

## COMMON FIRST MID-TERM TEST - 2019

TC

Standard XII

Reg.No.

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Marks: 50

Time: 1.30 hours.

BIOLOGY

## Part - I - Bio-Botany (25 marks)

## I. Choose the correct answer:

8 x 1 = 8

- First cell of male gametophyte in angiosperm is
  - microspore
  - megaspore
  - nucleus
  - primary endosperm nucleus
- Parthenocarpic fruits lack
  - endocarp
  - epicarp
  - mesocarp
  - seed
- Assertion (A) : Sporopollenin preserves pollen in fossil deposits.  
Reason (R) : Sporopollenin is resistant to physical and biological decomposition
  - A is true, R is false
  - A is false, R is true
  - both A and R are not true
  - both A and R are true
- Assertion (A) : Gametes are never hybrid.  
Reason (R) : Law of independent assortment
  - A is false, R is true
  - A is true, R is false
  - both A and R are true
  - both A and R are not true
- Match the correct pair:
 

a) Plant height	- Inflated
b) Seed shape	- Tall
c) Pod colour	- Wrinkled
d) Flower position	- Axial
- Which one of the following is an example of polygenic inheritance?
  - flower colour in mirabilis jalapa
  - production of male honey bee
  - pod shape in garden pea
  - skin colour in humans
- If haploid number in a cell is 18, the double monosomic and trisomic number will be
  - 35 and 37
  - 34 and 38
  - 37 and 35
  - 17 and 18
- In nucleotide substitution, purine to purine (A → G) or pyrimidine to pyrimidine (T → C) arrangement is
  - transition
  - insertion
  - transversion
  - deletion

3 x 2 = 6

## II. Answer any 3 questions:

- Define Protandry.
- What are clones?
- What is mellitophily?
- What is back cross?
- Define gene mapping.

2 x 3 = 6

## III. Answer any 2 questions:

- List out the three functions of tapeworm.
- Draw and label the monocot seed - Oryza sativa.
- Write any three reasons for Mendel's successes in his breeding experiment.
- Define Crossing over.

1 x 5 = 5

## IV. Answer any one of the following:

- a) With a suitable diagram explain the structure of an Ovule.

(or)

- Write the significance of Ploidy.

(2)

XII Biology

## Part - II - Bio-Zoology (25 marks)

## I. Choose the correct answer:

8 x 1 = 8

- Assertion (A) : Off springs produced by asexual reproduction are genetically identical to the parent.  
Reason (R) : Asexual reproduction involves only by mitosis not meiosis.
  - Both (A) and (R) are true and (R) is correct explanation for (A)
  - Both (A) and (R) are true but (R) is not the correct explanation for (A)
  - If (A) is true but (R) is false
  - If both (A) and (R) are false
- In which of the following organism the process apolysis takes place?
  - taenia solium
  - hydra
  - planaria
  - paramecium
- Select the correct option from the codes given below:
 

A) Copper releasing IUD	- i) LNG - 20
B) Hormone releasing IUD	- ii) Lippas loop IUD
C) Non-medicated IUD	- iii) Saheli
D) Mini pills	- iv) Multiload-375

  - A - iv, B - ii, C - i, D - iii
  - A - iv, B - i, C - iii, D - ii
  - A - i, B - iv, C - ii, D - iii
  - A - iv, B - i, C - ii, D - iii
- Genetal warts caused by
  - HPV
  - HBU
  - HIV
  - HAV
- The foetal membrane that forms the basis of the umbilical cord is:
  - allantois
  - amnion
  - chorion
  - yolksac
- Colostrum is rich in
  - IgE
  - IgA
  - IgD
  - IgM
- The ovary remains attached to the pelvic wall and the uterus by an ovarian ligament called
  - mesarchium
  - mesosalpinx
  - mesovarium
  - myometrium
- Which of the following hormone causes the "Let-Down Reflex"?
  - prolactin
  - oxytocin
  - relaxin
  - hPL

3 x 2 = 6

## II. Answer any 3 questions:

- What is inhibin? Mention its functions.
- Expand the following: FSH, LH, hCG, hPL
- In spermatogenesis, how many spermatozoa produced from 500 primary spermatocyte? Mention the type of cell division for that process.
- What is regeneration? Mention its types.
- List out different types of Natural contraception methods.

