1. The major building block of an organism is...

A. Nitrogen

B. Carbon

C. Water

D. Sulphur

2. The process by which plants loss water to the atmosphere is

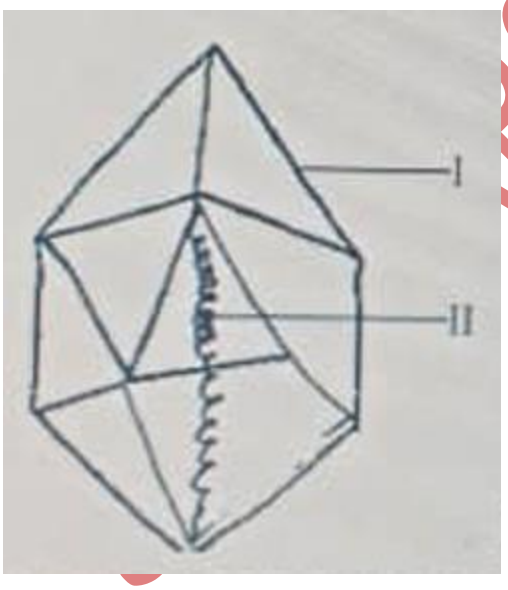
A. transpiration

B. guttation

C. translocation

D. evaporation

3.



Use the diagram above to answer the question that follows

The organism belongs to kingdom

A. monera

B. protista

C. fungi

D. animalia

4. The formation of cilia and flagella in living cells is carried out with the help of

A. ribosome

B. lysosome

C. centriole

D. plastid

5. The food nutrient with the highest energy value is

A. protein

B. carbohydrate

C. lipid

D. minerals

6.

6 X + 6 H_2O → $C_6H_{12}O_6$ + 6O_2

III chlorophyll II IV

Use the diagram above to answer question that follows

The part labelled I is

A. enzyme

B. water

C. sunlight

D. chemical

7. Bilateral symmetry,cylindrical bodies and double openings are characteristic features of

A. nematodes

B. hydra

C. protozoa

D. protists

8. Mouth part adapted for piercing and sucking is found in

A. housefly

B. grasshopper

C. mosquito

D. cockroach

9. The web-feet of frogs and toads is basically for

A. leaping

B. walking

C. swimming

D. mating

10. The part of the inner ear that is responsible for hearing is

A. sacculus

B. cochlea

C. utriculus

D. ampullae

11. The changes of living organisms over generation is referred to as

A. human evolution

B. organic evolution

C. physical evolution

D. chemical evolution

12. In a cross involving a heterozygous red flower plant (Rr) and a white flowered plant (rr). What is the probability that the offspring will be Rr?

A. 1/2

B. 1

C. 2

D. 1/4

13. Inbreeding is highly discouraged in humans because it may

A. increase the death rate of new born

B. lead to the birth of dwarfs

C. lead to high rate of competition among offspring

D. lead to outbreak of hereditary diseases

14. One main feature of trees in the savanna habitat is the possession of

A. large, leathery leaves

B. straight slender stems with branches near the top

C. thin, smooth barks

D. thick, corky bark

15.

Use the diagram above to answer the question that follows

The zone labelled II is called

A. supra-tidal zone

B. pelagic zone

C. littoral zone

D. benthic zone

16. Which of the following structures enables the exchange of gases in insects?

A. skin

B. tracheae

C. Malpighian tubules

D. flame cell

17. The total number of ATP produced during glycolysis is

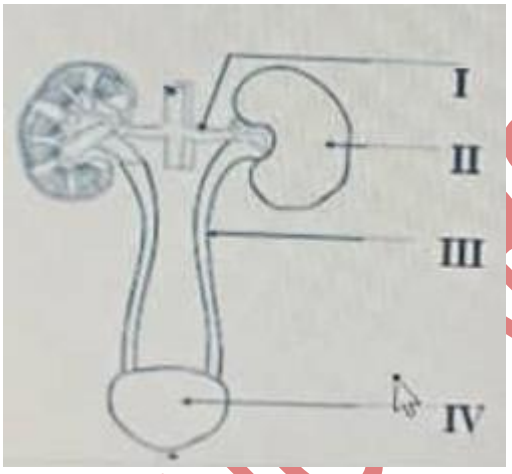
A. 3 molecules

B. 2 molecules

C. 4 molecules

D. 6 molecules

18.



Use the diagram above to answer the question that follows

The diagram above is

A. circulatory system

B. reproductive system

C. urinary system

D. nervous system

19. Bile is a greenish alkaline liquid which is stored in the

A. gall bladder

B. liver

C. stomach

D. pancreas

20. A medium texture soil with high organic matter is

A. clay

B. loamy

C. humus

D. sandy

21. One of the following is an example of discontinuous variation

A. shape of the head

B. blood group

C. body complexion

D. pointed nose

22. The type of variation where there are no remarkable differences between the two extreme individuals is called

A. continuous variation

B. morphological variation

C. physiological variation

D. discontinuous variation

23. The transmission of diseases through contamination of food is an economic importance of

A. mosquitoes

B. cockroaches

C. butterflies

D. bees

24. Bryophyte is an intermediate group between higher algae and

A. thallophyte

B. pteridophyte

C. spermatophyte

D. tracheophyte

25. Ecological succession can result from

A. newly formed habitat

B. habitat with abundant food

C. habitat with space and light

D. population of plants on a fertile land

26. The first organism evolved from which of the following habitat?

A. terrestrial

B. arboreal

C. aquatic

D. desert

27. Which of these pair of substances must be present for a seed to germinate in a laboratory set-up?

A. microbes and water

B. heat and water

C. soil and manure

D. heat and microbe

28. A fruit formed from one flower with many carpels is referred to as

A. simple

B. multiple

C. aggregate

D. false

29. Which of the following plant is found in the ground layer of a tropical rainforest in Nigeria?

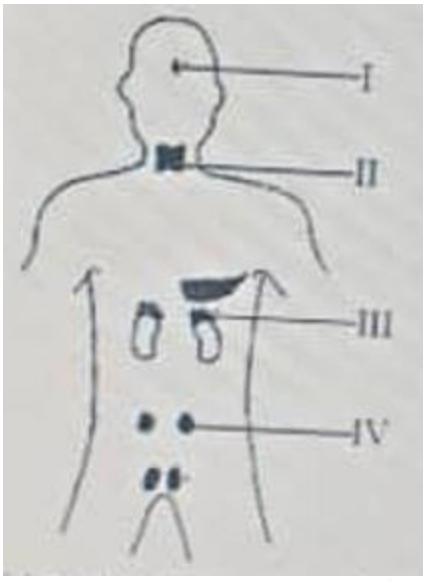
A. obeche

B. liverwort

C. mahogany

D. oil palm

30.



