugar that is found human tissues?
    A. Cellulose B. Coenzyme C. Nucleic acid D. Glycogen
11. Which of the following classes of crops is a good source of proteins?

A. Leafy vegetables B. Cereals C. Pulses D. Roots and tubers

12. What makes phospholipid molecules arrange themselves into a bilayer in a water medium?
    A. The double bonds of the fatty acids C. The length of the fatty acids
    B. The presence of hydrophilic and hydrophobic groups D. Their high solubility in water
13. Which of the following is a polysaccharide?
    A. Sucrose B. Glucose C. Cellulose D. Fructose
14. Choose the alternative that shows the monomer and polymer of carbohydrates?
    A. Nucleotied, amino acid C. Monosaccharide, polysaccharide
    B. Polypeptide, polynucleotide D. Nucleic acid amino acid
15. Which of the following is the most abundant polysaccharide found in plants?
    A. Glycogen B. Cellulose C. Sucrose D. Starch
16. What term is used to describe the chemical process of living organisms that involves both the joining up of monomers to produce polymers and the splitting of polymers to monomers?
    A. Anabolism B. Metabolism C. Catabolism D. Polymorphism
17. Which alternative correctly marches the polymer with its monomer?
    A. Carbohydrate- amino acid C. Nucleic acid – nucleotide
    B. Protein – monosaccharide D. Lipid – fat
18. All of the following carbohydrates are polysaccharides except which?
    A. Glucose B. Cellulose C. Starch D. Glycogen
19. Which one of the following sugars do babies get from the milk of their mother
    A. Maltose B. Sucrose C. Lactose D. Fructose
20. Which of the following are **not** included in lipids?
    A. Nitrogenous bases B.Waxes C. Steroids D. Phospholipids
21. Which of the following is true about both DNA and RNA?
    A. Both are single stranded C. Both have a five carbon sugar
    B. Both are polymers of amino acids D, Both contain the same four nitrogenous bases
22. Which property of water keeps the bottoms of lakes and the lift there in from being frozen during cold winters in the temperate regions?
    A. Its highest density at 4 C^0 C. its high boiling point
    B. Its high heat of vaporization D. Its high latent heat of fusion
23. Which of the following helps to keep the biological membranes in a fluid state?
    A. Waxes B.Phospholipids C. Cholesterol D. Water

24. Which of the following compounds is an important component of the exoskeleton of arthropods such as insects?
    A. Oil B.Sugar C. Protein D. Chitin

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

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

26. Which of the following compounds is an important component of the bacteria cell wall?

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

27. Which of the following pairs of elements are fond in all carbohydrates in addition to the element carbon?

A. Nitrogen and Oxygen C. Hydrogen and Oxygen

B. Hydrogen and nitrogen D. Phosphorus and nitrogen

28. In the process of amino acid condensation, which one of the following happens?

A. Oxygen is used up. C. Carbon dioxide is released

B. Water is released as a byproduct D, Protein is broken down into amino acid

29. Which of the following properties of water makes sweat an effective body cooler?

A. Its high specific heat. C. Its low density when frozen.

B. Its high surface tension. D. Its high heat of vaporization.

30. Among the molecules found in cells, which of the following contains less energy?

A. A glucose molecules C. A triglyceride

B. An amino acid D. A water molecule

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

A. In their R group C. In their amino group

B. In their carboxyl group D. In their alpha-carbon group

32. If one mixes a sample of a fruit juice and some drops of Benedict's solution and obtains a brick-red precipitate upon warming the mixture, what does the juice contain?

A. Starch B. Reducing sugar C. Sucrose D. Protein

33. The main component of the plant cell wall is _____?

A. Starch B. Cellulose C. Protein D. Chitin

34. How many carbon atoms are there in one disaccharide molecule?

A. 6 B. 12 C. 18 D. 24

35. All proteins contain carbon, hydrogen, oxygen and what other element?

A. Chlorine B. Flourine C. Nitrogen D. Sulphur

36. What makes unsaturated fatty acids different from saturated fatty acids?
   A. The presence of long chain of carbon. C. The presence of one or more double bonds.
   B. The presence of large number of hydrogen atoms. D.Their occurrence as solid at room temperature.
37. What is the name of the sugar found in milk?
   A. Glucose B. Lactose C. Maltose D. Sucrose
38. In which of its contents RNA differs from DNA?
   A. Deoxyribose and guanine C. Ribose and thymine
   B. Ribose and uracil D. Phosphate and adenine
39. Which of the following groups of substances are all inorganic?
   A. Water, sugar, calcium carbonate C. Sugar, fatty acid, amino acid
   B. Water, calcium carbonate, carbon dioxide D. Carbon dioxide, amino acid, fatty acid
40. In which of the following compounds are both members of the pair are polymers of carbohydrates that naturally occur in plants only?
   A. Starch and chitin C. Starch and cellulose
   B. Glycogen and cellulose D. Glycogen and chitin
41. Which of the following is generally expected to give better health benefits when present in human diet?
   A. Animal fat C. Saturated Fatty acid
   B. Monounsaturated fatty acid D. Polyunsaturated fatty acid
42. Which of the following is a distinguishing feature of amino acids that is **NOT** found in carbohydrates?
   A. Carbon B. Oxygen C. Hydrogen D. Nitrogen
43. Which one of the following molecules in living things is **NOT** an organic molecule?
   A. Sugar B. Nucleotide C. Amino acid D. water
44. How many carbon and oxygen atoms are there in a molecule of maltose?
   A. 6 carbon and 6 oxygen C. 12 carbon and 11 oxygen
   B. 11 carbon and 12 oxygen D. 24 carbon and 12 oxygen
45. Which of the following carbohydrates has structural function?
   A. Cellulose B. Glycogen C. Starch D. Sucrose
46. What can one conclude about the contents of the foodstuff if a mixture of Benedict solution and a foodstuff remain blue after heating?
   A. It contains proteins. B. It lacks starch C. it contains fats. D. it lacks reducing sugar.
47. Which group of organic compounds includes the enzymes?
   A. Proteins B. Lipids C. Starches D. Carbohydrates

48. Which of the following is true about saturated fatty acids?

A. They have single bonds between carbon atoms

B. They are the same as polyunsaturated fatty acids

C. They are the same as monounsaturated fatty acids

D. They have double bonds between the carbon atoms

49. Which of the following is true about the substance represented by the chemical formula "$C_2H_2NO_2$"?

A. Simple sugar B. Inorganic substance C. Fatty acid D. Amino acid

50. Choose the one that represents a chemical formula of an organic compound?

A. $C_{12}H_{22}O_{11}$ B. $Mg(OH)_2$ C. NH_3 D. NaCl

51. How are unsaturated fats distinguished?

A. They are made up of glucose & fructose

B. They are made up of amino acids & glycerol

C. They have double bonds in their carbon chains

D. They have only single bonds at the points of attachment

52. Which of the following is produced when a lipid molecule is hydrolyzed?

A. Amino acids & water C. Fatty acids & glycerol

B. Amino acids & glucose D. Glucose & glycerol

53. A carbohydrate compound is known to have 12 carbon atoms in the whole molecule. What could this compound be?

A. A polypeptide B. A disaccharide C. A monosaccharide D. A polysaccharide

54. If certain food stuff gave a positive result with Benedict test only after it was hydrolyzed with hydrochloric acid, which of the following substances could it be ?

