

10. A diagram of a person's chromosome is called?
- Karyotype
 - Syndrome
 - Chromatin
 - Fingerprint
11. This force can stabilize a DNA double-helix:
- Hydrophilic sugar-phosphate groups are found on the exterior of the helix where interaction with water occurs
 - Hydrophobic bases are present in the interior of the helix, each base-pair is stabilized by the same number of hydrogen bonds
 - Covalent base stacking interactions may take place between neighbouring bases within the same strand in the helix
 - Non-covalent N-glycosidic bonds may form between nitrogenous bases in opposite strands in the helix
12. If the DNA strand has nitrogenous base sequence ATTGCC, the mRNA will have:
- ATTGCA
 - UGGACC
 - UAACGG
 - ATCGCC
13. In DNA, the enzyme which breaks the H₂ bonds is:
- Ligase
 - Helicase
 - Topoisomerase
 - Polymerase
14. Which of the following mechanisms will remove uracil and incorporate the correct base?
- Direct repair
 - Base excision repair
 - Mismatch repair
 - Nucleotide excision repair
15. What is the main enzyme that plays a major role in formation of thymine dimer?
- Glycosylase
 - Photolyase
 - Gyrase
 - DNA ligase
16. Which two Uvr component molecules scan the DNA during nucleotide excision repair?
- UvrC, UvrA
 - UvrA, UvrB
 - UvrB, UvrC
 - UvrD, UvrA
17. In SOS repair system cleavage of LexA and UmuD is mediated by:
- RecB
 - RecA
 - RecC
 - UvrA
18. Which of the following is not a type of post translational modification?
- Proteolysis
 - Protein folding
 - Glycosylation
 - Lipid addition
19. In the N-linked glycoprotein, the carbohydrates are attached to which of the following bases?
- Valine
 - Threonine
 - Asparagine
 - Serine
20. 25 individuals in a population are homozygous dominant, then the individuals that are expected to be homozygous recessive are:
- 100
 - 75
 - 50
 - 25

(Descriptive)

Time : 2 hr. 30 mins.

Marks : 50

[Answer question no.1 & any four (4) from the rest]

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| 1. Describe the working principle and uses of fluorescence microscope and phase contrast microscope. | 5+5=10 |
| 2. State the difference between SEM & TEM. | 10 |
| 3. Describe the structure and function of plasma membrane. | 10 |
| 4. Write short notes on:
a) Lampbrush chromosome
b) Polytene chromosome
c) DNA A
d) DNA Packaging | 5+5=10 |
| 5. Describe the process of DNA replication in prokaryotes. | 10 |
| 6. What are the components of an operon? Explain the positive regulation of lac operon with suitable diagrams. | 3+7=10 |
| 7. Describe the structure and function of any two of the following types of RNAs
(i) mRNA (ii) tRNA (iii) rRNA | 5+5=10 |
| 8. Write short notes on any two of the following:
(i) Wiseman's theory of evolution
(ii) Synthetic theory
(iii) Lamarckism
(iv) Darwinism | 5+5=10 |

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