Use the diagram above to answer the question that follows

The endocrine gland that is located in the part labelled I is

A. thyroid

B. adrenal

C. parathyroid

D. pituitary

31. Which of the following processes takes place in the carbon cycle?

A. evaporation

B. nitrification

C. combustion

D. transpiration

32. Which of the following plants shows hypogeal germination?

A. castor oil

B. groundnut

C. maize

D. orange

33. In vascular plants, xylem tissue is responsible for

A. transportation of water

B. translocation of food

C. transportation of hormones

D. storage of sugar

34. The causative agent of tuberculosis is

A. virus

B. bacteria

C. protozoa

D. fungi

35. Which of these is a respiratory organ in mammals?

A. skin

B. mouth

C. heart

D. lungs

36. Which of the Nigeria states is Northern guinea savanna located?

A. Borno

B. Kano

C. Oyo

D. Kwara

37. Darwin's theory of evolution is based on the principle of

A. use and disuse of organ

B. natural selection

C. acquired characteristics

D. mutation

38. Similar structures that are modified to work in different ways in different organisms are referred to as

A. homologous structures

B. analogous structures

C. divergent structures

D. convergent structures

39. One of the ways of controlling Schistosomiasis is by

A. destroying water snails and water weeds

B. clearing the bushes around the house

C. washing hands after using the toilet

D. properly washing fruits before eating them

40. The central nervous system comprises of

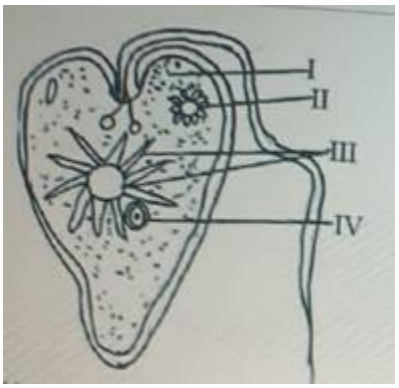
A. brain and somatic

B. brain and spinal cord

C. spinal cord and somatic

D. brain only

41.



Use the diagram above to answer the question that follows

The organelle that shows the organism has plant characteristics is

A. I

B. II

C. III

D. IV

42. Reproduction in paramecium is by

A. binary fission

B. budding

C. spore formation

D. fragmentation

43. A community with a population of two million three hundred and ten thousand people living in an area of two thousand three hundred and ten square kilometres has a population density of

A. 10000

B. 10

C. 100

D. 1000

44. A succession that occurs in an area where there are no pre-existing community is called

A. tertiary succession

B. primary succession

C. post-primary succession

D. secondary succession

45. Which of the following processes releases oxygen to the atmosphere?

A. Respiration

B. Combustion

C. Decomposition

D. photosynthesis

46. The depressed side of paramecium which is lined with cilia leads to a tube-like structure called

A. anal pore

B. oral groove

C. gullet

D. food vacuole

47. The rhizoid of liverwort is

A. unicellular and unbranched

B. multicellular and branched

C. unicellular and branched

D. multicellular and unbranched

48. In glycolysis, glucose is broken down through series of reactions in the presence of enzyme and absence of oxygen to produce

A. Acetyl-coenzyme + ATP

B. Phosphorylated glucose

C. pyruvic acid + ATP

D. Amino acid

49. Gaseous exchange takes place through the plasma membrane in

A. hydra

B. paramecium

C. flatworm

D. earthworm

50. One of the characteristics of secondary succession is that it

A. starts on a bare surface

B. takes longer time to reach climax

C. starts on already colonized surface

D. starts with low organism

51. One of the components of xylem tissue is

A. companion cell

B. tracheid

C. sieve tube

D. epidermal

52. Which of the following statements explains the theory of natural selection?

A. There is no struggle for existence

B. New species get better adaptation

C. The weaker offspring are eliminated

D. Unused structures disappear later

53. The chemical and physical composition of soil is an example of

A. climatic factor

B. topographic factor

C. Edaphic factor

D. chemical factor

54. The abiotic factor that affect the population growth of an organism is

A. predator

B. rainfall

C. food shortage

D. disease

55. The cells responsible for transmitting messages to the effectors are

A. motor neurons

B. sensory neurons

C. hair cells

D. relay neurons

56. The oxygen transported to all parts of the body during blood circulation is used for the

A. growth and development of cells

B. removal of waste products

C. release of energy from food

D. formation of carboxyl haemoglobin

57. After fertilization in plants, the zygote develops into

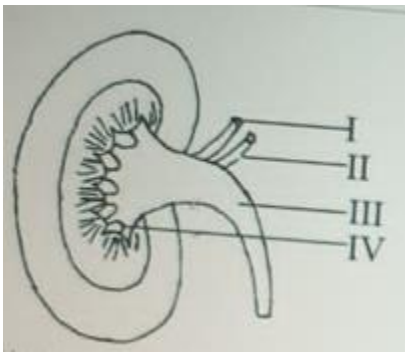
A. fruit

B. an embryo

C. seed

D. an endosperm

58.



Use the diagram above to answer the question that follows

The organ is responsible for

A. production of heat

B. osmoregulation

C. vasoconstriction

D. production of hormones

59. Which of the following evidences of evolution employs the use of radio-isotope dating?

A. comparative anatomy

B. Embryology

C. Fossil records

D. vestigial organs

60. Pentadactyl forelimb of vertebrate function due to differences in environment is

A. comparative anatomy

B. physiological evidence

C. embryological evidence

D. fossil records

61. The feeding relationship between ruminants and the bacteria in their digestive tract is

A. saprophytic

B. parasitic

C. symbiotic

D. heterotrophic

62. A photosynthetic carnivorous plant which feeds on insects is

A. parasitic

B. saprophytic

C. herbivorous

D. insectivorous

63. Xerophytes are mostly found in the

A. arid land

B. tropical rainforest

C. montane forest

D. Sudan savanna

64. In which zone of the marine habitat does the organisms require adaptation for attachment?

A. Supratidal

B. Subtidal

C. intertidal

D. abyssal zone

65. Energy transfer in plants and animals are in the form of

A. DNA

B. ATP

C. GTP

D. RNA

66. The pigment carrying oxygen in the blood is

A. plasma

B. haemoglobin

C. oxyhaemoglobin

D. erythrocytes

67. Production of healthier offspring, viable seeds and formation of new varieties are good characteristics

A. self pollination

B. cross pollination

C. wind pollination

D. insect pollination

68. One of the following is a courtship behaviour in animals

A. fighting

B. display

C. hibernation

D. feeding

69. In blood transfusion, a patient with group AB receives

A. Group A, B, AB

B. Group O, A, B

C. Group O, B, AB

D. Group O, A, B, AB

70. A trait that is always expressed during crossing of hereditary characteristics is

A. recessive trait

B. dominant trait

C. homozygous trait

D. heterozygous trait

71. Blood group AB is considered as universal recipient because they can receive blood from groups

A. A and O

B. B and O

C. AB and O

D. A, B, AB and O

72. An example of organism that exhibits counter-shading to escape from its predator is

A. grasshopper

B. toad

C. fish

D. chameleon

73. A form of adaptive colouration that helps animals to remain unnoticed is

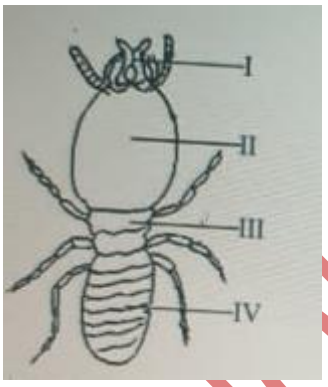
A. hibernation

B. aestivation

C. countershading

D. migration

74.