A. Non-reducing sugar B. Nucleic acid C. Lipid D. Protein

55. Which of the following molecules is **not** a polymer?

A. Protein B. Lipid C. RNA D. Starch

56. Which of the following classes of organic molecules is the least important source of energy for cellular respiration?

A. Nucleic acid B. Lipids C. Carbohydrates D. Proteins

57. For what purpose do molecular biologists use the technology known as polymerase chain reaction or PCR?

A. To insert DNA into plasmids? B. To insert plasmids into bacteria

C. To multiply copies of DNA molecule D. To produce DNA from RNA

58. Which element is found in nucleic acids?

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

59. What is the base found in RNA in place of thymine of DNA?

A. Cytosine B. Guanine C. Thymine D. Uracil

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A. Cytosine B. Guanine C. Thymine D. Uracil

61. In the formation of a macromolecule, what type of reaction would join two subunits together?

A. Hydrolysis reaction B. Dehydration reaction C. Denaturation reaction D. Hydrophobic reaction

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63. Which of the following is an inorganic molecule?

A. $CaCO_3$ B. CH_4 C. $C_6H_{22}O_{11}$ D. $C_{18}H_{36}O_2$

64. To which group of organic compounds do the triglycerides and waxes belong?

A. Carbohydrates B. Proteins C. Lipids D. Vitamins

65 . In which industrial product is pyruvate fermentation by yeast practically applied?

A. Brewing beer B. Swiss cheese making C. Production of vinegar D. Yoghurt making

66. Which of the following is true about all proteins?

A. They are twenty amino acids long C. They are globular in shape

B. Yhey perform the same function D. The monomers are held together by peptide bond

67. What does the fermentation of glucose by yeast normally yield?

A. Lactic acid ,CO_2, and 2ATP C. CO_2,H2O,and 36 ATP

B. Alcohol, CO_2,and 2ATP D. Alcohol,CO_2 ,and 36ATP

68. Which hormone promotes human sleep fullness in darkness and controls he sleep - wake cycle?

A. Insulin B. Adrenaline C. Melatonin D. Thyroxine

69. Which two nitrogenous bases belong to the purines?

A. Adenine and thymine B. Adenine and guanine C. Guanine and cytosine D. Thymine and uracil

70. Which one of the following is a functional group of a fatty acids?

A. A ketone group B. An aldehyde group C. An amino group D. A carbohydrate group

71. Which of the following food types would most likely give a negative result upon addition of iodine solution?

A. Bread B. Butter C. Biscuit D. Potato

72. How many fatty acids would a cell need to form a molecule of triglyceride?

A. Two B. Four C. Five D. Three

73. Which one of the following molecules can serve as araw material for industries that produce glucose?

A. Nucleic acids B. Proteins C. Lipids D. Starch

.74. According to the fluid-mosaic model of the plasma membranes , what does the word´ mosaic˝ refer to?

A. The hydrophobic property of fatty acids B. The bilayer nature of the membrane

C. The arrangement of the proteins D. The movement of the phospholipids

75. Which of the following organic compound would release both nitrogen and sulfur to the ecosystem when decomposed

A. Polysaccharides B. Sucrose C. Proteins D. Lipids

76. Which of the following classes of fatty acids is without carbon-carbon double bond?

A. Monounsaturated fatty acids B. Unsaturated fatty acids

C. Saturated fatty acids D. Polyunsaturated fatty acids

77. What is the substance that helps to keep the biological membrane in a fluid state?

A. Waxes B. Water C. Cholesterol D. Phospholipids

78. Which of the following substances is NOT formed when glucose is fermented by yeast?

A. Alcohol B. ATP C. Lactic acid D. Carbon dioxide

79. What are hexoses?

A. Disaccharides with 6 carbon atoms B. Disaccharides with 6 oxygen atoms

C. Monosaccharide with 6 carbon atoms D. Monosaccharide with 6 oxygen

80. In which of the following is the element correctly matched with its main function in human body?

A. Calcium -- builds bones , teeth & muscles B. Chlorine -- help blood carry oxygen

C. Iron-- protect teeth enamel D. Fluorine -- digest food

81. Which of the following elements is most abundant in human cells?

A. Sulphur B. Phosphorus C. Oxygen D. Nitrogen

82. Which of the following correct?

A. In a triglyceride there are three fatty acids and glycerol B. In a triglyceride there is one fatty acids & glycerol

C. An unsaturated fatty acids has only a single C-C bond D. A saturated fatty acids has a single C-C bond

83. What is it that distinguishes organic from inorganic molecules?

A. Presence of C and O B. Presence of H and O C. Presence of C and H D. Presence pf C and N

84.What is the main physiological advantage that certain storage carbohydrates such as glycogen are highly branched polymers?

A. Fast release of glucose B. Slow polymerization of glucose

C. Easy diffusion of food between cells D. Creation of high osmotic potential in cells

85. Which of the following elements is found in the chlorophyll molecule?

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

88. Which of the properties of water allows mosquito larvae to hung themselvesdawn into the water from the water surface?

B. Its high specific heat capacity C. Its high surface tension
C. Its hihg latent of vaporization D. Its low density in solid state

Biology Grade – 11

Unit – 3

1. To which group of compounds do enzymes belong?
   A. Lipoproteins C. Globular proteins
   B. Fibrous proteins D. Deoxyribonucleic acid
2. If an enzyme has its optimum activity at neutral P^H, to which of the following P^H values does this correspond?
   A. P^H 14 B.P^H 7 C. P^H 12 D. P^H4

3. What is true about the rate of an enzyme catalyzed reaction if the enzyme concentration is kept constant and the substrate is supplied in excess? The rate would:

