

Name : Abdul Salam  
ID NO : 14863

Paper : Human Genetic

Q no 1

Fill in the Blanks:

- ① Heredity
- ② Gregor Johan Mendel
- ③ 30-40% DNA 50-65% protein  
1-10% RNA
- ④ nucleosomes
- ⑤ sister chromatids
- ⑥ centromere
- ⑦ Kinetochore
- ⑧ Histones.

Q no: 2

i) ① Chromosome and Gene:

\* Chromosome:

Chromosomes are structures within cells that contain a person's genes. Genes are contained in chromosomes, which are in the cell nucleus.

\* Gene:

Genes are segments of deoxyribonucleic acid (DNA) that contain the code for a specific protein that functions in one or more types of cells in the body.

ii) Allele and form of Alleles:

An allele is a variant form of a gene. Some genes have a variety of different forms which are located at the same position, or genetic locus, on a chromosome. Humans are called diploid organisms because they have two alleles at each genetic locus, with one allele inherited from each parent.

3

### 3) Genotype and phenotype

• Genotype:

Genotype versus phenotype.  
An organism's genotype is the set of genes that it carries.  
An organism.

• phenotype:

is all of its observable characteristics which are influenced both by its genotype and by the environment.

### 4) Homozygous and Heterozygous

1) Homozygous: means that the organism has two copies of the same allele for a gene.

2) Heterozygous: means that an organism has two different alleles of a gene. For example, pea plants can have red flowers and either be homozygous dominant (red-red) or heterozygous (red-white).

## 5) \* Centromere and Telomeres

i) Centromere :- is required for sister chromatid cohesion until it be come involved in chromosome segregation during nuclear divisions.

ii) Telomeres :- protect chromosome ends from degradation and fusion and prevent chromosome shortening during DNA replication.

Q no:3 What is Genetics:

Ans: • Have you ever wondered why you look like your parents and why your hair is blond, brown or black.

- Do you know how criminal can be caught using DNA fingerprinting.
- Genetics can be used to answer these question.

\* Genetics is:

- The study of gene.
- genetics is about how and why physical characteristics such as eye colour are passed on from one generation to another.
- about how diseases and condition can run in families.
- The study of patterns in genetic information, such as the patterns used in DNA fingerprinting and profiling.
- and genetic is about how variation occurs in and between animal, plants or human.

\* Genetic Application:

in medicine genetic engineering has been used - to mass-produced insulin human growth hormones follister (for treating infertility) Human inbumin monoclonal antibodies antihemophilic factors, vaccines and many other drugs, in research organism are genetically engineered to discover the function of certain gene.

Application of genetic studies

Disease diagnosis and characterization.

- identification of pathogenic mutation
- preserving biodiversity
- identification and characterization of microbes.
- studying inheritance pattern.
- creating advanced plant species
- creating genetically modified organism
- DNA fingerprinting
- Antibiotic resistance study and drug discovery.
- Genetic / DNA medicines
- Genetic engineering
- (crop) improvement.