Use the diagram above to answer the question that follows

The part labelled III is

A. abdomen

B. head

C. maxillae

D. thorax

75. Lamarck's theory of evolution is based on the idea of

A. the inheritance of acquired traits

B. organisms' survival of the fittest

C. organisms constantly struggling for existence

D. plenty offspring produced by organisms

76. How many chromosomes will be present in a gamete if the somatic cell has 8 chromosomes?

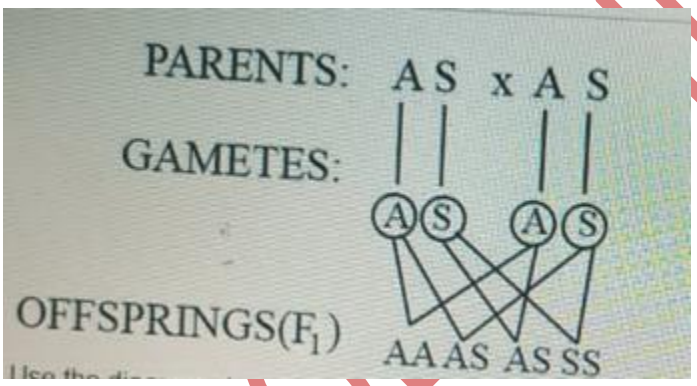
A. 16

B. 6

C. 4

D. 8

77.



Use the diagram above to answer the question that follows

What is the genotypic ratio of the offspring produced in F1 generation?

A. 2:1:1

B. 1:2:1

C. 2:2

D. 3:1

78. Body temperature, thirst and hunger are regulated by

A. thalamus

B. hypothalamus

C. medulla oblongata

D. spinal cord

79. Cell division that involves the growth, development, repairs and replacement of worn out tissues is

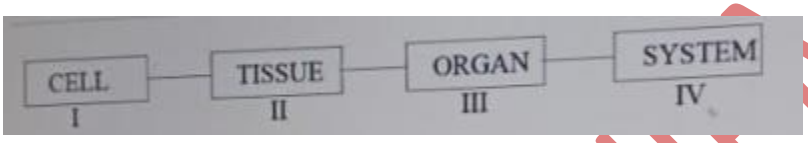
A. biosynthesis

B. mitosis

C. meiosis

D. synthesis

80.



Use the diagram to answer the question that follows

The flower of plants belongs to part labelled

A. I

B. II

C. III

D. IV

81. The bacteria in the large intestine of man synthesizes

A. vitamins and minerals

B. vitamins and glucose

C. amino acids and vitamins

D. amino acids and minerals

82. The main excretory product of earthworm is

A. ammonia

B. carbon dioxide

C. urea

D. uric acid

83. Which of the following conditions causes aestivation in animals?

A. Wind

B. Drought

C. Rain

D. Cold

84. An instrument used for measuring the intensity of light

A. thermometer

B. photometer

C. anemometer

D. hygrometer

85. A common component of blood and lymph is

A. fats

B. plasma

C. red blood cell

D. white blood cell

86. The part of the kidney where the selective reabsorption takes place is

A. glomerulus

B. Bowman's capsule

C. Henle's loop

D. urethra

87. The schlerenchyma tissues consist of

A. dead cell

B. living cell

C. tracheid cell

D. meristematic cell

88. The number of vertebrae in the human vertebral column is

A. 30

B. 33

C. 38

D. 39

89. The organisms that adopt swarming as an adaptation to overcome overcrowding are

A. Agama lizard

B. tilapia

C. rats

D. termites

90. Loamy soil is characterized by

A. low humus and high porosity

B. high humus and high porosity

C. moderate humus and low porosity

D. high humus and moderate porosity

91. The cone in the retina of eye is an example of

A. cell

B. tissue

C. organ

D. system

92. The part of the flower that develops into seed is

A. ovule

B. pedicel

C. petal

D. style

93. Which of these is a medium of transportation in plants?

A. cell sap

B. Nucleus

C. Mitochondrion

D. Ribosome

94. Which of the following is a viral disease?

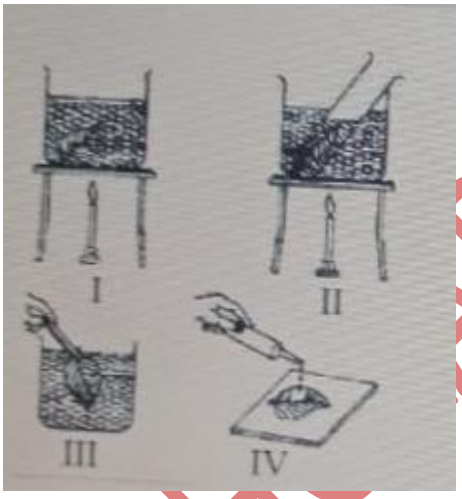
A. Syphilis

B. Measles

C. Cholera

D. Typhoid

95.



Use the diagram above to answer the question that follows

The experiment is set up to determine the presence of

A. chlorophyll

B. starch

C. oxygen

D. pigment

96. The type of circulatory system found in arthropods and some molluscs is

A. open circulatory system

B. closed circulatory system

C. single circulatory system

D. double circulatory system

97. In plants, the main excretory product produced during metabolism is

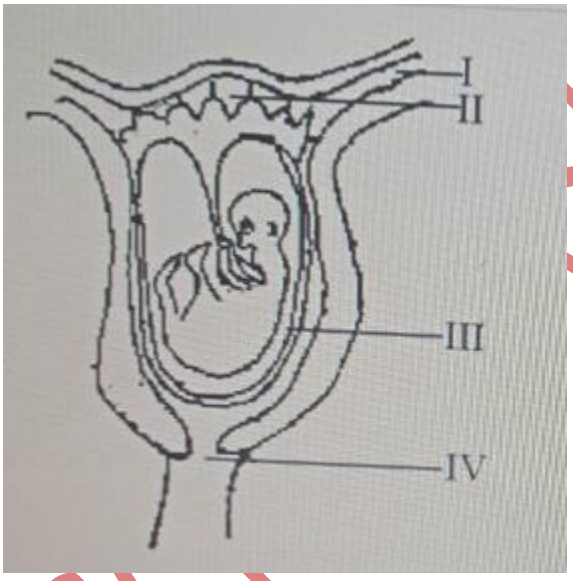
A. oxygen

B. alkaloids

C. carbon(iv)oxide

D. mucilage

98.