   A. Rise continuously C. Decline sharply

   B. Stay constant D. None of the above

4. Among the following, identify the molecule that is an enzyme:
   A. Starch B. Cellulase C. Cellulose D. Glycogen
5. An enzyme known as catalase converts hydrogen peroxide into water and oxygen. In this reaction which one is the substrate?
   A. Catalase B. Hydrogen peroxide C. water and oxygen D. water only
6. Identify the enzyme that is used to cut DNA molecules into small pieces?
   A. Urease B. Reverse transcriptase C. DNA polymerase D. Restriction endonuclease
7. Identify the statement that more correctly explains why each cell contains so many different types of enzymes? Enzymes are
   A. Consumed in the process of catalysis C. Used over and over again
   B. Specific to their substrates. D. Easily synthesized
8. To which category of enzymes do the digestive enzymes that breakdown food substances in the human alimentary canal belong
   A. Intracellular enzymes C. Extracellular enzymes
   B. Globular enzymes D. Fibrous enzymes
9. If an enzyme is provided with its normal substrate plus another molecule having the same shape and size as the substrate, which one of the following would happen?
   A. Allosteric inhibition C. Irreversible inhibition
   B. Competitive inhibition D. End product inhibition
10. If one keeps on adding a substrate to a fixed amount of an enzyme, when does the reaction rate reach a plateau?
   A. When all the substrate is converted to products
   B. When all the active sites of the enzymes are occupied
   C. When most of the enzyme molecules are consumed
   D. When much of the products are accumulated
11. Which of the following is **true** about those bacteria which dwell in hot springs
   A. They are not metabolically active C. They get energy of activation from the spring heat
   B. They use non-protein enzymes D. Their enzymes do not denature at that temperature
12. Which factor has a more negative effect on the functions of enzymes than the others?

A. Neutral PH C. Very high temperature.

B. Optimal amount of salt concentration. D. Optimal amount of substrate concentration

13. What do we call the substance upon which an enzyme acts?

A. Product C. Substrate

B. Activation energy D. Enzyme-substrate complex

14. When an enzyme is denatured by heat or extreme PH, which one of the following does it lose?

A. The peptide bond. C. Secondary structure.

B. Primary structure. D. Tertiary structure.

15. In Which one of the following points does the induced-fit model of enzyme action differ from the lock-and-key model?

A. Enzyme lower the energy of activation

B. Substrates bind at the active site of the enzyme

C. During the reaction, an enzyme-substrate complex is formed.

D. The shapes of the substrate and active site are complementary.

16. Which of the following mechanisms do cells use to regulate enzymes catalyzed reactions in metabolic pathways?

A. Enzyme denaturation C. Irreversible inhibition

B. End product inhibition D. Competitive inhibition

17. Suppose 25% of the molecules of an enzyme are inhibited by a non-competitive inhibitor, which one of the following would happen if the amount of the substrate is increased by 50%?

A. The reaction rate would double.

B. More enzyme molecules would get inhibited.

C. The rate of the reaction would decrease by 50%.

D. The rate of the reaction would remain unchanged.

18. In competitive inhibition, which one of the following factors determines the rate of the inhibition?

A. The reaction temperature. C. The enzyme concentration

B. The substrate concentration D. The ratio of inhibitor to enzyme concentration

19. What are the environmental advantages of using enzymes in industry?

A. It makes high production possible with less input of heat.

B. It makes high production possible with high input of heat.

C. It makes high production possible with emission of more CO_2.

D. It helps high production with supply of more heat and emission of more CO_2

20. Which of the following classes of enzymes digests carbohydrates?

A. Amylases B. Lipases C. Proteases D. Nucleases

21. One of the following molecules is the building units of an enzyme molecule.

A. Amino acids B. Glucose C. Nucleotides D. Fatty acids

22. Which of the following pairs of molecules are known to have catalytic activity?

A. Lipids and proteins C. Proteins and RNAs

B. Carbohydrates and proteins D. Proteins and DNAs

23. To which class of enzymes do the digestive enzymes belong?

A. Esterases B. Transferases C. Hydrolases D. Isomerases

24. Which of the following types of enzyme inhibitions can be removed when the end product of the metabolic pathway is depleted?

A. Allosteric inhibition C. Non-reversible inhibition

B. Competitive inhibition D. Reversible competitive inhibition

25. In the case of enzymatic chemical reactions, what do you call the substance that is acted upon by an enzyme?

A. Polypeptide B. Coenzyme C. Vitamin D. Substrate

26. Which of the following is the common characteristic of all enzymes?

A. They act inside cells only C. They are proteins

B. They require cofactors D. They operate at any PH

27. Which of the following pH values represents the strongest base?

A. 2 B. 7 C. 13 D. 15

28. Into which of the following organic compounds can lipase, maltase and sucrase be grouped?

A. Hormones B. Carbohydrates C. Nucleic acids D. Enzymes

29. For a biological detergent to effectively remove oily and greasy dirt, which of the following enzymes should it contain?

A. Cellulose B. Protease C. Amylase D. Lipase

30. Which region of the human digestive tract contains enzymes that perform well at low pH?

A. Mouth B. Stomach C. Small intestine D. Large intestinal

31. To which one of the following organic molecules do enzymes belong ?
A. Carbohydrates **B**. Amino acids C. Proteins D. Lipids

32. Which of the following is a coenzyme?

A. NAD B. Carbohydrates C. Water molecule D. Protein

33. Which of yhe following substances has a shape which is similar to that of the substrate of an enzyme?

A. The reaction product C. A competitive inhibitor

B.A cofactor D. An allosteric inhibitor

34. At which level structural organization do protein have the alpha-helix shape?

A. Primary structure C. Tertiary structure

B. Secondary structure D. Quaternary structure

35. Which one of teh following terms refers to how fast an enzyme acts on its substrate?

A. Turn over number B. Substrate number C. Enzyme number D. Product number

36. What does a restriction enzyme do?

A. Restricts transcription C. Prevent DNA from replicating

B. Cuts DNA at specific sites D. Hydrolyzes the DNA molecule

37. The optimum temperature of enzymes found in thermophilic bacteria is:

A. Lower than for enzymes in the human body C. higher than enzymes in the human body

B, the same as enzymes found in human body D. lower than enzymes found in warm blooded animals

38. If the rate of enzyme catalyzed reaction remains constant even when more substrate is added to the reaction ,which of the following might be the reason?

A. Saturation of the enzyme C. Inhibition of enzyme- substrate complex formation

B. Inactivation of the enzyme D. Loss of substrate specificity by the enzyme

. 39. Which of the following will primarily happens if the enzymes in the lysomsomes of a cell are defective?

A. Cellular debris will not be removed C. Chromosome replication will cease

B. ATP production will stop D. Diffusion process will stop

40. Which of the following properties of enzymes makes it possible that a single enzyme molecule can act on many substrate molecules?

