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SEMESTER END THEORY EXAMINATION

B.Sc. (Hons.) Horticulture

Semester	: I (New)	Term	: I	Acad. Year	:	2021-2022	
Course No.	: H/ BOT-112	Title	: Principles of Genetics and Cyto-genetics				
Credit	: 3 (2+1)						
Day and Date	: Friday 12/11/2021	Time	: 4.00-6.00	Total Marks	:	80	

Note: 1) Solve ANY EIGHT question from SECTION-A
2) Solve ANY TWELVE question fromSECTION-B
3) All questions from SECTION–C arecompulsory
4) Send the PDF file of answer sheet to the email id of respective courseteacher

SECTION- A

(Write the answer in 4-5 sentences only. Each question carries 04 Marks)

Q.1 Give classification of chromosomes based on centromere position
Q.2 Define mutation. Give the classification based on survival of treated organism.
Q.3 What is gene interaction? Enlist types of gene interactions with phenotypicratios
Q.4 State the salient features of quantitativetraits
Q.5 Define Cell.Give the functions of important plant cell organelles
Q.6 Differentiate between DNA and RNA
Q.7 Give the characteristics of Genetic Code
Q.8 Define multiplealleles. Give its characteristics with examples
Q.9 Define Linkage. Explain various phases of linkage
Q.10 State Law of segregation and give its illustration in short

SECTION-B

(Write the answer sin ones entence only.Each question carries 2 marks)

Q. 11 Do as directed

a) Give the stages of mitosis.
b) Define Emasculation.
c) Who proposed the classical model of Lac operon.
d) Definecrossingover
e) Blood group is an example of_____.
f) Enlistanyfourphysicalmutagens
g) Define Synapsis.
h) One gene-one enzyme hypothesis was given by_____.
i) What are different types of RiboNucleic Acid?
j) Whatdoyoumeanbyheterozygouscondition?
k) Name the scientists who rediscovered the Mendel's work
l) Whatdo you mean by transcription?
m) Which are non sensecodons?
n) What is difference between testcross and backcross?

SECTION-C

(Choose the correct option. Each question carry 1 mark)

Q. 12

1) Typical Di-hybrid F_2 phenotypic ratio is
a) 9:3:3:1 b) 15:1
c) 1:2:1 d) 1:1

2) are sites for large numbers of genes.
a) Mitochondria b) Chromosome
c) Nucleus d) All of these

3) Duplicate gene action exhibit____F_2 phenotypic ratio
a) 12:3:1 b) 15:1
c) 9:6:1 d) 13:3

4) Crossing over occurs during_____stage during meiotic prophase
a) Diplotene b) Zygotene
c) Liptotene d) Pachytene

5) UV radiation is an example of_____ mutagen.
a) Chemical b) Biochemical
c) Physical d) Biological

6) Who discovered jumping genes in maize
a) L. J. Stadler b) W. Bateson
c) B. McClintock d) R. Brown

7) A single gene controlling the phynotypic expression is known as_____.
a) Sex linked gene b) Co-dominant gene
c) Autosomal recessive gene d) Pleiotropic gene

8) Genes which exhibit higher mutation rate than others are termed as ____
a) Mutable genes b) Mutator genes
c) Anti-mutator genes d) None of these

9) Qualitative traits are _____
a) Highly affected by environment b) Governed by major genes
c) Exhibits continuous inheritance d) None of these

10) The frequency with which a gene produces a phenotypic or visible effect is called _
a) Penetrance b) Segregation
c) Expressivity d) Gene interaction

11) Germplasm theory is put forward by ___
a) Schleiden and Schwann b) Lamarck
c) A. Weismann d) G. Mendel

12) A complex ribosomes attached to a single strand of m-RNA is known as_
a) Polypeptide b) Okazaki fragment
c) Polysome d) Lysosome

13) coined the term Chromosome
a) C. Benda
b) G. Mendel
c) Hugo de Vries
d) W. Waldeyer

14) is exchange of segments between two non-homologous chromosomes.
a) Deletion
b) Insertion
c) Translocation
d) Duplication

15) In plants Meiosis takes place in
a) Stems tips
b) Anthers
c) Root tips
d) All of these

16) Nucleus was first discovered by__
a) Robert brown
b) Flemming
c) Robert Hooke
d) Crick

17) According to Double Helix Model, DNA consists of___polynucleotide chains.
a) Two
b) Three
c) Four
d) None of these

18)Mendel discovered the law of inheritance working with which crop?
a) Maize
b) Garden Pea
c) Drossophilla
d) Barley

19) In Mendelian inheritance,can produce two genotypes and two phenotypes
a) Monohybrid cross
b) Incomplete dominance
c) Di-hybrid cross
d) Co-dominance

20) Which mode of DNA replication is universally accepted?
a) Conservative
b) Dispersive
c) Semi-Conservative
d) All of these

21) is termed as *'Cinderella of Genetics'*
a) Pea
b) Mirabilis jalapa
c) Mutation
d) Drosophila

22) Percentage of recessives in progeny obtained by crossing two F_1s will be ____
a) 75 %
b) 100 %
c) 25 %
d) 50%

23) During reproduction, segregation of genes occurs during _____
a) Metaphase – I
b) Anaphase – I
c) Metaphase – II
d) Anaphase – II

24) Inhibitory gene interaction exhibit phenotypic ratio
a) 13:3
b) 9:3:3:1
c) 3:1
d) 1:2:1