Use the diagram above to answer the questions that follow

The part labelled I is

A. oviduct

B. placenta

C. amnion

D. uterus

99. Comparative anatomy to study evidence for evolution depends on

A. four fingered

B. three fingered

C. two fingered

D. five fingered

100. Iron is an essential nutrient in plants because it

A. aids in the formation of chlorophyll and proteins

B. helps in cell division

C. protects the plants from pest attack

D. fastens fruits maturation

101. The endocrine gland that is called the master gland is the

A. thyroid gland

B. pancreas

C. pituitary gland

D. adrenal gland

102. Which of the following characteristics is possessed by both living and non-living things?

A. Both age and die

B. Both have life

C. Both have weight

D. Both have no shape

103. Infectious diseases are caused by

A. bacteria

B. protists

C. Amoeba

D. protozoa

104. The cell organelle responsible for the synthesis of protein is the

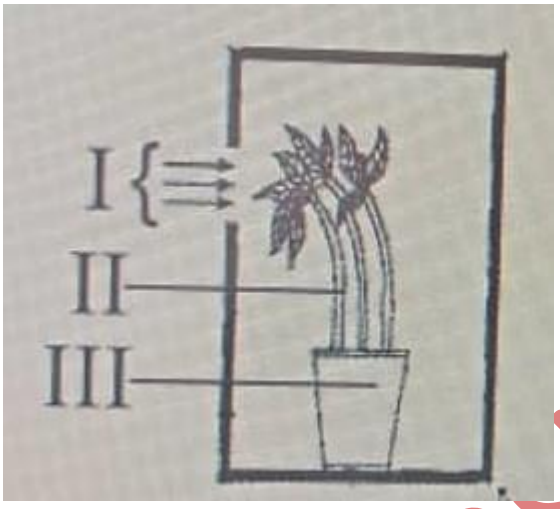
A. centriole

B. vacuole

C. plastid

D. ribosome

105.



Use the diagram above to answer the question that follows

The diagram demonstrates

A. thigmotropism

B. phototropism

C. geotropism

D. hydrotropism

106. Which of the following factors can lead to overcrowding?

A. Emigration

B. Competition

C. High natality

D. High mortality

107. The common examples of trees found in the desert are

A. raffia palm and coconut

B. baobab and cacti

C. white and red mangrove

D. shea-butter and isobelina

108. If the F1 generation allows for self-pollination, what will be the genotypic ratio of the offspring?

A. 1 : 2 : 1

B. 2 : 2

C. 3 : 1

D. 2 : 1 : 1

109. The resemblance of an organism to another organism as means of enhancing it's chances of survival in its habitat is known as

A. counter shading

B. protective colouration

C. mimicry

D. warning

110. The urinary tubules opens into a proximal convoluted tubule coils to form distal by making a

A. Z- shaped loop

B. L- shaped loop

C. U- shaped loop

D. I- shaped loop

111. A discontinuous morphological variation often used in crime detection is the

A. skin colour

B. blood group

C. finger prints

D. eye colour

112. The component that serves as major buffer in blood is

A. plasma

B. erythrocytes

C. leucocytes

D. lymph

113. DNA carries the genetic information and are generally found in the

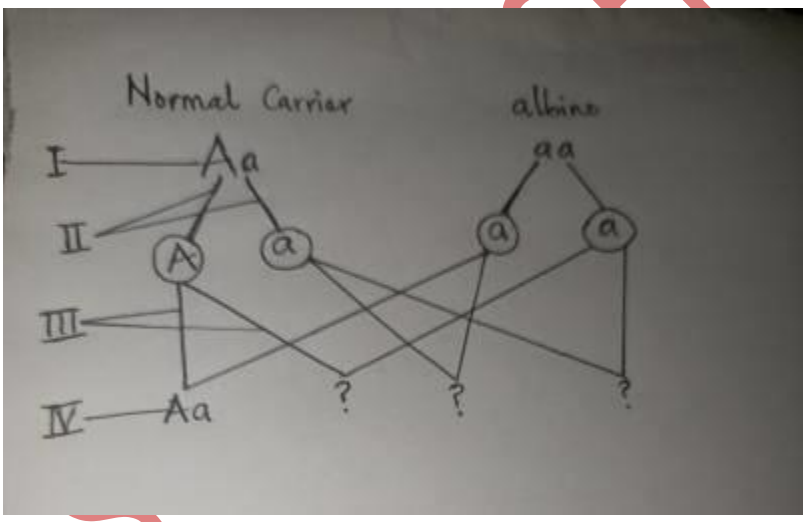
A. ribosomes

B. chromosomes

C. blood

D. enzymes

114.



Use the diagram above to answer the question that follows:

Recombination of genes at fertilization is represented by the part labelled

A. I

B. II

C. III

D. IV

115. Hemophilia in humans is controlled by the

A. blood group

B. dominant gene

C. rhesus factor

D. recessive gene

116. The part of the brain that receives sensory impulses of smell is the

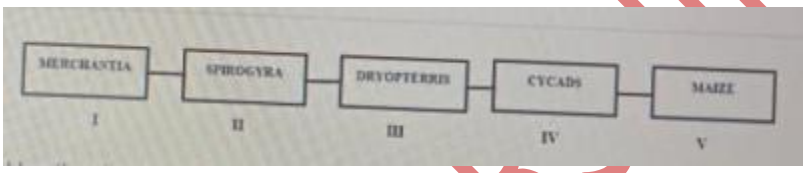
A. olfactory lobe

B. medulla oblongata

C. cerebrum

D. Cerebellum

117.



Use the diagram above to answer the question that follows.

Examples of non-vascular plants are labelled

A. I and II

B. I and III

C. II and III

D. II and IV

118. Which of the following organisms contains Chlorophyll in its cells?

A. Caterpillar

B. Paramecium

C. Euglena

D. Grasshopper

119. Species are groups of organisms that

A. are of different origins and are always found together

A. are of common origin but cannot interbreed freely

C. have similar features and can interbreed freely

D. resemble each other and occupy different niches

120. A plant with short, vertical underground stem is a

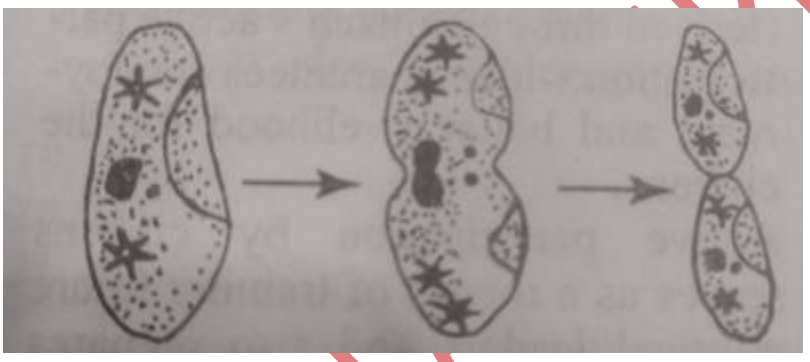
A. bulb

B. corm

C. rhizome

D. tuber

121.



The diagram above is an illustration of a reproductive process in an organism. Study it and answer ques tions 4 and 5.

The type of reproduction illustrated is

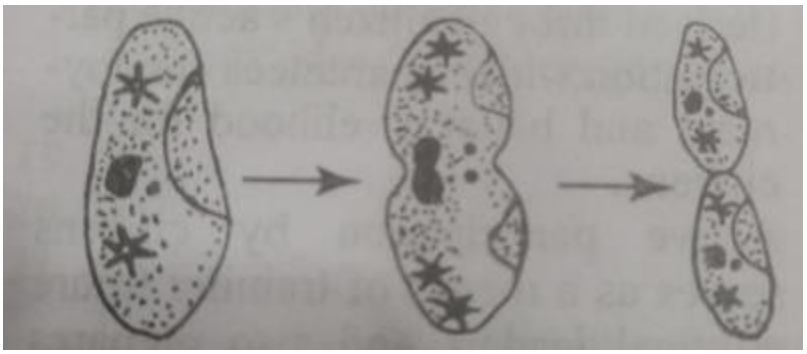
A. budding

B. binary fission

C. grafting

D. vegetative propagation

122.