A. Enzymes are proteins C. Enzymes lower the energy of activation

B. Enzymes are reused over and over again D. Enzymes are substrate specifi

41. Which process produces mRNA during protein synthesis?

A. Translation B. Replication C. Mutation D. Transcription

42. Which part of the human alimentary canal contains digestive enzymes that functions at acidic pH 7?

A. Stomach B. Mouth C. Esophagus D. Small intestine

43. Which of the following is made of globular proteins?

A. Enzyme B. Keratin C. Collagen D. Glycogen

44. In which area of enzyme application is invertase injected to sucrose paste in order to produce liquid chocolate?

A. Detergent making industry B. Palp and paper industry C. Pharmaceutical industry D. Food processing industry

45. Which one of the following functions best at higher optimum pH than all the rest?

A. Pepsin B. Salivary amylase C. Trypsin D. Enzyme in stomach

46. Which class of enzyme joins two molecules together by formulation of new bonds?

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

47. In an enzymes that contains non- protein organic molecules, in addition to the protein component, what is the protein component called?

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

49. Which one of the following should be done in order to remove an enzyme inhibition caused by a competitive inhibitor?

A. Remove affected enzyme molecules B. Add more substrate to the system

C. Remove the end product of the reaction D . Add more inhibitor to the system.

50. How many amino acids are there in all known proteins?

A. About 10 B. About 35 C. About 20 D. About 46

51. Deficiency of which of the following nutrients in human diet is likely result in a deficiency of some co-enzymes like FAD?

A. Essential amino acids B. Vitamins C, Carbohydrates D. Saturated fatty acids

52. What causes tomato fruits to ripen much more slowly when kept in a refrigerator than if left on a table at room tempreture?

A. Low temperature slows the normal action of ripening enzymes

B. Enzymes produced by bacteria normally inhibit ripening

C. Humidity accelarates enzyme activity and ripening process

D. Normal temperature arrests the action of ripening enzymes

53. In what way is the lock - and -key model of enzyme molecule assumed to be different from the induced-fit model?

A. It has low turnover rate B. It does not form enzyme-substrate complex

C. It can not effectively reduce the activation energy D. Shape of active site and the substrate complement

54. Which of the following determines the primary structure of a polypeptide?

A. The peptide bond B. The coding gene C. The hydrogen bonds D. The disulphide bridges

55. Which property listed below is NOT true about enzymes?

A. They speed up specific chemical reactions B. They are used up in the reaction they catalyze

C. They are affected by pH and substrate concentration D. Small amounts can change a large amounts of substrate

56. Which of the following belongs to the class of enzymes known as transferase?

A. Kinases B. Esterases C, Fumerases D.Aldolases

57. What is the functional group of the building blocks of proteins called?

A. Amino group B. Ketone group C. Carboxyl group D. Aldehyde group

58. WHat is an alternative name for the enzyme pepsin?

A.Trypsin B. Lipase C. Gastric protease D. Gastric polymerase

59. In which of the following is the proteins structure and its description MISMATCHED ?

A. Secondary protein structure - beta pleated sheet B. Primary protein structure - folded protein chain

C. Secondary protein structure - alpha helix structure D. Quaternary protein structure * two or more folded chains

Biology Grade – 11

Unit – 4

1. Lysosomes function in:
   A. Protein synthesis
   B. Processing and packaging
   C. Intracellular digestion
   D. Lipid synthesis
2. In which of the following organelles of the prokaryotic cell are enzyme synthesized?
   A. Nuclei B. Mitochondria C. Chloroplasts D. Ribosomes
3. Which one of the following is the part of a eukaryotic plant cell that is devoid of DNA?
   A. Nucleus B. Cytoplasmic fluid C. Chloroplast D. Mitochondrion
4. Which one of the following organelles of the cell is involved in the energy release of eukaryotic cells?
   A. Chloroplast B. Endoplasmic reticulum C. Nucleus D. Mitochondrion
5. Which one of the following terms refers to the diffusion of water across a selectively permeable membrane?
   A. Dialysis B. Osmosis C. Cohesion D. Cytoplasmic streaming
6. Which of the following are structurally and evolutionary more related to prokaryotic cells?
   A. Fungi and protozoa
   B. Higher plants and animal
   C. Chloroplasts and mitochondria
   D. Unicellular green algae and fungi
7. Select the kingdom of life in which the cellular organelles are without membranes around them?
   A. Plantae B. Protista C. Monera D. Fungi
8. What is the process by which water passes across the cell membrane?
   A. Active transport B. Osmosis C. Facilitated diffusion D. Pinocytosis
9. What would be the approximate image size of a cell with the size of 0.03 microns viewed under a compound microscope with magnification powers marked as 10X on the eye piece and 100X on the objective lenses?
   A. 10 microns B. 20 microns C. 30 microns D. 40 microns
10. When does a hypotonic condition exist in the environment of the cell?
   A. When there is equal concentration of solutes outside and inside the cell
   B. When the solute concentration outside the cell is higher than inside the cell
   C. When the solute concentration inside the cell is greater than outside the cell
   D. When the net movement of water is from the cell to the outside environment

11. Which of the following is important to regulate the entry and exit of materials into and out of plant cells?
    A. Cell wall B. Cell membrane C. Nucleus D. Central vacuole
12. All the living components of the cell collectively known as what?
    A. Cytoplasm B. Nucleus C. Cell membrane D. Protoplasm
13. Which of the following is found in both plant and animal cells?
    A. Cell wall B. Chromoplasts C. Chromosomes D. Leucoplasts
14. What happens to a human red blood cell when it is placed in a hypertonic solution?
    A. It becomes turgid C. it might lose water and shrink
    B. It might swell and burst D. It will remain unchanged
15. Which organelle of the cell has a function of modifying proteins for secretion?
    A. Goldi body B. Ribosome C. Food vacuole D. Lysosome
16. What is the process by which cells like amoeba and white blood cells engulf and internalize particles such as bacteria?
    A. Osmosis B. Pinocytosis C. Active transport D. Phagocytosis
17. Among the following, which one can be an example of prokaryotic organisms?
    A. Paramecium B. Amoeba C. Liverwort D. Bacteria
18. If pieces of fresh potato are kept for some time in sugar solution of 20%, 10%, 5% and distilled water, which piece will gain the highest percentage of weight?
    A. The one in 20% solution C. the one in 5% solution
    B. The one in 10% solution D. The one in distilled water
19. Which is not true of prokaryotic? They:
    A. Are living cells C. All are parasitic
    B. Lack a true nucleus D. Are either archaebacteria or eubacteria
20. The cells of which group of micro-organisms can be described as prokaryotic?
    A. Viruses B. Protozoa C. Algae D. Bacteria
21. Which one of the following is largely made up of phospholipids
    A. Cell wall B. Cell membrane C. Nucleus D. Chromosomes
22. Choose the name of the researcher/scientist who introduced the term cell for the first time?
    A. Aristotle C. Robert Hooke
    B. Anton Van Leeuwenhoek D. Robert Brown
23. Which of the following is a process by which cells take in fluid by means of vesicles?
    A. Pinocytosis B. Endocytosis C. Osmosis D. Phagocytosis
24. Among the following discoveries in biology which one is the latest of all?
    A. The low of heredity C. The double helix nature of the DNA
    B. The cell theory D. The binomial system of classification

