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Final paper Fundamental

Genetics

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Q NO 2 ; Write a short note on the following

Q NO 1

Answer

Heredity

The study of heredity in biology is known as genetics .

Heredity is the passing of traits from parents to their offspring , either to asexual reproduction or sexual reproduction , the offspring cells or organism acquire the genetics information of their parents .

Variation

Genetics variation can refers to differences between individuals or to differences between populations .mutation is the ultimate source of genetics variation ,but mechanisms such as sexual reproduction and genetic drift contribute to it as well.

Example of genetics variation include eyes color ,blood type ,camouflage in animals ,and leaf modification in plant .

Q NO 2 ;

Answer

Sex chromosome linked diseases in human

Sex chromosome linked diseases in humans like hemophilia ,color blindness ,male pattern of bladness are sex –linked diseases .

Where color blindness and hemophilia is x-linked diseases ,and male pattern of bladness is a y-linked one .

The x-linked will express themselves in a male where as the female is always a carrier until both the genes are recessive in the female .

Male pattern of baldness beings a y-linked trait express itself only in the males while females are never affected by it .

Q NO 3

Answer

Biological significance of Mendes law

Mendals work remind buried for about 3 decades ,but after its discoveries , the laws are being used for the Various branches breeding .these are used for improving the varitise of fowls and their eggs , and obtaining rust –resistant and diseases –resistant varieties of gains .various new breeds of horses and dogs by cross breeding experiment the science of eugenics is the outcomes of mendelism , which deals with the betterment of human .

Q NO 4

Answer

Chromosomal theory of inheritance

Or the idea of that genes are located on chromosomes ,was proposed based on experiments by Thomas Hunt Morgan using drosophila melanogaster , or fruits flies .

Why fruit fly

Because like human they have xx in female and xy in female .they are cheap ,fast and easy to grow.

Chromosome theory of inheritance state that genes are found specific location on chromosome and the behavior of chromosome

Thomas Hunt Morgan , who studied fruit flies ,provide the first strong confirmation of the chromosome theory

Morgan discovered a mutation that affected fly eye color .he observed that the mutation was inherited differently by male and female flies .

Based on the inheritance pattern , Morgan conclude that the eye color gene must be located on X-chromosome .

Q NO 3

Answer

Sex chromosomes and x-linked inheritance

In human and other mammals , biological sex is determined by a pair of sex chromosomes . xy in males and xx in females .

Gene on the x chromosome are said to be x linked . x-linked genes have distinctive inheritance patterns because they are present in different numbers in females xx and male xy .

X linked human genetic disorder are much more common in males than in females due to the x linked inheritance pattern .

Q NO 4

Answer

Mitochondrial inheritance

DNA is also found in mitochondria present in most plant and animal cells ,as well as chloroplast of plant cells .here well ecxplore how mitochondrial and chloroplast DNA are inheritance .

THE DNA molecules found in mitochondria are small and circular much like the DNA of typical bacterium .they are usually many copies of DNA in a single mitochondrion .

How is non-nuclear DNA different

Here are some ways that mitochondrial DNA found in the nucleus .

High copy number

A mitochondrial has multiple copies of its DNA ,and a typical cells has many mitochondria .as a result ,cells usually have many copies –often thousands –of mitochondrial .

Random segregation

Mitochondria is a randomly distributed daughter cells during mitosis and meiosis .

When the cell divide organelles happened to be of an opposite side to the cleavage furrow are cell plate will end up in different daughter cells

Single parent inheritance

Non –nuclear DNA is often inherited uniparentally

, meaning that offspring get DNA only from the male or the female parent, not both .in humans for example children get mitochondrial DNA from their mother but not their father .

Q NO 5

Answer

Mutation

Changes in the sequence of nucleotide in DNA is called mutation .

May occur in somatic cell ,are not passed to offspring .

May occurs in gametes eggs and sperm and be passed to offspring .

Types of mutation

Deletion

Due to breakage , a piece of a chromosome is lost .

Inversion

Chromosome segment breaks off ,segment flips around backwards , segment reattaches

Duplication

Occurs when the gene sequence is repeated .

Translocation

Involves two chromosomes that aren’t homologous .

Part of one chromosome is transferred to another chromosomes .

Non –disjunction

Failure of chromosomes to separate during meiosis causes gamete to have too many or too few chromosomes .

Gene mutations

Changes of the nucleotide sequence of a gene

May only involve a single nucleotide may be due to copying errors, chemicals ,viruses ,etc

Fill in the blanks

1. . pRb
2. Aneuploidy
3. p53
4. Oncogenes , mutants and non-mutants