The illustrated organism is capable of reproducing by

A. sexual means only

B. asexual means only

C. vegetative propagation only

D. sexual and asexual means

123. Which of the following organisms consists of unicellular cells joined to form a filament?

A. Amoeba

B. Spirogyra

C. Euglena

D. Chlamydomonas

124. The structure in the cell that controls the movement of substances in and out of the cell is the

A. cytoplasmic membrane

B. nuclear membrane

C. protoplasm

D. endoplasm

125. The bursting of a red blood cell placed in a hypotonic solution is called

A. crenation

B. haemolysis

C. plasmolysis

D. cytolysis

126. The function of the root hair in plants is to

A. absorb soil water by the process of osmosis.

B. excrete water and mineral salts by simple diffusion.

C. purify the soil for the plant.

D. translocate manufactured food.

127. If a germinating seed is attached horizontally to a revolving klinostat, what would be the effect on the seedling after three days? The

A. plumule will curve vertically upward while the radicle will not show any curvature

B. radicle will curve towards the ground while the plumule will not show any curvature.

C. plumule and radicle will not show any curvature.

D. plumule will curve vertically upwards while the radicle will curve towards the ground

128. The lumbar vertebra differs from the thoracic vertebra because it possesses a

A. longer neural spine.

B. wider neural canal.

C. thicker centrum.

D. shorter transverse process.

129. Which of the following blood vessels carries oxygenated blood into the heart?

A. Pulmonary artery

B. Anterior vena cava

C. Pulmonary vein

D. Posterior vena cava

130. Filtrates in the Bowman's capsule contain vitamins because

A. they have low molecular weight.

B. most of them are fat soluble.

C. they cannot be reabsorbed into the blood.

D. little amount is required by the blood

131. The structures that contain grey matter and white matter are found in the

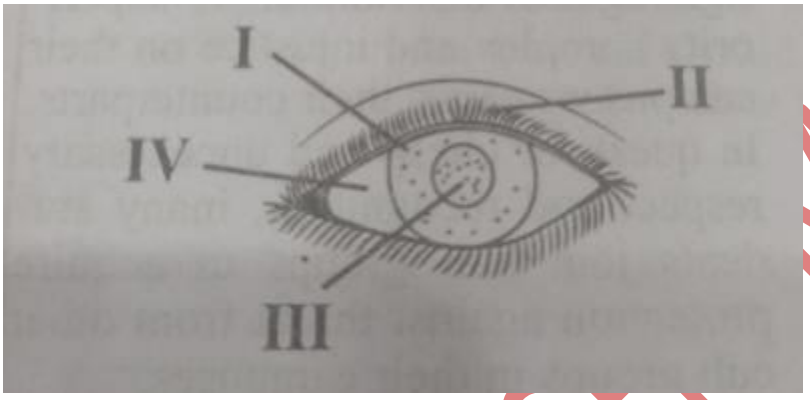
A. reproductive system.

B. nervous system.

C. respiratory system.

D. digestive system.

132.



The diagram above is an illustration of sense organ in humans. Study it and answer questions 15 and 16.

The part that protects the organ is labelled

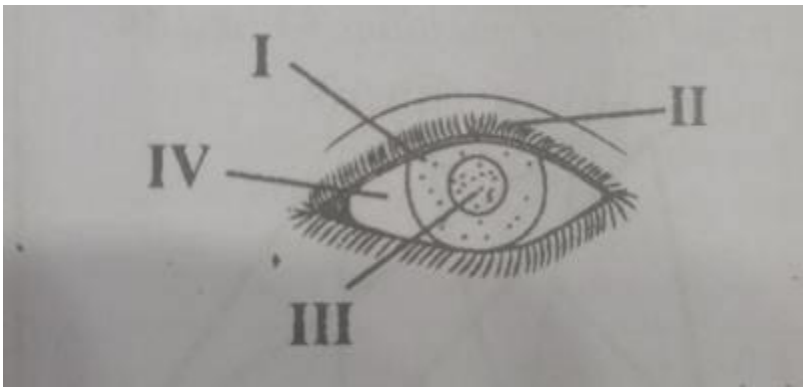
A. I

B. II

C. III

D. IV

133.



The part labelled III is the

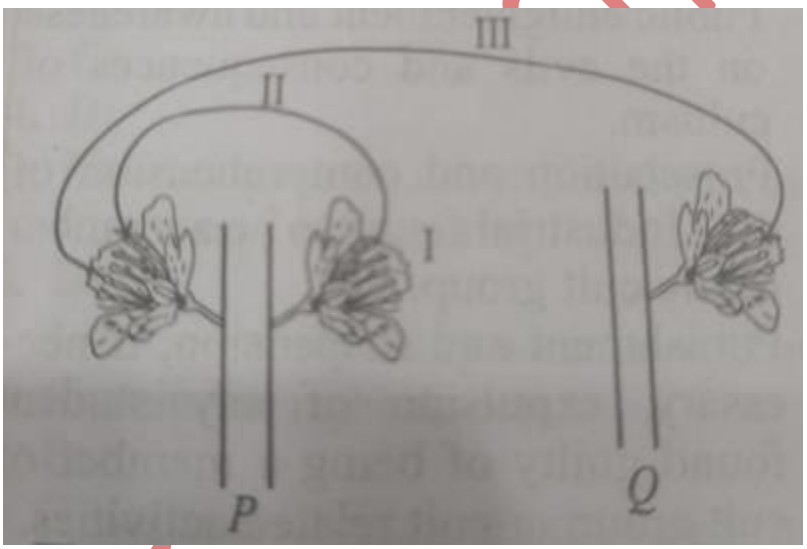
A. iris.

B. pupil

C. sclera

D. cornea

134.



The diagram above is an illustration of two plants P and Q. Arrows I, II and III illustrate the transfer of pollen grains among flowers of plants P and Q. Studly it and answer questions 17 and 18.