25. Which of the following organelles are likely to be more abundant inactive cells such as the muscle cells of human heart?
A. Lysosomes B. Chromosomes C. Mitochondria D. Golgi bodies
26. Solution ions pass from a region where they are at lower concentrations to a region where they are found at higher concentrations inhuman cells. This is an example of which of the following processes?
A. Osmosis B. Simple diffusion C. Passive transport D. Active transport
27. Choose the structure that is usually present only in the cells of animals?
A. Vacuole B. Cell wall C. Nucleus D. Centriole
28. Why is it that the leaves and soft young stems of plants that have started wilting become stiff again when they are provided with water? This is because of:
A. Fast intake of mineral C. Increased turgor pressure
B. The cooling effect of water D. Increased rate of photosynthesis
29. In which kingdom of life are the unicellular eukaryotes grouped?
A. Monera B. Proissta C. Plantae D. Anmalia
30. Which of the following statements is in agreement with the modern cell theory?
A. Cells come from nothing C. .Cells come from existing cells
B. Cells come from non-living material D .Cells arise by means of spontaneous generation.
31. Which of the following ideas in cell theory was contributed by Rudolf Virchow?
A. All plants are made up of cells C. All animals are made up of cells
B. Cells are the structural unit of life. D. Cells come from pre-existing cells.
32. Which of the following modes of material transport across the cell membrane is **NOT** governed by the concentration gradient of the transported material?
A. Simple diffusion B. Facilitated diffusion C. Osmosis D. Active transport
33. Which of the following require expenditure of ATP?
A. Osmosis B. Facilitated diffusion C. Simple diffusion D. Endocytosis
34. Which means of particle transport requires input of energy by the cell?
A. Simple diffusion B. Facilitated diffusion C. Osmosis D. Active transport
35. Suppose we consider four hypothetical cells (designated A, B, C and D) having cubic shape with their sides measuring 2, 4, 6 and 8 arbitrary units respectively which of these cells has the largest surface area to volume ratio?
A. Cell A B. Cell B C. Cell C D. Cell D

36. Suppose three potato cylinders are kept for some time in 15%, 8% and 4% sucrose solutions, respectively, and the fourth cylinders is kept in distilled water, which of the cylinders will be more flaccid?
    A. The cylinder in 4% solution C. The cylinder in 8% solution
    B. The cylinder in 15% solution D. The cylinder in distilled water
37. What type of molecules cannot pass across the cell membrane by simple diffusion?
    A. Charged molecules C. Lipid soluble molecules
    B. Non-polar molecules D. Molecules of very small size.
38. Which of the following kingdoms of life is consisting of prokaryotic organisms?
    A. Fungi B. Monera C. Protista D. Plantae
39. Which one of the following is the main constituent of biological membranes?
    A. Phospholipids B. Glycoproteins C. Glycolipids D. Cholesterols
40. Which unit is best to use for measuring the smallest cells and organelles?
    A. Micrometer. B. Milliliter C. Millimetre D. Nanometre
41. If a suspension of a mixture of cellular of organelles is spun in a centrifuge, which organelle settles to the bottom first?
    A. Mitochondria B. Nuclei C. Chloroplasts D. Ribosomes
42. If the size of a cell increases, which one of the following gets smaller?
    A. The volume of the cell C. The surface area of the cell
    B. Surface area to volume ratio of the cell D. Volume to surface area ratio of the cell
43. Which of the following is an important function of the Golgi apparatus?
    A. Protein synthesis C. Packaging of proteins for export out of the cell.
    B. Removing of debris from cell D. Storage of waste materials not needed by the cell
44. In which of the following features are eukaryotic cells distinguished from prokaryotic cells?
    A. They have mitochondria C. Their nuclei lack membranes
    B. They have no DNA D. They have smaller ribosome
45. What will happen if human red blood cells are kept in a hypotonic solution?
    A. Lose water by osmosis and burst C. Lose water by osmosis and shrink
    B. Take in water by osmosis, swell and burst. D. Take in water by osmosis, swell and remain turgid.
46. In which type of solution is the water potential more negative than in the cells?
    A. Hypotonic B. Hypertonic C. Isotonic D..Equal solute and solvent concentration
47. Which of the following paired organelles are membrane-bound?
    A. Ribosomes and peroxisomes C. Chloroplasts and ribosomes
    B. Mitochondria and ribosomes D. Chloroplasts and mitochondria

48. Most cell membranes are primarily composed of which compounds?
    A. Proteins and lipids B. DNA and ATP C. Chitin and starch D. Nucleotides and amino acids
49. If red blood cells shrink when placed in a certain solution, what is the strength of the solution relative to the strength of the protoplasm of the cells?
    A. Hypotonic B. Isotonic C. Hypertonic D. Isoosmotic
50. Which of the following cell types can be rich in lysosmes?
    A. Red blood cells B. Nerve cells C. Phagocytic cell D. Muscle cells
51. One of the following would be harder to see under the ordinary light microscope that is more likely to be available in school laboratories.
    A. Nucleus B. A bacterium C. A mitochondrion D. A ribosome
52. Which of the following cellular forms did Robert Hooke observe under his crude microscope?
    A. Bacteria B. Protozoa C. Yeast D. Empty cell wall
53. On which of the following organelles of the eukaryotic cell does protein synthesis take place?
    A. The nucleus B. The ribosome C. The chloroplast D. The mitochondrion
54. Which molecule in the cell is the constituent of the gene?
    A. Nucleic acid B. Protein C. Lipid D. Carbohydrate
55. Which of the following structures is **NOT** present in animal cells?
    A. Cell wall B. Nucleus C. Protoplasm D. Nucleic acid
56. Choose the organisms that belong to the eukaryotes?
    A. Bacteria B. Blue-green algae C. Amoeba C. Virus
57. What is the general term for the part of the protoplasm that lies outside the nucleus?
    A. Cytosol B. Cytoplasm C. Central vacuole D. Plasma membrane
58. Which of the following cellular structures is possessed by all cells?
    A. Cell membrane B. Nucleus C. Cell wall D. Golgi apparatus
59. Which of the following eukaryotic cell organelles was a free living cell before eukaryotic cells evolved?
    A. Nucleus B. Ribosome C. Chloroplast D. Nucleolus

60. Which of the following mechanisms moves digested amino acids and glucose across the plasma membrane of the cells lining the wall of the small intestine?

A. Osmosis B. Simple diffusion C. Facilitated diffusion D. Active transport

61. If a cell fails to clear its cellular debris, which one of its organelles is most likely **NOT** functioning?

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

62. Among the following identify the organelle in which nucleic acid is **NOT** found?

A. Mitochondria B. Chloroplast C. Ribosome D. Golgi apparatus

63. Suppose a hypothetical cube-shaped cell has sides of 10 micrometers, what is the surface area to volume ratio of this cell?