2 x 3 = 6

## III. Answer any 2 questions:

- Draw and label the diagram of Human Ovum.
- Write the functions of Foetoscope.
- Differentiate: Ovulation and Spermiation
- Define : External fertilization and internal fertilization

1 x 5 = 5

## IV. Answer briefly:

- Explain the process of Oogenesis with proper illustrations.

(or)

Explain any two Assisted Reproductive Technology.

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## FIRST MID- TERM TEST-2019

## XII Bio-Botany

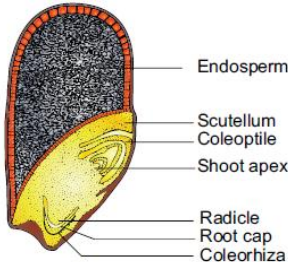
## I Choose the correct answer

1	a	microspore	5	d	axial
2	d	seed	6	d	Skin colour in humans
3	d	Both A and R are true	7	a	35 and 37*
4	b	A is true R is false	8	a	transition

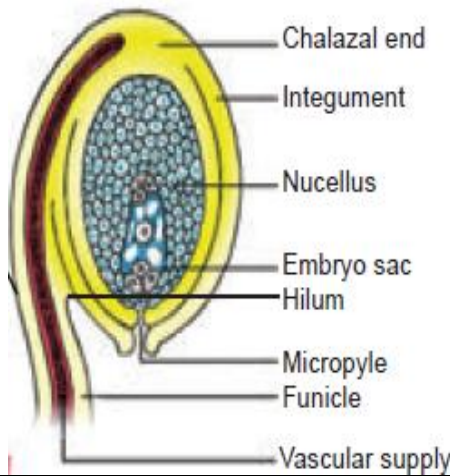
## II Answer any 3 questions

Q.No	Answer Key	Marks
9	<b>Protandry</b> -stamens mature earlier than the stigmas of the flowers Examples: <i>Helianthus</i> , <i>Clerodendrum</i>	1 1
10	<b>Clones</b> -individuals formed by asexual method of reproduction are morphologically and genetically identical and are called clones.	2
11	<b>Mellitophily</b> -Cross pollination takes place by means of (Honey) Bees	2
12	<b>Back cross</b> is a cross of F <sub>1</sub> hybrid with any one of the parental genotypes	2
13	<b>Genetic mapping</b> -The diagrammatic representation of position of genes and related distances between the adjacent genes.	2

## III Answer any 2 questions

Q.No	Answer Key	Marks
14	<b>Functions of tapetum</b> -[any 3 points] <ul style="list-style-type: none"> <li>It <u>supplies nutrition</u> to the developing microspores.</li> <li>It <u>contributes sporopollenin through ubisch bodies</u> thus plays an important role in pollen wall formation.</li> <li>The <u>pollenkitt material is contributed</u> by tapetal cells and is later transferred to the pollen surface.</li> <li><u>Exine proteins responsible for 'rejection reaction'</u> of the stigma are present in the cavities of the exine. These proteins are <u>derived from tapetal cells</u>.</li> </ul>	1 1 1
15	<b>Monocot seed- <i>Oryza sativa</i></b> 	[diagram 1 any four parts 2]
16	<b>Reasons for Mendel's successes</b> [any 3 points] <ul style="list-style-type: none"> <li>He applied <u>mathematics and statistical methods</u> to biology and laws of probability to his breeding experiments.</li> <li>He followed <u>scientific methods and kept accurate and detailed records</u> that include quantitative data of the outcome of his crosses.</li> <li>His <u>experiments were carefully planned and he used large samples</u>.</li> <li>The pairs of contrasting characters which were controlled by factor (<u>genes</u>) <u>were present on separate chromosomes</u>.</li> <li>The parents selected by Mendel were <u>pure breed lines</u> and the purity was tested by self crossing the progeny for many generations.</li> </ul>	1 1 1
17	<b>Crossing over</b> is a biological process that produces new combination of genes by inter-changing the corresponding segments between non-sister chromatids of homologous pair of chromosomes.	3

