



OSDAV Public School, Kaithal
FIRST UNIT TEST (May ,24)
CLASS- XII
SUBJECT- BIOLOGY

Set - A

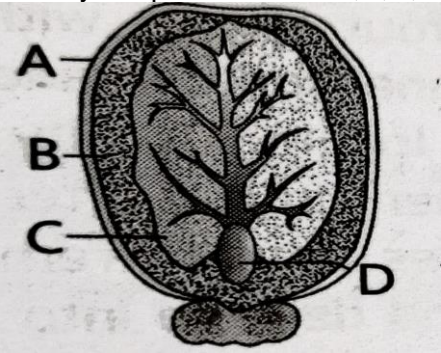
Time:1hr

MM:30

General Instructions:

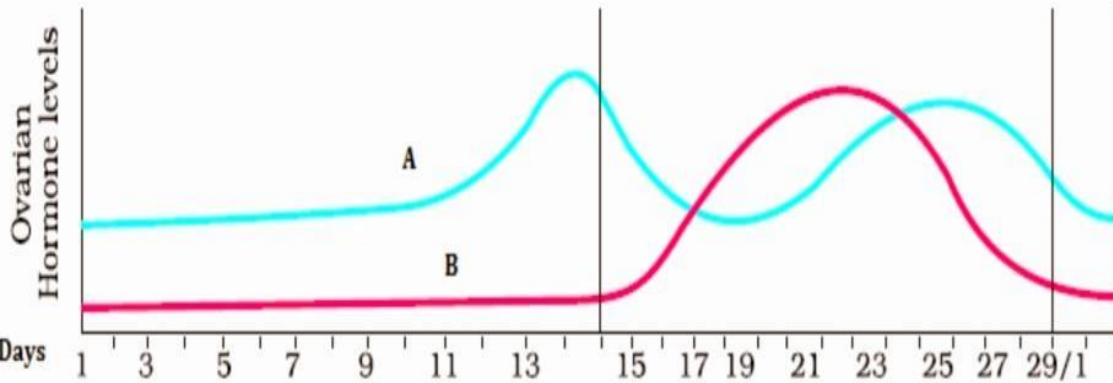
1. All questions are compulsory

SECTION-A

Q.1	Kiwi is a dioecious species. Which of the following methods can be definitely RULED OUT as a possible mode of pollination in its case? P) cleistogamous autogamy Q) chasmogamous autogamy R) geitonogamy S) xenogamy (a) only P and R (b) only P and Q (c) only Q and S (d) only P, Q and R	1															
Q.2	Choose the correct option wherein, the correct stages of the development of human embryo takes place. <table style="width: 100%; margin-top: 10px;"> <thead> <tr> <th style="text-align: center; width: 33%;">Ovary</th> <th style="text-align: center; width: 33%;">Fallopian Tube</th> <th style="text-align: center; width: 33%;">Uterus</th> </tr> </thead> <tbody> <tr> <td>A Morula</td> <td>Fertilised egg</td> <td>Blastocyst</td> </tr> <tr> <td>B Unfertilized egg</td> <td>Fertilised egg</td> <td>Morula</td> </tr> <tr> <td>C Unfertilized egg</td> <td>Fertilised egg</td> <td>Blastocyst</td> </tr> <tr> <td>D Fertilised egg</td> <td>Morula</td> <td>Blastocyst</td> </tr> </tbody> </table>	Ovary	Fallopian Tube	Uterus	A Morula	Fertilised egg	Blastocyst	B Unfertilized egg	Fertilised egg	Morula	C Unfertilized egg	Fertilised egg	Blastocyst	D Fertilised egg	Morula	Blastocyst	1
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Q.3	Identify the parts labelled A,B,C,D in the given figure and select the correct option-  <p style="margin-top: 10px;"> A) A seed coat B scutellum C epicotyl D hypocotyl B) A seed coat B scutellum C hypocotyl D epicotyl C) A seed coat B cotyledon C endosperm D hypocotyl D) A seed coat B endosperm C cotyledon D hypocotyl </p>	1															
Q.4	The technique called Gamete Intra Fallopian Transfer (GIFT) is recommended for those females (A) who cannot produce an ovum (B) who cannot retain the foetus inside uterus (C) who cannot provide suitable environment for fertilisation (D) all of these	1															
Q.5	Which of the following statements are correct with respect to hormones secreted by placenta? (i) Placenta secretes relaxin during later stages of pregnancy. (ii) Placenta secretes a high amount of FSH during pregnancy. (iii) Placenta secretes relaxin during the initial stage of pregnancy. (iv) Placenta secretes hCG and hPL during pregnancy. A. (i) and (iv) B. (i), (ii) and (iv) C. (iii) and (iv) D. (ii), (iii) and (iv)	1															
Q.6	During the pollen grain formation, the generative cell divides to give rise to the two male gametes. What is the ploidy of the generative cell? (a) n (b) 2n (c) 3n (d) 4n	1															

Q.7	<p>Assertion and reason based questions</p> <p>A) both assertion and reason are true and reason is the correct explanation of assertion B) both assertion and reason are true and reason is not the correct explanation of assertion C) assertion is true but reason is false D) assertion is false and reason is true</p> <p>Assertion (A): The coconut endosperm is multinucleate throughout its development. Reason (R): Some endosperms undergo free nuclear division without the formation of distinct cell boundaries.</p>	1
Q.8	<p>Assertion: Lactational amenorrhea is the natural method of contraception. Reason: It increases the phagocytosis of sperm</p>	1

