Seat No:_____ Enrollment No:_____

PARUL UNIVERSITY

COLLEGE OF AGRICULTURE

B.Sc.(Hons.) Agriculture Summer 2016 – 17 Examination

Semester: 1 **Date: 05/07/2017**
Subject Code : 20102101 **Time: 10 am to 1 pm**
Subject Name: Principles of Genetics **Total Marks: 60**

Instructions

1. Attempt all questions from each section.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Write section – A, section – B on separate answer sheets.

SECTION A

Q.1 Fill in the blanks. (Each of 0.50 marks) **(10)**

1. _____Inheritance is governed by plasma gene.
2. The heritable variation is known as_____.
3. Interaction between two alleles of the same gene is known as_____.
4. An individual with gametic chromosome number is known as_____.
5. Meiosis leads to reduction in_____.
6. Nucleus was first discovered by_____.
7. The term mutation was coin by_____.
8. Combine study of cytology and genetics is known as_____.
9. _____ refers to the presence of more than two alleles at a locus.
10. Linkage between either dominant or recessive gene is known as_____.
11. The process of sex differentiation is known as_____.
12. Gene which has masking effect is called as_____.
13. The cross of F_1 with its homozygous recessive parent is known as_____.
14. Deletion is leads to alteration in gene_____.
15. A diagram which is used to represent karyotype is known as_____.
16. DNA replication takes place during _____phase.
17. The colourless plastids is knows as_____.
18. Stroma and grana are the parts of_____.
19. The Mendel's results were rediscovered by _____,_____and_____.
20. The term Genetics was coin by_____.

Q.2 Match group A with group B. (Each of 0.50 marks) **(05)**

A	B
1. Endoplasmic reticulum	a) Linkage
2. Division of cytoplasm	b) Benda(1897)
3. AaBbCc	c) Robert Brown(1833)
4. Bateson and Punnet(1906)	d) Chromosome become visible in
5. K Mc Lung	e) Cytokinesis
6. Garden pea	f) 2n=8
7. Morgan T. H.	g) Haploid number
8. Mitochondria	h) Heterozygous
9. Metaphase	i) Coupling and repulsion
10. n	j) Sex linkage

Q.3 Define the following. (Any ten) **(05)**

1. Heterozygous
2. Mitosis
3. Transformation
4. Repulsion
5. Cell
6. Autosomes
7. Genetics
8. Centromere
9. Endoplasmic reticulum
10. Pachytene
11. Deletion
12. Gene interaction

Q.4 Answer the following. (Any ten) **(10)**

1. Define brief classification of chromosome.
2. State various types of haploids.
3. Enlist the different types of linkage.
4. Give a brief account of various stage of meiosis.
5. Describe briefly reasons of Mendel's success in investigation the low of heredity.
6. Explain briefly the significance of mitosis.
7. Describe in brief function of nucleus.
8. Enlist different types of epistasis.
9. What are the factor which affecting crossing over?
10. Explain briefly the role of environment in sex determination with one example.
11. Describe briefly main feature of linkage.
12. What are the significance of crossing over?

SECTION B

Q.1 Multiple choice type questions. (Each of 0.50 mark) **(10)**

1. DNA is polymer of
   a) Amino acid
   b) Nucleotides
   c) Nucleosides
   d) None of the above
2. 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
3. Nucleus was first discovered by
   a) Flemming(1822)
   b) Camillo Golgi(1832)
   c) Robert Brown(1833)
   d) Benda(1897)
4. The daughter cells produced by meiosis are the different from mother cells in
   a) Shape
   b) Chromosome number and composition
   c) Size
   d) All of the avove
5. In meiosis, syneptonemal complex develops during
   a) Leptotene
   b) Pachytene
   c) Zygotene
   d) Diplotene
6. At anaphase a metacentric chromosome will assume
   a) V shape
   b) Rod shape
   c) J shape
   d) None of the above
7. Structural changes in chromosome cause alteration in
   a) Phenotype
   b) Variability
   c) Fertility
   d) All of the above
8. In a genome, each type of chromosome is represented
   a) Only once
   b) Thrice
   c) Twice
   d) Many times
9. Monoploids are represented by
   a) x
   b) n
   c) 2x
   d) 2n
10. Substitution of haploids are represented as
    a) n+1
    b) n-1
    c) n-1+1
    d) 2n
11. Low of inheritance were discovered by Mendel in 1866 working with
    a) *Drosophila*
    b) Garden pea
    c) Maize
    d) *Neurospora*
12. With complete dominance and equal survival of all genotypes, The gene in F_2 in a monohybrid cross segregate into
    a) 3:1 ratio
    b) 1:2 ratio
    c) 1:2:1 ratio
    d) 9:3:3:1 ratio
13. Mendel was died in
    a) 1866
    b) 1884
    c) 1874
    d) 1890
14. In recessive epistasis, in F2 the phenotypic ratio of 9:3:3:1 in modified to
    a) 9:3:4
    b) 9:7
    c) 12:3:1
    d) 15:1
15. Crossing over takes place during
    a) Leptotene
    c) Pachytene

b) Zygotene
d) Diplotene

16. Chiasma was first discovered by
a) Bateson and Punnet(1906)
c) Johnnsen(1904)
b) Morgan(1910)
d) Halden (1942)

17. Sex chromosomes were first discovered in
a) *Drosophila*
c) Garden pea
b) Grasshopper
d) Maize

18. Cytoplasmic genes are found in
a) Mitochondria
c) Both
b) Chloroplast
d) Neither

19.Theory of epigenesis was proposed by
a) Charles Darwin
c) Lamark
b) Mendel
d) Bateson

20. The term lysosome was first used by
a) Poster(1948)
c) Camillo(1822)
b) Dave(1955)
d) Benda(1897)

Q.2 Give the sentence true or false. (Each of 0.50 mark) **(05)**

1. Monoploids contain a double copy of genome.
2. Nucleus is found in the cytoplasm.
3. The term epistasis was coined by Bateson(1909).
4. Lambrush chromosomes have large number of loops.
5. Dominant characters express in F_1.
6. The term Genetics was coin by Mendel.
7. N-1-1 refers to substitution of haploids.
8. Ribosomes are the sites of protein synthes.
9. G_1 is the pre- DNA replication phase.
10. Translocation involves homologous chromosome.

Q.3 Write short notes. (Any five) **(10)**

1. Low of segregation
2. Double helix structure of DNA.
3. Chromosome
4. Endoplasmic reticulum
5. Linkage
6. Polytene chromosome

Q.4 Differentiate the following. (Any five) **(05)**

1. Monoploid and Haploid
2. Heterochromatin and Euchromatin
3. Prokaryote and Eukaryote
4. Mitosis and Meiosis
5. Homozygous and heterozygous
6. DNA and RNA
7. Crossing over and Linkage