The types of pollination illustrated as I,II and III, respectively are

A. cross, self and cross

B. self, self and cross

C. self, cross and self

D. self, cross and cross

135. The condition necessary for reproduction to occur between plants P and Q after pollination is that plants P and Q should be

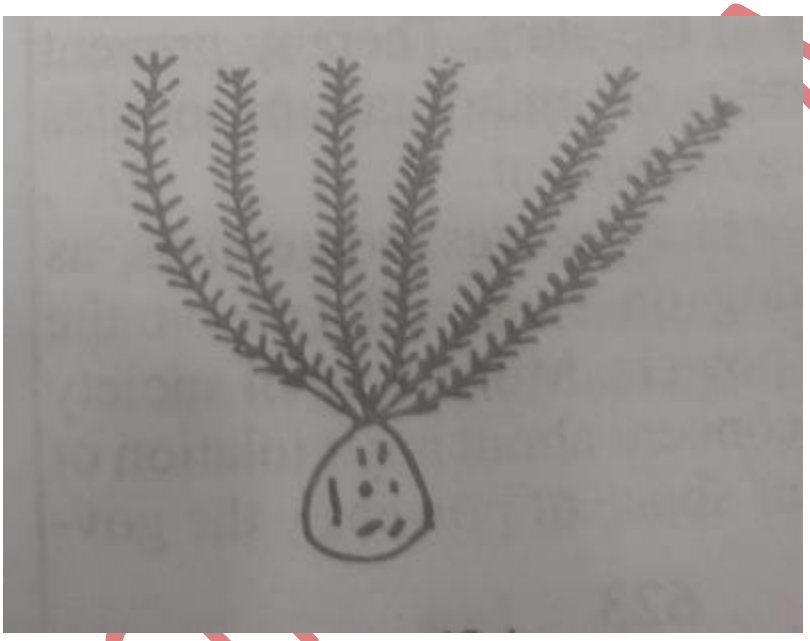
A. of the same species.

B. brightly coloured.

C. well scented

D. of different species.

136.



The diagram above illustrates a dry dehiscent fruit. Use it to answer questions 19 and 20.

The agent of dispersal of the fruit is

A. animal

B. explosive mechanism

C. water

D. wind

137. The Parachute-like tuft of hairs developed from the

A. pedicel

B. petals

C. receptacle

D. sepals

138. Which of the following events does **not** occur in the light reaction stage of photosynthesis?

A. Chlorophyll absorbs sunlight

B. Carbon (IV) oxide combines with hydrogen

C. Photolysis of water occurs

D. Hydroxyl ions are produced

139. The rate of photosynthesis decreases in a wilted herbaceous plant because the

A. enzymes in the leaf were denatured

B. chlorophyll in the leaves was not broken down

C. amount of light reaching the plant was reduced

D. amount of carbon dioxide entering the leaf decrease.

140. The element required for chlorophyll formation in plants is

A. Iron

B. Calcium

C. Phosphorus

D. Sulphur

141. The process of food digestion in mammals would

A. make energy immediately available to the body

B. promote growth and repair of tissues

C. provide sufficient food materials within the body

D. render food substances soluble and absorbable

142. Which of the following food substances would give a negative reaction with Benedict's reagent?

A. Fructose

B. Glucose

C. Galactose

D. Sucrose

143. Sunlight is the major source of

A. Vitamin D

B. vitamin C

C. vitamin B

D. vitamin A

144. Discouraging the use of poison to kill fish in a large water body is a way of

A. impoverishing the people.

B. conserving the fish species.

C. allowing the fittest organism to survive

D. making the fish adapt to their environment

145. The pathway through which nutrient are replenished and circulated in an ecosystem is called a

A. cycle

B. pyramid of energy

C. pyramid of numbers

D. Food chain

146. The illustration below is a food chain. Study it and answer questions 29 and 30.

Grasses → Grasshoppers → Lizards → Hawks

Which of the following statements is not correct about the food chain? The number of

A. grasses eaten by grasshoppers is greater than the number of grasshoppers.

B. grasses eaten by grasshoppers is fewer than the number of grasshoppers.

C. grasshoppers eaten by lizards is greater than the number of lizards.

D. lizards eaten by hawks is greater than the number of hawks.

147. Grasses → Grasshoppers → Lizards → Hawks

If the individual species of organisms in the food chain are counted and arranged as a pyramid, the result would be a pyramid of

A. numbers

B. energy

C. biomass

D. biomes

148. Which of the following gases is released during the decomposition of organic matter?

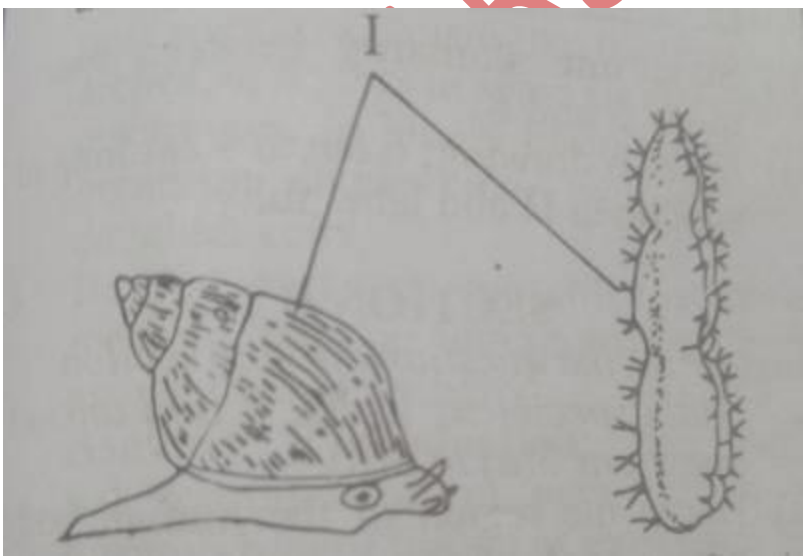
A. Carbon(II) oxide

B. Sulphur (IV) oxide

C. Hydrogen Sulphide

D. Nitrous oxide

149.



The diagrams above are the illustrations of organisms from different habitat. Study them and answer questions 32 and 33.

The structures labelled I are for

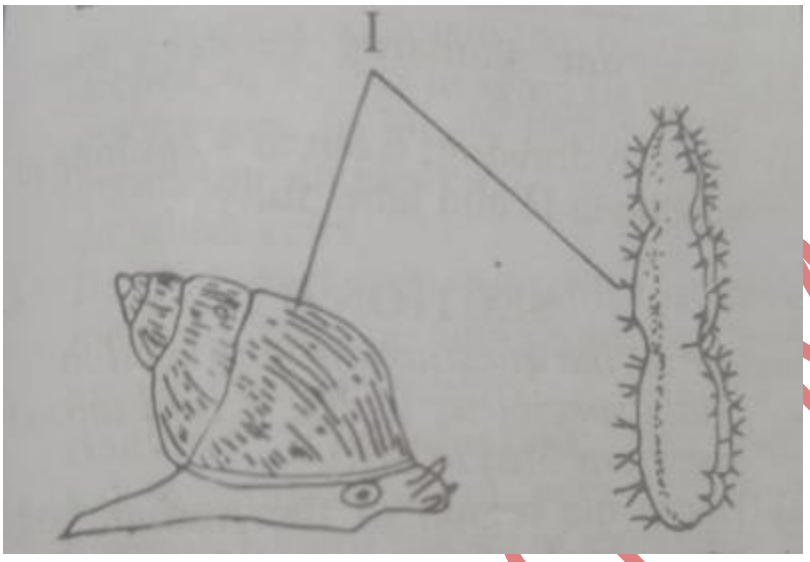
A. Camouflage

B. Chemical offence

C. Physical defence

D. Mimicry

150.



