

Model Question

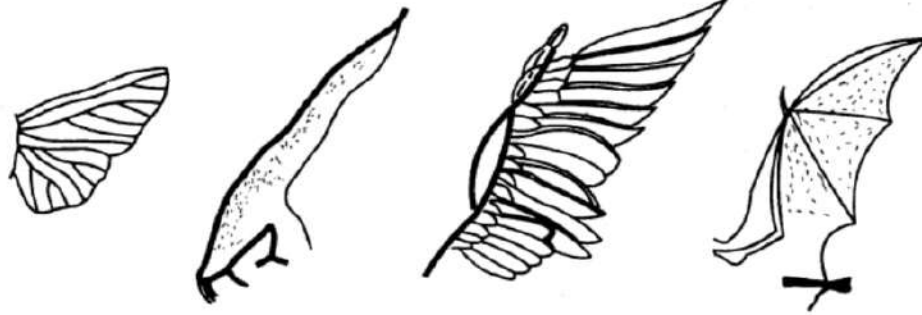
Attempt all questions.

Group 'A'

Circle the correct one from given alternatives.

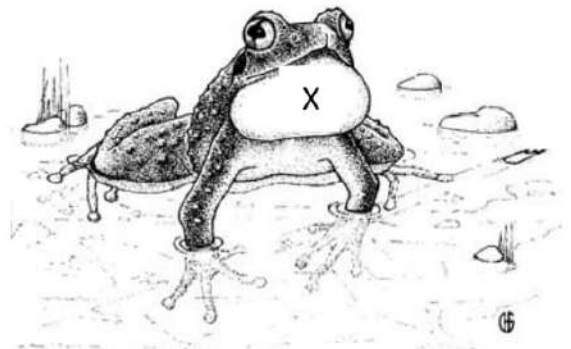
(11 × 1 = 11)

- Identify the correct bonding between nitrogen bases in DNA molecule from given pair.
a. A = C b. A = G c. A = U d. A = T
- Miller and Urey designed an experiment and try to recreate the environment of primitive earth to support the theory of biochemical origin of life. Which composition he has used to produce simple amino acids?
a. Ammonia, Hydrogen, Nitrogen, and water vapour
b. Ammonia, Methane, Hydrogen, and water vapour
c. Ammonia, Oxygen, Carbon dioxide, and water vapour
d. Ammonia, Nitrogen, Oxygen, and water vapour
- Which habitat is needed for xerophytic plants to survive?
a. habitat with dry condition
b. warm habitat
c. habitat like desert
d. habitat with little water
- “Red rust is one of the destructive diseases in tea plants which results adverse effect on tea yield. It is caused by a type of algae.” Which discipline of Biology is related to explain the above statement?
a. Mycology b. Agronomy c. Pathology d. Phycology
- Which of the following is a practice of *in-situ* conservation of biodiversity?
a. Botanical garden b. Wildlife sanctuary
c. Zoo d. Seed bank
- Which one statement of the following tells the favor of prop root?
a. It has the function of support
b. It has the function of absorption
c. It has the function of fixation
d. It has the function of conduction
- Forelimbs (wings) of Dragon fly, Pteranodon, Hawk and Bat are given,



8. What type of organs are these?
- | | |
|---------------|--------------|
| a. Homologous | b. Atavism |
| c. Analogous | d. Vestigial |
9. Which is the nearest ancestor of modern man?
- Homo sapiens neanderthalensis*
 - Homo sapiens sapiens*
 - Homo erectus erectus*
 - Homo erectus pekinensis*

9. In the given figure, X denotes an organ of the frog which produces a particular sound. What does that sound indicate?
- Danger
 - Hunger
 - Excitement
 - Sex appeal



10. Trichocysts is an important organelle in *Paramecium*. Which activities does it associate for?
- Defense, offence, and adhesion
 - Defense, reproduction, and nutrition
 - Offence, osmoregulation, and defense
 - Adhesion, osmoregulation, and reproduction
11. IUCN noticed the one horned rhino restricted in Chitwan national park of Nepal as high risk group. Its population has declined due to habitat loss, excessive poaching, low rate of breeding, human encroachment and other descendent factors. According to this description, in which risk group does one horned rhino of Nepal notice?
- | | |
|--------------------|--------------------------|
| a. Near endangered | b. Critically endangered |
| c. Endangered | d. Least endangered |

Group 'B'

Give short answer to the following questions.

(8 × 5 =40)

1. Write any five characteristics of Chlorophyceae.
2. 'Gymnosperm is an advanced group than Pteridophyta'. Justify this statement with any five points.

OR

Compare between simple fruit and multiple fruit in two points. How can fruit play an important role for continuity of generation in plant life? (2×2+1)

3. How can ecological factors influence in pond ecosystem? discuss it with suitable examples with respect to its structural and functional aspects. (2+1+2)
4. Explain any five ways, how microorganisms play an important role in the field of medicine?
5. The excessive and unbalance use of pesticides is one of the prominent environmental issue since last few years in Nepal. Mention any three consequences of over use of pesticides in your locality and suggest awareness campaign that you have follow in two points. (3+2)
6. What is transverse binary fission? Write its process in Paramecium. (1+2+2)
7. How can pancreas of a frog play an important role in digestion? Explain it in reference to physiology of intestinal digestion. (2+3)

OR

Describe with suitable diagram, how copulation and cocoon formation takes place in earthworm. (2+2+1)

8. How does Darwinism explain the theory of organic evolution? Clarify your answer. (5)

Group 'C'

Give long answer to the following questions.

(3 × 8 = 24)

9. Why is sexual reproduction important in lower grade plant like fungi? Explain it with respect to sexual reproduction of Yeast along with diagram. (2+ 2×3)

OR

Explain the diagnostic floral characters of family Solanaceae with floral formula and floral diagram. Write the botanical name of any two plants of this family regarding medicinal and edible values. (4+1+1+2)

10. How excretion is performed in earthworm? Explain in analytical approach of the structure of septal nephridia of earthworm with labeled diagram. (1+4+3)
11. Meiosis cell division is important in life of organism since it maintains the chromosomal stability in offspring which is happen due to reduction and disjunction of homologous chromosome. It is a multi-step processes and two successive steps within this process is given.

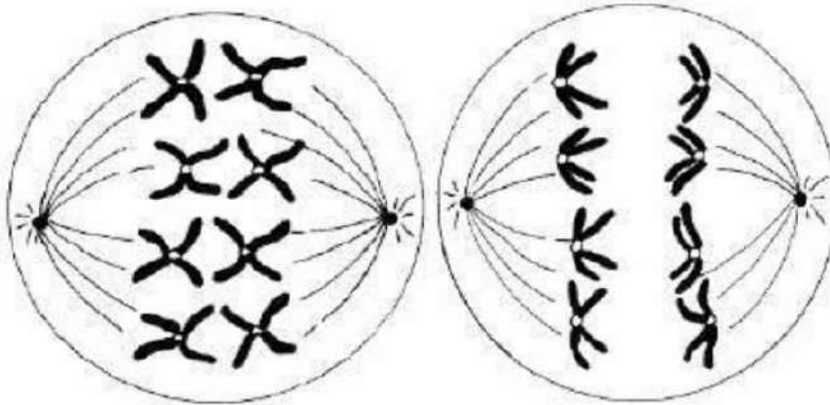


Fig- 1

Fig-2

- a. In reference to disjunction, what changes do you find between fig-1 & fig-2 ? Describe it. (4)
- b. What had happened in chromosomal stability if changes not occurs from figure-1 to figure-2 ? (1)
- c. Draw the diagram of successive next one step after figure-2 with two distinguishing features. (1+2)