A. 6 : 10 B. 10 : 10 C. 3 : 6 D. 4 : 8

64. In which of the following solutions does an animal cell undergo haemolysis?

A. In hypotonic solution C. In hypertonic solution

B. In isotonic solution D. In both hypotonic & hypertonic solutions

65. Which of the following will happen if a plant cell is kept in a solution that is stronger than its protoplasm?

A. The cell will become turgid C. The central vacuole will expand

B. The protoplasm will get plasmolysed D. The cell will swell and burst

65. Which of the following units of measurement is more c0nvenient to express the size of cellular organelles?

A. Meter B. Centimeter C. Millimeter D. Micrometer

66. Which of the biologist is more frequently is used to study cell structure in laboratory?

A. Dissecting kit B. Centrifuge D. Petri- dish D. Microscope

67. What does it mean when biologists express the cell membrane as a unit membrane?

A. A cell is covered by a single membrane C. A membrane is only one lipid layer thick

B. All cells have essentially similar membrane D. A membrane is covered by a single layer of protein

68. Which of the following classes of molecules **CANNOT** pass easily across the cell membrane by simple

diffusion?

A. Small non-polar molecules C. Lipid soluble molecules

B. Non- polar molecules D. Polar molecules

. 69. Which the following modes of transport is used by cells to move substances against their concentration

gradients?

A. Osmosis B. Simple diffusion C. Facilitated diffusion D. Active transport

69. Which one of the following factors determines the rate at which organelles settle out of cell homogenate

if span in centrifuge ?

A. Mass of the organelle C. Function of organelle in the cell

B, Location of the organelle in the cell D. Thickness of the membrane covering the organelle

70. Of he following four cells whose surface area to volume ratio is given , which cell can more efficiently

transport its needs of material across the surface

A. 24 : 8 ratio B. 54 : 27 ratio C. 96 : 64 ratio D. 150 : 125 ratio

71. Cells immediately use the energy that electrons lose as they pass along the chain of electro carriers to:

A. produce ATP B. pump protons C. spin rotor of ATP synthase D. reduce NAD

72. What is the purpose of the enfolding of the -membrane of the mitochondria ?

A. Increasing the photosynthetic capacity of cell

B. Speeding up the lose of CO_2 during fermentation

C. Speeding up the process of glycolysis

D. Increasing the surface area for ATP production

73. What is the molecule in plant cell that first captures the radiant energy from sunlight?

A. ATP B. DNA C. Chlorophyll D. Carbon dioxide

74. Of the following functions, which one do triglycerides accomplish in cells?

A. Increase density of tissues and cells B. Increase thermal insulation of cells

C. Yield limited amount of ATP for cells D. Facilitate entry of excess water into cells

75. What is the best term that expresses the movement of substances in cells against their concentration gradients?

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

76. Which of the following has a bigger size than all the others?

A. A ribosome taken from animal cell B. A mitochondria taken from a plant cell

C. A nerve cell taken from a human brain D. A glucose molecule taken from a plant cell.

77. Which of the following parts of the plant cell is NOT a living component of the cell?

A. Cell membrane B. Cell wall C. Cytoplasm D. Nucleus

78. If two species are known to belong to the same order ,they must also belong to which taxonomic category?

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

79. Which of the following mechanisms of cellular transportation depends only on the kinetic movement of the transported substances?

A. Simple diffusion B. Facilitated diffusion C. Active transport D. Phagocytosis

80. What would happen to relative size of surface area and volume as the cell size increase?

A. Both increase at same rate B. The volume increase faster

C. The surface area increase faster D. As volume increases surface area decreases

81. Which of the following liquid media would cause plasmolysis if plant cells are kept in it?

A. Distilled water B. Hypotonic solution C. Hypertonic solution D. Isotonic solution

82. In which of the following alternatives do both organelles have double membranes?

A. Peroxisomes and lysosomes B. Chloroplasts and lysosomes

C. Ribosomes & mitochonderia D. Mitochondria and chloroplasts

83. Which of the following is correct according to the cell theory?

A. All organisms are made up of one cell

B. Cells are built spontaneously from organic molecules

C. Only the higher multicellular organisms are made up of cells

D. Cells are the structural and functional units of all living things

84. Which one of the following do all prokaryotic cells have?

A. Cell wall B. Chloroplast C. Nuclear envelop D. Mitochondrion

85. Why is the surface -area -to-volume ratio of a cell important?

A. It measures cell´s efficiency in obtaining the oxygen it needs

B. It measures how efficient the cell is in conserving energy

C. It measures how efficiently the cell uses the energy it releases

D. It measures how efficiently the cell releases energy in respiration

86. Which of the following is true about cells kept in different solution?

A. Plant cell in hypertonic solution swell C. Plant cells in hypotonic solution become turgid

B. Red blood cells in hypotonic solution shrink D. Red blood cells in hypertonic solution haemolyse

87. Which one of the following is the smallest of all?

A. A red blood cell B. A virus C. A bacterium D. An amoeba

88. In which of the following groups of living organisms do the cells lack organized nuclei?

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

89. Which one of the following events happened before all the others ?

A. The cell theory was proposed B. The protozoa were discovered

C. The compound microscope was invented D. The structure of DNA was described

Biology Grade – 11

Unit – 5

1. Which molecule in plaint cells first captures the energy from sunlight during photosynthesis?
   A. Adenosinetriphosphate B. Chlorophyll C. Carbon dioxide D. Glucose
2. Which one of the following alternatives gives the products of fermentation of glucose by yeast?
   A. Lactic acid, CO2, 2ATP C. Alcohol, CO2, 2ATP
   B. CO2, H2O, 36ATP D. Alcohol, CO2, 36ATP
3. If a cell contains 10NADH + 10 $FADH_2$ molecules, a total of how many ATP molecules would it produce from them?
   A. 20 ATP B. 30 ATP C. 50 ATP D. 60 ATP
4. Which of these is not true of fermentation?
   A. Net gain of only two ATP C. NADH donated electrons to electron transport system
   B. Occurs in cystol D. Begins with glucose
5. Which one of the following compounds contains more energy
   A. $FADh_2$ B. Pyruvic acid C. NADH D. ATP
6. Which one of the following is the correct sequence for the main processes of cellular respiration?
   A. Krebs cycle, electron transport system, glycolysis
   B. Glycolysis, Krebs cycle, electron transport system

