SHRI KRISHNA ACADEMY

NEET,JEE & BOARD EXAM(10th,+1,+2) COACHING CENTRE

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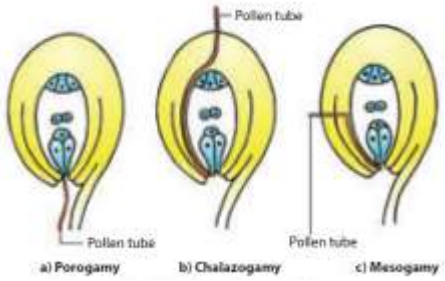
FIRST MID TERM TEST - JULY 2019

STD: XII **DATE: 02.08.2019**

SUBJECT: BIO-BOTANY **MARKS : 25**

Q. NO	ANSWER KEY	MARKS
	SECTION -I	
1.	c) Microspore	1
2.	d) Law of segregation	1
3.	b) Drosophila	1
4.	a) Hilum	1
5.	d) Atavism	1
	SECTION -B **II. ANSWER ANY THREE QUESTIONS FROM THE FOLLOWING**	**3X2=6**
6.	**Clones:** The individuals formed by this method is morphologically and genetically identical and are called **clones**.	2
7.	**Integumentry tapetum:** In some species(unitegmic tenuinucellate) the inner layer of the integument may become specialized to perform the nutritive function for the embryo sac and is called as **endothelium** or **integumentary tapetum** (Example : Asteraceae).	2
8.	**Difference between Heredity and variation:** **Heredity**: Heredity is the transmission of characters from parents to off springs. **variation**: The organisms belonging to the same natural population or species that shows a difference in the characteristics is called variation.	2
9.	**Test cross:** Test cross is crossing an individual of unknown genotype with a homozygous recessive.	2
10.	**Illegitimate crossing over:** It involves mutual exchange of chromosomal segments between two non-homologous chromosomes. It is also called **illegitimate crossing over.**	2

	Section - C III. Answer any 3 questions:(Question No. 13 is Compulsory)	3x3=9
11.	**Apospory:** Megaspore mother cell undergoes the normal meiosis and four megaspores formed gradually disappear. A nucellar cell becomes activated and develops into a diploid embryo sac. This type of apospory is also called somatic apospory. Examples : *Hieracium* and *Parthenium*.	2 1
12.	**Types of entry of pollen tube into the ovule:** **Entry of pollen tube into the ovule**: There are three types of pollen tube entry into the ovule. **Porogamy**: when the pollen tube enters through the micropyle.  **Chalazogamy**: when the pollen tube enters through the chalaza. **Mesogamy**: when the pollen tube enters through the integument.	1 1 1
13.	**Reasons Mendel did choose the Pea plant for his hybridization experiments:** He choose pea plant because, ❖ It is an annual plant and has clear contrasting characters that are controlled by a single gene separately. ❖ Self-fertilization occurred under normal conditions in garden pea plants. Mendel used both self-fertilization and cross-fertilization. ❖ The flowers are large hence emasculation and pollination are very easy for hybridization.	3
14.	**Genetic mapping:** The diagrammatic representation of position of genes and related distances between the adjacent genes is called **genetic mapping**. **Uses of Genetic mapping:** ❖ It is used to determine gene order, identify the locus of a gene and calculate the distances between genes. ❖ They are useful in predicting results of dihybrid and trihybrid crosses. ❖ It allows the geneticists to understand the overall genetic complexity of particular organism.	1 1 1
15.	**Sex determination in Papaya:** Recently researchers in Hawaii discovered sex chromosomes in Papaya (***Carica papaya***, 2n=36). Papaya has 17 pairs of autosomes and one pair of sex chromosomes. Male papaya plants have XY and female plants have XX. Unlike human sex chromosomes, papaya sex chromosomes look like autosomes and it is evolved from autosome. The sex chromosomes are functionally distinct because the Y chromosome carries the genes for male organ development and X bears the female organ developmental genes.  In papaya sex determination is controlled by three alleles. They are m, M_1 and M_2 of a single gene.	2

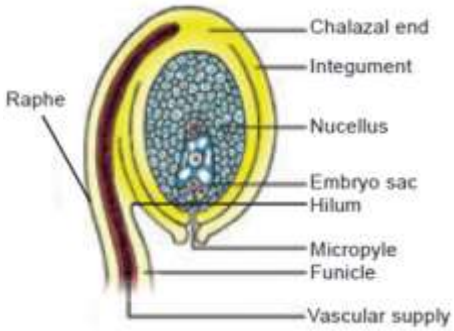
Genotype	Dominant/ recessive	Modification	Sex
mm	Homozygous recessive	Restrict maleness	Female
M_1m	Heterozygous	Induces maleness	Male
M_2m	Heterozygous	Induces both the sex	Bisexual (rare)
M_1M_1 or M_2M_2 or M_1M_2	Homozygous/ Heterozygous dominant	Inviable plants	Sterile

1

SECTION -D **1x5=5**

IV. Answer the following questions

16. **a) Structure of an ovule and its parts:**



2½

b) Functions of Tapetum:

- ❖ It supplies nutrition to the developing microspores.
- ❖ It contributes sporopollenin through **ubisch bodies** thus plays an important role in pollen wall formation.
- ❖ The pollenkitt material is contributed by tapetal cells and is later transferred to the pollen surface.
- ❖ Exine proteins responsible for '**rejection reaction**' of the stigma are present in the cavities of the exine. These proteins are derived from tapetal cells.

