

المستوى الرابع (لائحة الساعات المعتمدة) برنامج البيولوجيا الجزيئية

وراثة الانسان (٤٠٦ ح)

Date: 4 / 1 / 2026

Time: 2 Hours

Mark: 70

الامتحان في ورقتين

Question One (20 Marks):

-Complete the following:

- Human genetics is more ...1..... science than a fundamental science. - One benefit of studying human genetic variation is the2..... and description of the genetic contribution to many human diseases.
- Noncoding RNA molecules play many essential roles in cells, especially in the many reactions of3..... and4.....
- The inactive X chromosome is silenced by being packaged into a transcriptionally inactive structure called5.....
- The centromere is precisely located in the centre of the x chromosomes. Hence, it is called6..... The centromere is present at7..... of the y chromosomes. Hence, it is called acrocentric.
- Each crossing over involves only8..... chromatids of two homologous chromosomes
- The number of chiasma per bivalent may vary from one to more than one depending upon9..... of chromatids.
- When homologous chromosomes synapse, they come closer together until they are10.....by synaptonemal complex.
- A polymorphism in TCHH gene appears to be related to differences in11.... in people of northern European ancestry.

Question Two (10 Marks):

Mention the scientific term.

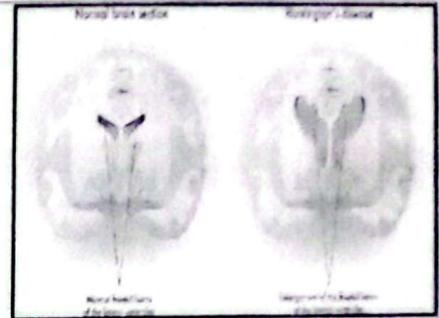
- 1- (.....) lethal alleles which result in death of an organism at early stage of life, for example, during embryogenesis.
- 2- (.....) A pair of identical alleles that are both present in an organism that ultimately results in death of that organism
- 3- (.....) a classification of blood, based on the presence and absence of antibodies and inherited antigenic substances on the surface of red blood cells (RBCs).
- 4- (.....) impairs the growth of bone in the limbs and causes abnormal growth in the spine and skull.

5- (.....) the patterns of skin ridges on which a person's fingerprints are based on.

Question Three (20 Marks):

Look at this figure and answer the following:

- 1-What is Huntington's disease?
- 2-What are the types of Huntington's disease?
- 3-What causes Huntington's disease?



Question four (20 Marks):

Put (√) next to the correct statement and (X) next to the incorrect one – with correction:

- 1- Multiple Crossing over refers to formation of Two chiasmata between non-sister Chromatids of homologous Chromosomes.
- 2- Even identical twins, who have the same DNA, have different fingerprints.
- 3- People with brown eyes have a large amount of melanin in the iris, while people with blue eyes have much less of this pigment.
- 4- It is difficult to accurately predict how tall a child will be.
- 5- Crossing over refers to the interchange of parts between Sister Chromatids of homologous Chromosome during meiotic Prophase.
- 6- Generally, Chiasma terminalization occurs between diplotene and metaphase I.
- 7- Random Synapsis is Pairing of homologous Chromosomes starts From The end and Continues towards their Centromere.
- 8- Tetrad is Two Chromosomes or Four Chromatids.
- 9- After Crossing over Force of Synapsis increases.
- 10- The basic size, shape, and spacing of dermatoglyphs appear to be influenced by only genetic factors.

With Best Wishes

Prof.dr. lamiaa Deef

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