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SVKM's NMIMS
SCHOOL OF AGRICULTURAL SCIENCES AND TECHNOLOGY

Programme: B.Sc. Agriculture

Year: I Semester: I

Academic Year: 2019-20

Subject: Fundamentals of Genetics

Date: 23 December 2019

Marks: 50

Time: 11.00 am - 1.00 pm

Durations: 2 (Hrs)

No. of Pages: 01

Final Examination

- I. Define the following (any 10) 1 × 10 = 10 Marks
- | | | | |
|-----------------|------------------|-----------------------------|------------------------|
| 1. Genetics | 2. Replication | 3. Translocation | 4. Quantitative traits |
| 5. Mitosis | 6. Cytokinesis | 7. Secondary sex characters | 8. Law of segregation |
| 9. Homozygosity | 10. Duplications | 11. Pseudo dominance | 12. Nucleotides |
| 13. Translation | 14. variability | | |
- II. Select the correct answer 0.5 × 10 = 5 Marks
1. Genetics was born in
a) 1900 b) 1910 c) 1905 d) 1912
 2. Mitosis is known as
a) Equational division b) Heterotypic division c) Reductional division d) None
 3. Chromosome with diffused centromere is known as
a) Acrocentric b) Holokinetic c) Telocentric d) All
 4. Translocations will alter in -----of the chromosome
a) Gene number b) Gene Sequence c) Chromosome structure d) All
 5. Nullisomics are represented by
a) $2n-1$ b) $2n-2$ c) $2n+1$ d) $2n+2$
 6. How many traits Mendel studied
a) Three b) Seven c) Eight d) Ten
 7. Holandric genes present on
a) X-chromosome b) Y-chromosome c) Autosomes d) All
 8. DNA does not contain
a) Adenine b) Guanine c) Uracil d) Cytosine
 9. The process of synthesis mRNA from DNA is known as
a) Transcription b) Transduction c) Translation d) Transformation
 10. Mendel failed to explain
a) Incomplete b) Co-dominance c) Linkage d) All dominance
- III. Answer any five of the following 3 × 5 = 15 Marks
1. What is mitosis? Write its significance.
 2. What are the numerical aberrations? Mention their types with formula.
 3. Write the components of DNA and RNA
 4. Define the law of segregation, derive the genotypic and phenotypic ratio by monohybrid cross
 5. List the characters with their alternative form studied by G J Mendel.
 6. Draw the typical chromosome structure and label the parts.
 7. Write the applications of genetics in agriculture.
 8. Classify the sex determination based on autosomes and sex chromosomes (X/A) ratios
- IV. Answer any four of the following the following (first one is compulsory) 5 × 4 = 20
1. Explain the brassica triangle.
 2. What are duplications? Write the types and effects of duplications.
 3. What are the mechanisms of sex determinations in plants and animals?
 4. Draw the typical plant cell and mention the functions of any five organelles.
 5. What are the different types DNA and list the differences between them.
 6. Write the reasons for Mendel's success.
 7. Explain the experiment that proved DNA is genetic material.
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