## III Answer any one of the following

Q.No	Answer Key	Marks
18 a)	<p><b>Structure of ovule(Megasporangium):</b></p> <ul style="list-style-type: none"> <li>▪ Ovule is also called megasporangium and is protected by one or two covering called <b>integuments</b>.</li> <li>▪ A mature ovule consists of a stalk and a body. The stalk or the <b>funiculus</b> is present at the base and it attaches the ovule to the placenta.</li> <li>▪ The point of attachment of funicle to the body of the ovule is known as <b>hilum</b>. It represents the junction between ovule and funicle.</li> <li>▪ In an inverted ovule, the funicle is adnate to the body of the ovule forming a ridge called <b>raphe</b>.</li> <li>▪ The body of the ovule is made up of a central mass of parenchymatous tissue called <b>nucellus</b> which has large reserve food materials. The nucellus is enveloped by one or two protective coverings called <b>integuments</b>.</li> <li>▪ Integument encloses the nucellus completely except at the top where it is free and forms a pore called <b>micropyle</b>.</li> <li>▪ The ovule with one or two integuments are said to be <b>unitegmic</b> or <b>bitegmic</b> ovules respectively.</li> <li>▪ The basal region of the body of the ovule where the nucellus, the integument and the funicle meet or merge is called as <b>chalaza</b>.</li> <li>▪ There is a large, oval, sac-like structure in the nucellus toward the micropylar end called <b>embryo sac</b> or female gametophyte. It develops from the functional megaspore formed within the nucellus.</li> </ul> 	5
18 b)	<p><b>Significance of Ploidy</b></p> <ul style="list-style-type: none"> <li>▪ Many polyploids are more vigorous and more adaptable than diploids.</li> <li>▪ Many ornamental plants are autotetraploids and have larger flower and longer flowering duration than diploids.</li> <li>▪ Autopolyploids usually have increase in fresh weight due to more water content.</li> <li>▪ Aneuploids are useful to determine the phenotypic effects of loss or gain of different chromosomes.</li> <li>▪ Many angiosperms are allopolyploids and they play a role in an evolution of plants.</li> </ul>	5



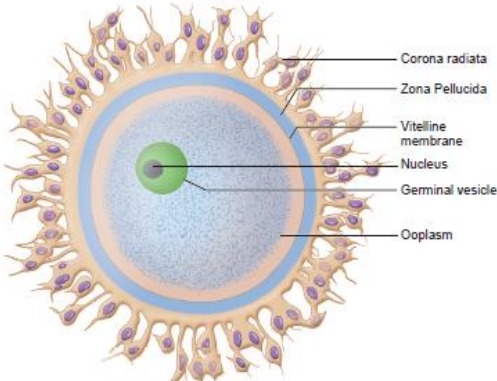
**BIO- ZOOLOGY****I Choose the best answer**

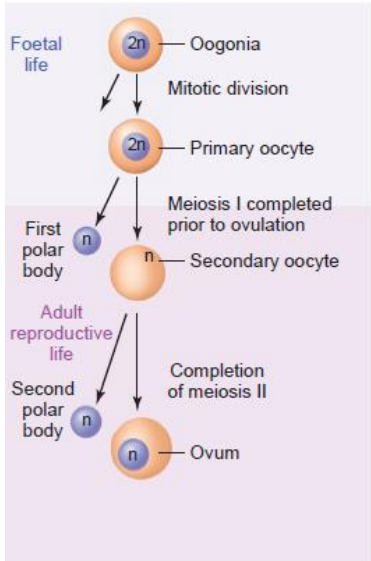
1	a	Both A & R are true and R is correct explanation for A	5	a	Allantois
2	a	<i>Taenia solium</i>	6	b	IgA
3	d	A-iv, B-I, C-II, D-III	7	c	mesovarium
4	a	HPV	8	b	oxytocin

**II Answer any 3 questions**

Q.No	Answer Key	Marks
9	<b>Inhibin</b> - a hormone secreted by Sertoli cells in seminiferous tubule, which is involved in the negative feedback control of sperm production.	1 1
10	FSH- Follicle Stimulating Hormone LH- Lutenizing Hormone hCG-human Chorionic Gonadotropin hPL-human Placental Lactogen	4x1/2=2
11	<i>500 x 4 = 2000 spermatozooids are produced. Meiosis cell division occurs.*</i>	2
12	<b>Regeneration</b> is the development of the whole body of an organism from a small fragment. It is of two types, namely restorative regeneration and reparative regeneration.	2
13	<b>Natural contraception method</b> Periodic abstinence/rhythm method Continuous abstinence Coitus interruptus Lactational amenorrhoea	2

**III Answer any 2 questions**

Q.No	Answer Key		Marks
14	<div></div>		[Diagram 1 Any four parts 2]
15	<b>Functions of Foetoscope</b> - used to monitor the foetal heart rate and other functions during late pregnancy and labour		3
16	<b>Spermiation</b>	<b>Ovulation</b>	3
	Sperms are finally released into the cavity of seminiferous tubules by a process called <b>spermiation</b>	release of the ovum (secondary oocyte) from the ovary wall into the peritoneal cavity. This process is called as <b>ovulation</b> .	
17	<b>External fertilization</b>	<b>Internal fertilization</b>	3
	fusion of male and female gametes takes place outside the body of female organisms in the water medium.	fusion of male and female gametes takes place within the body of female organisms.	
	e.g. sponges, fishes and amphibians	e.g. reptiles, aves and mammals.	