Habitats of the organisms respectively are

A. river and stream

B. rainforest and stream

C. pond and leaf litter

D. garden and desert

151. An environmental problem caused by Sulphur (IV) oxide is

A. acid rain

B. deforestation

C. global warming

D. Erosion

152. The phenomenon by which a farmland that is left to fallow for several years develops into a forest is called

A. Succession

B. afforestation

C. population

D. colonization

153.

A farmer planted many seeds on a small piece of land. The plants that germinated are as shown above.

Which of the following effects would **not** be observed among the population of the plants?

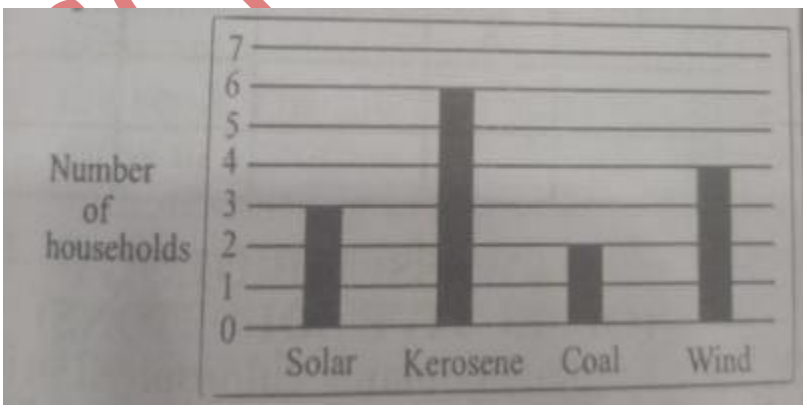
A. Rise in disease condition

B. Death

C. Mutualistic relationship

D. Competition

154.



The bar chart above shows the data of sources of energy used for cooking in a community. *Study it and answer questions **37** and **38.***

The source of energy that is mostly used in the community is

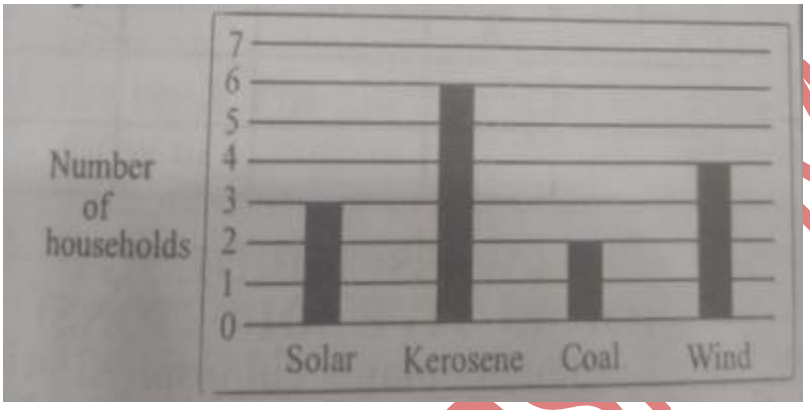
A. solar

B. Kerosene

C. coal

D. wind

155.



The two sources of energy that would mostly lead to pollution in the community are

A. solar and kerosene

B. coal and wind

C. kerosene and coal

D. solar and wind

156. An individual found a strange bird that is tagged as an endangered specie. What should the individual do?

A. Kill it

B. Take it to an aquatic environment

C. Return it to its natural habitat

D. Sell it at a very high price

157. Which of the following traits is **not** inheritable? Ability to

A. taste P.T.C

B. roll the tongue

C. move the ear

D. roll the eyeball

158. Which of the following statements is **correct** about the **ABO** blood group system?

A. Antigens are located on the surface of white blood cells

B. Antibodies are located in the blood plasma

C. Antibodies are located on the surface of the red blood cells

D. Antigens are located in the blood plasma

159. A woman with blood group **A** gives birth to a child with blood group **O**. Which of the following blood groups **cannot** belong to the father?

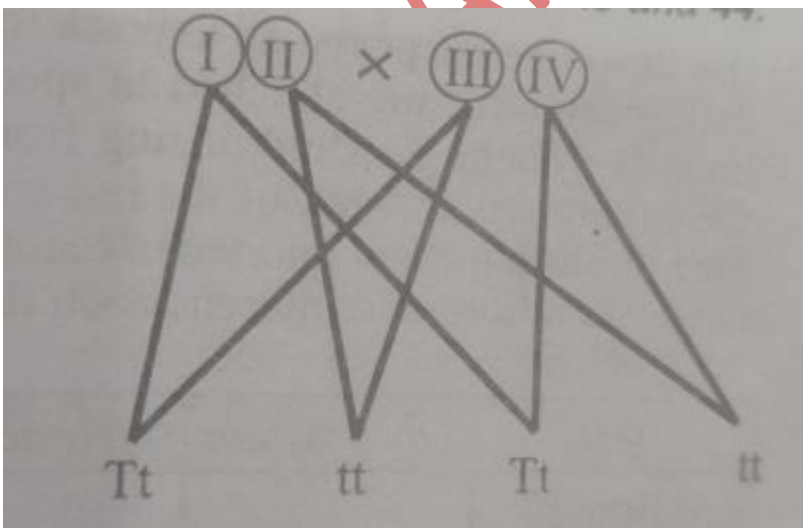
A. B

B. A

C. AB

D. O

160.



The diagram above is an illustration of genetic cross between two parents. The parental gametes **I, II, III** and **IV** gave rise to the offspring below. *Study it and answer questions **43** and **44.***

Gametes **I, II, III** and **IV,** respectively are

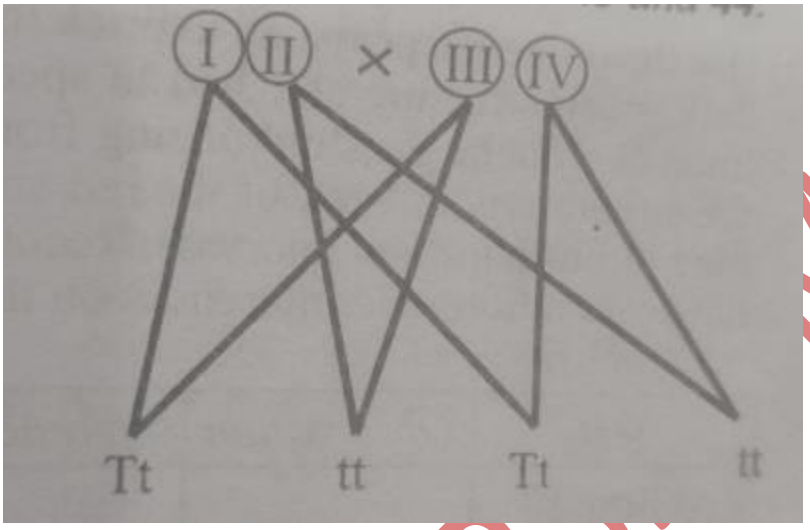
A. T,T,T and t

B. T, t, t, and t

C. T, T, t and t

D. T, t, T and t

161.



Which of the following statements is **correct** about the cross?