2½

(OR)

Two Types of variation:

1. Discontinuous Variation:

Within a population there are some characteristics which show a limited form of variation. Example: Style length in *Primula*, plant height of garden pea. In discontinuous variation, the characteristics are controlled by one or two major genes which may have two or more allelic forms. These variations are genetically determined by inheritance factors. Individuals produced by this variation show differences without any intermediate form between them and there is no overlapping between the two phenotypes. The phenotypic expression is unaffected by environmental conditions. This is also called as qualitative inheritance.

2½

2. Continuous Variation:

This variation may be due to the combining effects of environmental and genetic factors. In a population most of the characteristics exhibit a complete gradation, from one extreme to the other without any break. Inheritance of phenotype is determined by the combined effects of many genes, (polygenes) and environmental factors. This is also known as quantitative inheritance. Example: Human height and skin color.

2½

Namakkal (DT)

N

FIRST MID TERM TEST - JULY 2019

STANDARD - XII

Time : 1.30 hrs **BIOLOGY** **Marks: 50**

Time: 45 minutes **Bio-Botany** **Marks: 25**

Section-A

I. Choose the correct answer:- **5×1=5**

1) First cell of male gametophyte in angiosperm is
   a) Vegetative cell b) generative cell c) Microspore d) Megaspore
2) "Gametes are never hybrid" This is a statement of
   a) Law of random fertilization b) Law of dominance
   c) Law of independent assortment d) Law of segregation
3) Inversion type of structural chromosomal aberration was first reported by sturtevant in
   a) Maize b) Drosophila c) Pea d) Mirabilisjalapa
4) The point of attachment of funicle to the body of the ovule is known as
   a) hilum b) raphe c) chalaza d) Perisperm
5) A modification of a biological structure whereby an ancestral trait reappears after having been lost through evolutionary changes in the previous generations is the
   a) Pleitropism b) Apospory c) Apomixis d) Atavism

Section - B

II. Answer any three questions from the following:- **3×2=6**

6) What are called clones?
7) What is called integumentry tapetum?
8) Differentiate heredity and variation.
9) Define Test cross
10) What is called illegitimate crossing over?

Section - C

III. Answer any three questions. Q.No.13 is compulsory: **3×3=9**

11) Write a short note on "Apospory"
12) Explain the types of entry of pollen tube into the ovule.
13) What are the reasons Mendel did choose the Pea plant for his hybridization experiments?
14) What is called genetic mapping? Mention any two uses of genetic maps.
15) Describe the Sex determination in Papaya.

Section - D

IV. Answer the following:- **1×5=5**

16) a) Draw the structure of an ovule and label the parts.
    b) Write the functions of Tapetum **[or]**
    Describe the two types of Variation.

N

Time: 45 minutes Bio-Zoology Marks: 25

Section-A

I. Answer all the questions. Choose the most suitable answer from the given four alternatives and write the option code and the corresponding answer: 5×1=5

1) Which one of the following is not the function of Placeata?
   a) To facilitate supply of oxygen and nutrients to embryo
   b) To secrete oestrogen
   c) To facilitate the removal of Carbondioxide and material from embryo
   d) To secrete oxytocin during Parturition
2) In which type of Parthogenesis are only males produced?
   a) Arrhenotoky b) Thelytoky c) Amphitoky d) Both a and b
3) Match Column I with Column II and select the correct option from the codes given below

Column I	Column II
A. Copper releasing IUD	i) LNG-20
B. Hormone releasing	ii) Lippes Loop IUD
C. Non medicated IUD	iii) Saheli
D. Mini pills	iv) Multiload-375

   a) A-iv, B-ii, C-i, D-iii b) A-iv, B-i, C-iii, D-ii
   c) A-i, B-iv, C-ii, D-iii d) A-iv, B-i, C-ii, D-iii
4) Which of the following statement is correct regarding haemophilia?
   a) Recensive genes responsible present in X-Chromosome
   b) Dominanant genes responsible present in X-Chromosome
   c) Responsible dominant gene present in Y-Chromosome
   d) Responsible dominant gene present in the autuosomal chromosome
5) Meselson and Stahl's experiment proved?
   a) Transduction b) Transformation
   c) DNA is the genetic material d) Semi-Conservative nature of DNA replication

Section - II

II. Answer any three questions in which questions No.9 is compulsory: 3×2=6

6) What is Parthenogeneris? Give two examples from animals?
7) Which gland of female is homologous to the prostate gland of male? Write about it?
8) Expand the following: a) ZIFT b) ICSI
9) Differentiate intersexes from supersexes?
10) Name the anticodon required to recognize the following codons AAU, CGA, UAU and GCA

Section - III

III. Answer any three questions in which questions No.14 compulsory: 3×3=9

11) Draw a labelled sketch of a Spermatogenesis?
12) What is the difference between syngamy and fertilization?
13) Write the preventive measures of STDS?
14) What are the characteristic features of Huntington's chorea in man?
15) What is genetic Code? Explain

Section - IV

IV. Answer the following:- 1×5=5

16) Give a schematic representatives of Spermatogenesis and Oogenesis in human?

[or]

What are the application of DNA finger printing?

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