Q.No	Answer Key	Marks
18 a)	<p><b>Oogenesis</b></p> <ul style="list-style-type: none"> <li>▪ Oogenesis is the process of development of the female gamete or ovum or egg in the ovaries. During foetal development, certain cells in the germinal epithelium of the foetal ovary divide by mitosis and produce millions of <b>egg mother cells or oogonia</b>.</li> <li>▪ No more oogonia are formed or added after birth. The oogonial cells start dividing and enter into Prophase I of meiotic division I to form the <b>primary oocytes</b> which are temporarily arrested at this stage.</li> <li>▪ The primary oocytes then get surrounded by a single layer of granulosa cells to form the primordial or <b>primary follicles</b></li> <li>▪ A large number of follicles degenerate during the period from birth to puberty, so at puberty only 60,000 to 80,000 follicles are left in each ovary.</li> <li>▪ The primary follicle gets surrounded by many layers of granulosa cells and a new theca layer to form the <b>secondary follicle</b>. A fluid filled space, the antrum develops in the follicle and gets transformed into a <b>tertiary follicle</b>.</li> <li>▪ The theca layer gets organized into an inner theca interna and an outer theca externa. At this time, the primary oocyte within the tertiary follicle grows in size and completes its first meiotic division and forms the <b>secondary oocyte</b>.</li> <li>▪ It is an unequal division resulting in the formation of a large haploid secondary oocyte and a first polar body. The first polar body disintegrates.</li> <li>▪ During fertilisation, the secondary oocyte undergoes second meiotic division and produces a large cell, the <b>ovum</b> and a second polar body.</li> <li>▪ The second polar body also degenerates. The tertiary follicle eventually becomes a mature follicle or <b>Graafian follicle</b>.</li> <li>▪ If fertilisation does not take place, second meiotic division is never completed and the egg disintegrates. At the end of gametogenesis in females, each primary oocyte gives rise to only one haploid ovum.</li> </ul>  <p>The diagram illustrates the process of oogenesis. It begins in the 'Foetal life' stage with an 'Oogonia' cell (2n). This cell undergoes 'Mitotic division' to become a 'Primary oocyte' (2n). The 'Primary oocyte' then undergoes 'Meiosis I completed prior to ovulation' to produce a 'Secondary oocyte' (n) and a 'First polar body' (n). The 'Secondary oocyte' then undergoes 'Completion of meiosis II' to produce an 'Ovum' (n) and a 'Second polar body' (n). The 'First polar body' and 'Second polar body' are shown as small cells, while the 'Ovum' is a large cell. The 'Foetal life' stage is indicated by a pink arrow pointing to the 'Oogonia' cell, and the 'Adult reproductive life' stage is indicated by a pink arrow pointing to the 'Secondary oocyte' and 'Ovum'.</p>	5
b)	<p><b>Assisted reproductive technology (ART) [explain any two methods]</b></p> <p>A collection of procedures, which includes the handling of gametes and/or embryos outside the body to achieve a pregnancy, is known as <b>Assisted Reproductive Technology</b>. It increases the chance of pregnancy in infertile couples.</p> <p>ART includes</p> <ul style="list-style-type: none"> <li>▪ intra-uterine insemination (IUI),</li> <li>▪ <i>in vitro</i> fertilization, (IVF)</li> <li>▪ Embryo transfer (ET),</li> <li>▪ Zygote intra-fallopian transfer (ZIFT),</li> <li>▪ Gamete intrafallopian transfer (GIFT),</li> <li>▪ Intra-cytoplasmic sperm injection (ICSI),</li> <li>▪ Preimplantation genetic diagnosis,</li> <li>▪ oocyte and sperm donation</li> <li>▪ surrogacy.</li> </ul>	5

\* Dear teachers/Students' kindly ignore the mistakes. If any point of errors let me know, it will help me to correct in future. Thank you.

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