



SHIKSHA CLASSES

Subject : Biology

BOARD ANSWER PAPER

Total Marks : 20

Class : XII

Ch.: 5. Origin and Evolution of Life

Q.1 Select & write the most appropriate answer from the given alternatives for each sub-question. [3]

i) According to Mendel every gene that influences a trait has ----- alleles

Ans : b) 2

ii) Genetic variations are caused due to various aspects of -----.

Ans : d) All of these

iii) Site of fossil record of *Homosapiens*

Ans : b) Africa

Q. 2 A) Write the answer in ONE sentence: [6]

1) How is bipedal locomotion useful?

Ans : Bipedal locomotion upright posture, coupled with stereoscopic vision helped man to move around safely on land.

2) What is pre mating isolating mechanism? Name its types.

Ans : Premating isolating mechanism is the mechanism which prevents fertilization of zygote formation.

Its types are i) Habitat isolation
ii) Seasonal isolation iii) Ethological isolation
iv) Mechanical isolation.

B) What is deletion & duplication of chromosomal aberration?

Ans : **Deletion :** Loss of genes from chromosome.

Duplication : Genes are repeated or doubled in number on chromosome.

C) What is mendelian population?

Ans : All individuals of the some species constitute a population. The populations occur in small groups of 'interbreeding populations'. Such small interbreeding group of a population is referred as 'Mendelian population'.

Q.3 A) Attempt any ONE of the following : [6]

1) What is Chromosomal aberration. Explain Inversion & Translocation.

Ans : **Chromosomal aberrations :** The structural, morphological change in chromosome due to rearrangement, is called chromosomal aberrations. It changes the genes arrangement (order or sequence) that results in the variation.

Inversion : A particular segment of chromosome is broken and gets reattached to the same chromosome in an inverted position due to 180° twist. There is no loss or gain of gene complement of the chromosome.

Translocation : Transfer (transposition) of a part of chromosome or a set of genes to a non-homologous chromosome is called translocation. It is effected naturally by the transposons present in the cell.

2) Explain post mating barriers in reproductive isolation.

Ans : **Post-mating barriers :**

i. **Gamete mortality :** Gametes have a limited life span. Due to one or the other reasons, if union of the two gametes does

not occur in the given time, it results in the gamete mortality.

ii. **Zygote mortality** : Egg is fertilized but zygote dies due to one or the other reasons.

iii. **Hybrid sterility** : Hybrids develop to maturity but become sterile due to failure of proper gametogenesis (meiosis). e.g. Mule is an intergeneric hybrid which is sterile.

B) Explain in short how human evolution is good.

Ans : Cranial capacity of human beings increased over a period of time and large size of frontal lobe helped in development of high forehead.

Increase in intelligence necessitated physical development so that body and brain could be used effectively and productively. Freedom of forelimbs from locomotory function and opposable thumb led to better utilization of hands for holding objects effectively and development of motor skills etc.

Q. 4. Which are the major changes that took place in evolution of man? [5]

Ans : Major changes that took place in evolution of man include

- i) increase in size and complexity of brain and enhanced intelligence
- ii) increase in cranial capacity
- iii) bipedal locomotion
- iv) opposable thumb
- v) erect posture
- vi) shortening of forelimbs and
- vii) lengthening of hind limbs
- viii) development of chin
- ix) broadening of pelvic girdle
- x) development of lumbar curvature
- xi) social and cultural development

OR

What is reproductive isolation? Name the types of isolating mechanisms.

Ans : Reproductive Isolation : Reproductive isolations occurs due to change in genetic material, gene pool and structure of genital organs. It prevents interbreeding between population.

Types of Isolating Mechanisms :

A] Post-mating or post-zygotic isolating mechanism : This mechanism prevent fertilization and zygote formation.

B] Post-mating or post-zygotic barriers : This mechanism prevent fertilization and zygote formation.

i) **Habitat isolation or (Ecological isolation)** : Members of a population living in the same geographic region but occupy separate habitats so that potential mates do not meet.

ii. **Seasonal or temporal isolation** : Members of a population living in the same geographic region but are sexually mature at different years or different times of the year.

iii. **Ethological isolation** : Due to specific mating behaviour the members of population do not mate.

iv. **Mechanical Isolation** : Members of two population have difference in the structure of reproductive organs.

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