A. Both parents are heterozygous

B. The male is not heterozygous

C. The female is homozygous

D. Both parents are homozygous

162. The physical appearance of an organism is described as its

A. phenotype

B. genotype

C. allele

D. chromosome

163. Mutation leads to evolution because it

A. kills all organisms where it has occurred.

B. gives rise to offspring having same characteristics as the parents

C. does not confer adaptability to the offspring

D. gives rise to new individuals that differ from their parents

164. The male and female gametes which bear genes for inheritance in plants are located in the

A. anthers and petals

B. sepals and petals

C. stamens and pistils

D. stamens and petals

165. Which type of breeding is represented by industrial melanism in peppered moths?

A. Artificial selection

B. Natural selection

C. Inbreeding

D. Outbreeding

166. In a test, a student paired some scientists with their famous work as shown below. *Use it to answer questions **49** and **50.***

Scientist **Famous work**

I. Charles Darwin → Preservation of some food with heat

II. Gregor Mendel → Natural selection

III. Jean Baptiste Lamarck → Inheritance of acquired characteristics

IV. Louis Pasteur → Independent assortment of genes.

The Scientists that are not correctly paired with their famous work are

A. I and II only

B. II and III only

C. I, II and IV.

D. II, III and IV.

167. Which of the scientists were involved in the study of evolution?

Scientist **Famous work**

I. Charles Darwin → Preservation of some food with heat

II. Gregor Mendel → Natural selection

III. Jean Baptiste Lamarck → Inheritance of acquired characteristics

IV. Louis Pasteur → Independent assortment of genes.

A. I and III

B. II and III

C. I, II and IV

D. II. III and IV

168. (a)State **one** function **each** of the following parts of the nephron:

(i) glomerulus (ii)Bowman's capsule (iii)proximal convoluted tubule (iv) distal convoluted tubule

(b) Complete the table below.

Organism	Structure for excretion	Form in which waste is excreted by organism
	contractile vacuole	
Flatworm		
Earthworm		
Cockroach		
Human		Liquid

	Stomata pore	

(c) List **five** excretory products of plants.

169. An individual ate a hot and large meal of cassava with salty groundnut soup. The individual was sweating profusely and did not drink water after the meal.

(a) State **one** role **each** played by the following organs involved in the activity above:

(i) mouth; (ii) skin; (iii) tongue; (iv) kidney; (v) stomach; (vi) small intestine; (vii) large intestine; (viii) liver.

(b) Name **three** of the organs listed in **2(a)** that contain enzymes needed to breakdown the food.

(c) Name **three** digestive enzymes that would be involved in the digestion of the meal.

(d) Name **two** end products of the meal after digestion.

(e)(i) State **one** effect that the **excess** salt in the meal might have on the individual.

(ii) State **three** advantages that the individual would derive from the meal.

170. (a)A piece of raw meat was left in an uncovered bowl for **seven** days. Use the information to answer questions **3(a)** and **3(b)**.

(i) State **four likely** changes that would be observed in the meat.

(ii) Name the biological process that led to the changes that are observed in the meat.

(iii)On the table below, list **four** methods of preserving meat to prevent it from the changes stated in **3a(i)** and mention the principle involved in the methods.

Four methods of preserving the meat	**One** principle involved in the preservation method

(iv)Name **two** environmental factors that may be responsible for the changes in **3a(i)**

(b) Name **one** method of preserving the following food items:

(i) dried maize grains; (ii) fresh tomatoes; (iii) vegetables; (iv) beans; (v) milk

171. a(i)Complete the table below by stating the type of cell division and the type of set of chromosomes for the listed cells.

Cell	*Type of cell division*	*set of chromosomes*
Onion cell	mitosis	
Sperm cell		
Pollen grain		
Ovum		
Guard cell		
Cheek cell		diploid

(ii) What is mitosis?

(b)Explain **briefly** how parents with blood groups **A** or **B** could have an offspring with blood group **O**.

(c)Explain briefly how genes are involved in the process of evolution

172. SECTION B

a(i)What is *competition*?

(ii)List **two** types of competition.

(iii)List **four** factors that organisms compete for in a habitat.

(iv)Explain briefly the relationship between *competition* and *succession*.

b(i)What is *structural adaptation*?

(ii)State **four** types of structural adaptations in animals.

(c)List **four** features of variation in humans that are used in crime detection.

(d)Complete the table below by listing **three** types of adaptive colouration in animals and give **one** example **each** of animals that show the colourations.

Three types of adaptive colouration in animals	**One** example of animal that show the type of colouration

(e) Give **three** examples of plants found in a tropical Rainforest.

173. SECTION A

Study specimens **B, D** and **E** and answer questions **1(a)** to **1(f).**

(a) Name the phylum and class of the organism that possesses specimen **D**.

Phylum:

Class:

(b) State **three** observable features of Specimen **B**.

c(i) Give **three** functions of specimen **B** to the organism from which it was obtained

(ii) State **one** function each of specimens **D** and **E** to the organism from which they were obtained.

D:

E:

(iii) Mention **one** adaptation **each** of specimens **D** and **E** to the function stated in **1c**(ii)

D:

E:

d(i) Use the office pin provided to prick the dark green structure attached to specimen **B.** Touch the fluid oozing from the structure with **each** of the red and blue litmus

papers at intervals. Record the observations and inferences on the table below:

Test	Observation	Inferences
Red litmus paper + fluid		
Blue litmus paper + fluid		

(ii) Give **three** functions of the fluid tested in **1d(i)** to the organism that possesses it.

e(i) Name the biological system in the body of vertebrates that specimens **D** and **E** belongs to.

(ii) Which of specimens **B, D** or **E** is absent in humans?

f(i) Name the mode of feeding of the organism that possesses specimen **E**.

(ii) Name **one** type of food that the organism that possesses specimen **D** consumes.

174. Study specimens **F, H** and **K** and answer questions **2(a)** to **2(d)**.

(a) State **four** functions of specimen **H** to the plant from which it was obtained.

b(i) State **one** function each of specimen **F** and **K** to the plants from which they were obtained.

F:

K:

(ii) Give **one** reason for the answers in **2b**(i)

F:

K:

(iii) What part of the plant is modified for the function stated in **2b**(i)?

F:

K:

c(i) State **four** observable differences between specimens **F** and **K**.

F	K

(ii) State **one** similarity between specimens **F** and **K**.

(d) Make a drawing; 6 cm to 8 cm long of the specimen **H** and label fully

175. **SECTION B**

Answer **all** the questions in this section

Study specimens **L, M, P, and Q** and answer questions **3(a)** to **3(d).**

(a) Name the region of the human body where each of specimens **L** and **Q** are located.

L:

Q:

b(i) State **four** observable differences between specimens **L** and **Q.**

L	Q

(ii) State **four** observable similarities between specimens **L** and **Q.**

c(i) Name **two** bones each that articulate with specimens **M** and **P.**

(ii) Name **one** vertebra each that is located and after each of specimens **L** and **Q** in the vertebral column.

Before **After**

L: ....

Q: ....

(d) Complete the table below by using tick (✓) to indicate presence and cross (X) to indicate absence of the following features in each of specimens **L, M, P** and **Q.**

Specimen	Features			
	Neural canal	Rounded head	Neural spine	Long shaft
L				
M	X			
P				
Q			✓	