C. Electron transport system, Glycolysis, Krebs cycle

D. Glycolysis, Electron transport system, Krebs cycle

7. Which of the following is the most important pigment for photosynthesis?

A. Chlorophyll a B. Chlorophyll b C. Carotenoids D. Xanthophylls

8. The greatest contributor of electrons to the electron transport system is:

A. Oxygen B. The Krebs cycle C. The transition reaction D. Glycolysis

9. Which of the following processes releases oxygen to the atmosphere?

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

10. What is the source of the oxygen that green plants relese during photosynthesis

A. Sugar B. Carbon dioxide C. water D. Chlorophyll

11. Choose the final electron acceptor in eh electron transport chain during aerobic respiration of eukaryotic cells?

A. H_2O B. O_2 C. CO_2 D. NADP

12. Where in the plant cell does the Krebs cycle (citric acid cycle) take place?

A. Nucleus B. Cytoplasm C. Mitochondrion D. Chloroplast

13. Which of the following is true about the first stage of photosynthesis?

A. Light dependent B. Temperature dependent C. ATP driven D. Glucose driven

14. To which of the following molecules is most of the energy released during the Krebs cycle transferred?

A. ATP B. $FADH_2$ C. NADH D. ADP

15. Where in the mitochondria does the Krebs cycle take place?

A. On the cristae C. In the matrix

B. Between the outer and inner membrane D. On the inner surface of the outer membrane

16. Which of the following defines ATP?

A. Adenine + adenosine + a phosphate C. Adenosine + ribose sugar + double phosphate

B. Adenine+ ribose sugar + triple phosphate D. Nitrogen + sugar + monophosphate

17. Which process of respiration helps to release most of the energy stored in glucose?

A. Oxidative phosphorylation C. Fermentation reaction

B. Glycolysis D. Anaerobic reaction

18. If an animal inhales a radioactive form of oxygen, in which of the following products of the cellular respiration would the radioactivity be detected?

A. Water B. Carbon dioxide C. ATP D. NADH

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

A. Electron transport B. Glycolysis C. Krebs cycle D. Acetyl COA formation

20. In aerobic respiration of cells, in which cellular part does the krebs cycle (citric acid cycle) take place?
A. Chloroplasts B. Mitochondria C. Nuclei D. Lysosomes

21. What is the final electron acceptor in the electron transport chain of cellular respiration?
A. H_2 B. O_2 C. $NADP^+$ D. NAD^+

22. Which of the following pairs are both organelles concerned with energy transformation?
A. Nucleus and nucleolus C. Chloroplast and vacuole
B. Mitochondria and nucleus D. Chloroplast and mitochondria

23. When the muscle cells are in short supply of oxygen, which of the following compounds would be accumulated in them?
A. Ethanol B. Acetic acid C. Lactic acid D. Carbon dioxide

24. Which of the following processes of photosynthesis does **NOT** require the presence of light to take place?
A. The splitting of water B. ATP formation C. Reduction of NADP. D. Carbon fixation.

25. What amount of net gain ATP does glycolysis provide to a cell?
A. 2 ATP molecules. B. 4 ATP molecules C. 18 ATP molecules. D. 36 ATP molecules.

26. What is the correct equation for cellular respiration?
A. $6CO_2 + 6H_2O + Energy = 6O_2 + C_6H_{12}O_6$
B. $6O_2 + C_6H_{12}O_6 = 6CO_2 + 6H_2O + Energy$
C. $6O_2 + C_6H_{12}O_6 + Energy = 6CO_2 + 6H_2O$
D. $6CO_2 + 6H_2O = 6O_2 + C_6H_{12}O_6 + Energy$

27. Which of the following is **NOT** one of the stages in cellular respiration?
A. Calvin cycle B. Glycolysis C. Electron transport D. Krebs cycle

28. Which of the following is true for cellular respiration?
A. Restricted to plant cells C. Restricted to animal cells
B. Occurs in all eukaryotic cells D. Occurs in prokaryotic cells only

29. How many moles of ATP will be generated as a result of the oxidation of one mole of $FADH_2$ in an actively respiring mitochondrion?
A. 0 B. 3 C. 2 D. 6

30. In cyclic photophosphorilation what is the source of the recycled electron?

A. Reduced NADP C. Chlorophyll molecule

B. Adenosine triphosphate. D. Photolysis of water molecule

31. If there were no free oxygen to breath, which one of the following steps of the respiration process can operate in our body?

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

32. What is the source of the oxygen that is produced during the process of photosynthesis by higher plants?

A. CO_2 B. H_2O C. ATP D. Chlorophyll

33. Which energy rich organic compound contains adenine in its molecule?

A. Lipid B. Carbohydrate C. Glucose D. ATP

34. During chemiosmosis, what substance diffuses from one side to the other side of the membrane?

A. Water molecules B. Protons C. Electrons D. ATP molecules

35. Which of the following is **NOT** true about photosystem-II?

A. Its reaction center molecule is P680.

B. It passes is excited electrons to Photosystem-I.

C. The energy lost from its excited electrons reduces NADP.

D. It replenishes its lost electrons from photolysis of water

36. What is the importance of chemiosmosis in photosynthesis and cellular respiration?

A. Splitting of water molecule C. Operating the proton pump

B. Combining hydrogen and carbon D. Synthesizing ATP

37. Where does the light dependent reaction of photosynthesis occur in the chloroplast?

A. In the thylakoid membrane C. In the fluid of the stroma

B. In all parts of the chloroplast B. In the stomatal opening

38. For which of the following is the sugar produced by photosynthesis **NOT** used?

A. To produce biomass C. To make new DNA

B. To produce ATP in respiration D. To produce enzaymes

39. In which process is ATP generated during short distance high speed running?

A. Aerobic respiration C. Mitochondrial energy transformation

B. Anaerobic respiration D. The Krebs cycle

40. How many net ATP molecules are generated through anaerobic respiration, when a single glucose molecule is changed to pyruvate in the human body?

A. Two B. Three C. Four D. Six

41. During the Krebs cycle, which of the following molecules temporarily stores most of the energy released from food molecule?

A. ADP B. ATP C. NADH D. FADH

42. At which stage is most of the ATP generated in aerobic respiration?

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

43. Which of the following substances is **NOT** necessary for photosynthesis to take place?

A. Chlorophyll B. Carbon dioxide C. Oxygen D. Water

44. The molecule of which pigment is located at the reaction center of photosynthesis?

A. Chlorophyll a B. Chlorophyll b C. Carotenoid D. Accessory pigments

45. Where exactly in the cell does the Krebs cycle take place?

A. Inner mitochondrial matrix C. Inner mitochondrial membrane

B. Cytoplasmic fluid D. Outer mitochondrial membrane

46. If present in the fermentation system, which one of the following would negatively affect alcohol production by yeasts?

A. Water B. Oxygen C. Glucose D. Fermentation enzyme

47. In which of the following ways is the carbon dioxide of the atmosphere fixed into the carbon found in organic molecules?

A. In the decomposition of organic molecules C. In the process of photosynthesis by green plants

B. In all the cellular respiration processes of organisms? D. In the breathing processes of all animals

48. Which of the following groups of plants carry out lightdependent and light independent reactions of photosynthesis in separate cells?

