

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture Summer 2018 - 19 Examination

Semester: 2**Subject Code: 20102152****Subject Name: Fundamentals of Genetics****Date: 04/04/2019****Time: 2:00pm to 4:30pm****Total Marks: 50****Instructions**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A. Fill in the blanks. (Each of 0.5 mark)****(05)**

1. Meiosis occurs in _____ cells
2. The term chromosome coined by _____
3. Father of genetics _____
4. Sudden heritable change in genetic material is known as _____
5. If the centromere is very near the end, the chromosome is _____.
6. DNA replication takes place during _____ phase.
7. Deletion leads to alteration in gene _____.
8. Factor or agent causing mutation is known as _____.
9. Mendel work on _____ contrasting characters.
10. Chromosome is not visible in active nucleus due to their _____.

B. Multiple choice type questions. (Each of 0.5 mark)**(10)**

- 1 If centromere position is near the end _____.
 - a) Metacentric
 - b) Acrocentric
 - c) Submetacentric
 - d) Telocentric
- 2 Give different stages of meiosis: prophase I _____.
 - a) Leptotene
 - b) Diplotene
 - c) Zygotene
 - d) All of above
- 3 Monoploids are represented by
 - a) x
 - b) n
 - c) 2x
 - d) 2n
- 4 Cytoplasmic genes are found in
 - a) Mitochondria
 - b) Chloroplast
 - c) Both
 - d) Neither
- 5 Formation of the RNA molecule from the DNA is called
 - a) Transcription
 - b) Elongation
 - c) Translation
 - d) Replication
- 6 In DNA, guanine and cytosine bases are joined by
 - a) Double phosphate bonds
 - b) Triple phosphate bond
 - c) Double hydrogen bonds
 - d) Triple hydrogen bonds
- 7 Law of inheritance were discovered by Mendel in 1866 working with
 - a) *Drosophila*
 - b) Garden pea
 - c) Maize
 - d) *Neurospora*
- 8 Structural changes in chromosome cause alteration in
 - a) Phenotype
 - b) Variability
 - c) Fertility
 - d) All of the above
- 9 Crossing over occurs in
 - a) Zygotene
 - b) Pachytene
 - c) Leptotene
 - d) Diplotene
- 10 Chromosomes are lined up at the equatorial plate in _____
 - a) Prophase
 - b) Telophase
 - c) Anaphase
 - d) Metaphase
- 11 Which cell organelle responsible for protein synthesis
 - a) Ribosome
 - b) Mitochondria
 - c) Chloroplast
 - d) All of the above
- 12 Meiosis also known as _____
 - a) Equatorial division
 - b) Both (a) and (b)
 - c) Reductional division
 - d) None of these

- 13 Separation of alleles during gamete formation occurs in
 a) Anaphase-I c) Anaphase-II
 b) Both (a) and (b) d) None of these
- 14 These are phases of mitosis
 a) Prophase c) Metaphase
 b) Anaphase d) Telophase
- 15 Nucleus was first discovered by
 a) Flemming(1822) c) Robert Brown(1833)
 b) Camillo Golgi(1832) d) Benda(1897)
- 16 In DNA, which nucleotide absent which is present in RNA
 a) guanine c) cytosine
 b) Uracil d) Thaimin
- 17 DNA synthesis or replication always start from
 a)5' to 3' c)5' to 5'
 b)3' to 5' d)3' to 3'
- 18 which cell organelles known as psucidal box
 a) Lysosome c) Mitochondria
 b) Chloroplast d) None of above
- 19 Crossing over involve
 a) Non sister chromatides of homologus chromosome c) Sister chromatides of homologus chromosome
 b) Non sister chromatides of non-homologus chromosome d) Sister chromatides of non-homologus chromosome
- 20 If centromere position is the terminal end
 a) Metacentric c) Submetacentric
 b) Acrocentric d) Telocentric

Q.2 Do as Directed.

A. Define the following. (Any five out of seven)

(05)

1. Telomere
2. Chloroplast
3. Heterozygote
4. Cell division
5. Karyotype
6. Mutation
7. Mutagen

B. Answer the following. (Any five out of seven)

(05)

1. Why Mendel choose garden pea?
2. Give/ enlist different stages of meiosis
3. Give two other name of centromere
4. Role of Mitochondria
5. Chromosome most easily observed at which stage of mitosis? Why?
6. Why meiosis known as reductional division?
7. Give full form of DNA and RNA

Q.3 Write short notes. (Any five out of six)

(10)

1. Morphological structure of chromosome with their different parts
2. Give different stage of mitosis with diagram
3. Give Mendel's Law
4. Mutagen and their classification
5. Enlist cell organelles and describe any one
6. Chloroplast

Q.4 Long Questions/Example (Attempt any three out of four)

(15)

1. Define Mutation and their classification in detail
2. Difference between mitosis and meiosis
3. Give structure of DNA with label diagram
4. Difference between DNA and RNA