A. C-3 plants B. C-4 plant C. CAM plant D. Plants without chlorophyll

49. From which of the processes of cellular respiration is the majority of the ATP generated?

A. Anaerobic fermentation C. Glycolysis & link reaction

B. Electron transport & chemiosmosis D. Krebs cycle & glycolysis

50. On which of the following does the rate of algal photosynthesis in a lake depend?

A. The oxygen content of the water C. The nitrogen content of the water

B. The elevation where the lake is found D. The amount of light that penetrates the lake water

51. During aerobic respiration, what is the route through which protons return from the mitochondrial inter-membrane space back to its matrix?

A. Proton pump B. ATP synthase C. Ion channel D. Membrane lipid

52. What is molecule that supplies the quickest and suitable source of energy to cells ?

A. Lactose B.Sucrose C..ATP D. Lipid

. 53. Which of the following is **not** true about mitochondria and chloroplast?

A. Both contain chlorophyll C. Both contain nucleic acid

B. Both have double membrane D. Both transduce energy

.54. From where do plants get most of their nutrients

A. Chlorophyll B. Soil C. Light D. Atmosphere

55. When athletes take part in short distance running , how do the cells generate most of energy that is quickly

needed?

A. Aerobic respiration in muscle clls C. Mitochondrial respiration in any cells

B. Anaerobic respiration in muscle cells D. Yeast fermentation in the stomach

56. Which of the following happens in both cycle and non-cyclic photophosphorilation?

A. ATP is formed B. Oxygen is generated C. NADP is reduced D. Water molecule splits

57. Which of the following is NOT true about C4 plants such as tef (Eragrostis tef)?

A. CO_2 is harvested during the night time

B. Light - dependent reaction occurs in mesophyll cells

C. The bundle sheath cells contain chloroplast

D. Chloroplast of bundle sheath cells lack thylakoids

58. Of the following , which one is the main source from which plants get nutrients necessary for their growth and development?

A. Light B. Chlorophyll C. Atmosphere D. Soil

59. From which of the following does the O_2 released during the process of photosynthesis originates?

A. Pyruvic acid B. CO_2 C. Sugar D. Water

60. What happens in the first reaction of the Kerbs cycle during energy transformation?

A. A 2-C compound is produced B. A 6-C compound is produced

C. A 4-C compound is produced D. A 5-C compound is produced

61. In the carbon cycle ,which of the following processes removes carbon dioxide from atmosphere?

A. Respiration B. Decomposition C. Combustion D. Photosynthesis

62. Which of the following processes release CO_2 in to the atmosphere ?

A. Respiration B. Assimilation C. Feeding D. Photosynthesis'

. 63. During which of the following processes in cellular respiration are most of the ATPs formed?

A. Glycolysis B. Chromosome C. Link reaction D. Kerbs cycle

64. Which of the following is the adaptation by C4 plants that help them to avoid photosynthesis?

A. Harvesting of carbon dioxide at night B. Using separate cells for light and dark reactions

C. Storing carbon dioxide in the vacuole D. Keeping the stomata closed during the day

65. Which phosphate bond of the ATP is broken when the energy it contains is needed for cellular activity?

A. The first bond B. The C- C bonds C. The second bond D. The third bond

66., What is the advantage that a photo system containing molecules of different types of light sensitive pigments have?

A. To absorb light of different wave lengths B. To increase the site of photosystem

C. To increase the complexity of the photosystem D. To increase the surface area for light absorption

67.Which of the following is responsible for the bending of a young plant toward a unidirectional souce of light?

A. Reduced photosynthesis on dark side B. Faster growth rate on the dark side

C. Reduced auxin concentration on the dark side D. Increased rate of drugs cell division on the light side

68. Under what conditions do C4 plants have more photosynthetic efficiency than C3 plants?

A. Low water supply B. Low temperature C. Low light intensity D. Low CO_2 concentration

69.Which of the following processes release energy that is used by the cell in its ATP synthesis ?

A. Oxidation of glucose B. Synthesis of macromolecules

C. Conduction of nerve impulses D. Protein synthesis from amino acids

70 Which of the four stages of aerobic respiration of glucose takes place outside the mitochondria?

A. The Kerbs cycle B. Glycolysis C. Electron transport chain D. The link reaction

71. One of the following is NOT part of the light reaction of photosynthesis . Which is it?

A. Photosystem I B. Photosystem II C. Electron carrier D. Calvin cycle

72. From where do plants get the phosphates that they use in the synthesis of ATP?

A. Air B. Heat C. Soil D. Sun

73. Which of the following plants has the photosynthetic pathway known as CAM ?

A. Mango B. Maize C. Sugarcane D. Pineapple

74. To which of the following classes of molecules is ATP more related chemically?

A. Nucleotides B. Disaccharides C. Lipids D. Phospholipids

75. Commercial crop growers increase the CO_2 concentration and the temperature (up to a certain limit) to increase the rate of photosynthesis and crop yield in glass house production. To which of the following is this action best related ? understanding of ----------

A. soil nutrient requirement in crop production

B. limiting factors in plant growth and crop production

C. fluctuations in the amount of available nitrogen and oxygen

D. market factors and relations in commercial crop production

76In athletics, why should long distance races be made at slower speed than short distance running?

A. To allow aerobic respiration produce the ATP needed

B. To generate more ATP over very short period of time

C. To generate sufficient ATP through anaerobic respiration

D. To produce more lactic and ATP and avoid muscle fatigue

77.What do yeasts primarily achieve for their survival from the process of converting pyruvic acid to alcohol during anaerobic respiration ? They -----

A. from ATP B. recycle NAD C. produce oxygen D. release carbon dioxide

78. What does the complete aerobic respiration of glucose by cells normally yields?

A. Alcohol,CO_2 , and 36 ATP B. CO_2 , H_2O , and 36 ATP

C. Alcohol ,CO_2 and 2 ATP D. Lactic acid , CO_2 and 2 ATP

79. Which of the following stages of aerobic respiration occurs outside mitochondria ?

A. Glycolysis B. Chemiosmosis C. Kerbs cycle D. Link-reaction

80. Which process of photosynthesis can occur in the presence as well as in the absence of light?

A. Photolysis of water B. ATP formation C. Carbon fixation D. Release of free oxygen

81. Which of the following happens during cellular respiration but **NOT** during photosynthesis ?

A. Fixation of carbon dioxide B. Release of carbon dioxide

C. Release of free oxygen D. Formation of ATP

82. What does the fermentation of glucose by yeast normally yield?

A. A. Lactic acid ,CO_2, and 2ATP C. CO_2,H2O,and 36 ATP
B. B. Alcohol, CO_2,and 2ATP D. Alcohol,CO_2 ,and 36ATP