SECTION-B

Q.9	What is zygote intra fallopian transfer technique? How is intrauterine transfer technique different from it?	2
Q.10	<p>The graph given below shows the variation in the levels of ovarian hormones during various phases of menstrual cycle:</p> <p>a) Identify 'A' and 'B'.</p> <p>b) Compare the roles of A and B.</p> 	2

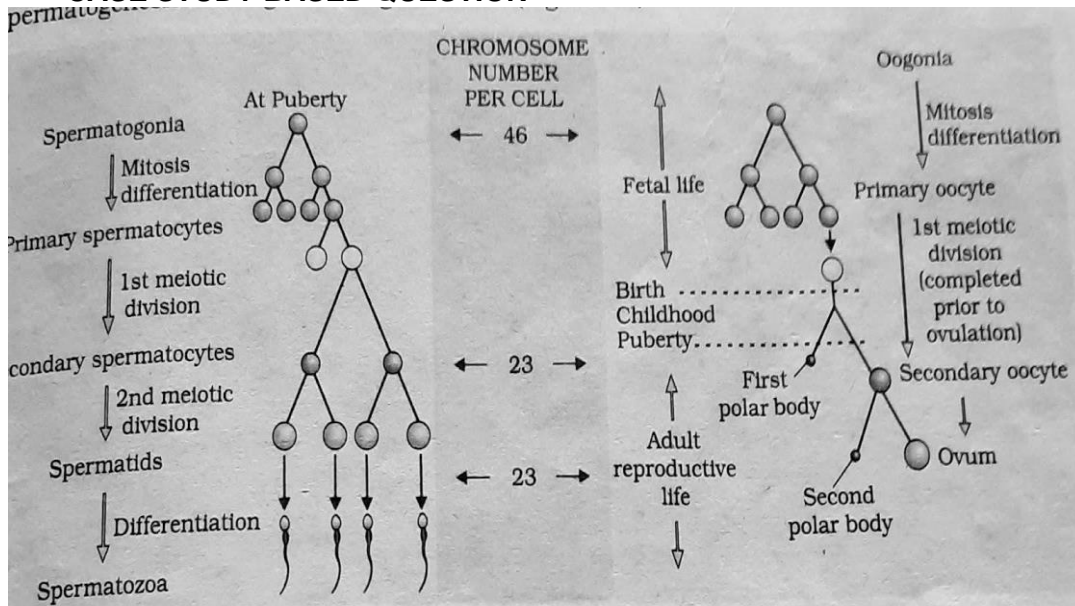
SECTION-C

Q.11	<p>A)Outbreeding helps in the maintenance of an organism's ability to survive and perpetuate its genetic material. This is termed as biological fitness. (a) What is the term used to signify reduction of such biological fitness? (b) Explain one method of outbreeding devised by plants that requires a chemical intervention by the reproductive apparatus of a plant. B)Is there any difference between apomixis and parthenocarpy? Explain.</p>	3
Q.12	<p>A)Parturition is induced by a complex Neuro endocrine mechanism'. Justify B)In case of polyembryony, embryo A develops from the synergids and embryo B develops from the nucellus. State the ploidy of embryo A and B.</p>	3
Q.13	<p>State the agent(s) which helps in pollinating in the following plants. Explain the adaptations in these plants to ensure pollination:</p> <p>(a) Corn b) Water hyacinth (c) Vallisneria</p>	3

SECTION-D

Q:14

CASE STUDY BASED QUESTION



4

With reference to the above schematic diagrams of spermatogenesis and oogenesis answer the following questions..

- About 300 million spermatozoa may be present in a human male ejaculation at one time. Calculate how many primary spermatocytes will be involved to produce this number of spermatozoa.
- How many spermatids will be formed?
- How many chromatids are found during Oogenesis in Primary oocyte and First polar body in a human female?

SECTION-E

Q.15

Describe the process of megasporogenesis up to fully developed embryo sac formation in an angiosperm.

5

Time:1hr.

MM:30

General Instructions:

1. All questions are compulsory

SECTION-A

Q.1	<p>Select the the correct order of endosperm types;</p> <div style="text-align: center;"> </div> <p style="text-align: center;"> A) Cellular ,helobial and free nuclear B)Cellular, free nuclear and helobial C) Helobial,free nuclear and Cellular D)Free nuclear ,cellular and helobial </p>	1
Q.2	<p>The accompanying diagram shows the fallopian tubes of Four Women P Q R and S:</p> <div style="text-align: center;"> </div> <p>In which two women is fertilisation impossible at present?</p> <p style="text-align: center;"> A) P and Q B)Q and R C) R and S D)S and P </p>	1
Q.3	<p>A dioecious flowering plant prevents</p> <p style="text-align: center;"> A)Geitonogamy and xenogamy B)Autogamy and xenogamy C)Autogamy and geitonogamy D)Cleistogamy and xenogamy </p>	1
Q.4	<p>The method of directly injecting a sperm into ovum in assisted reproductive technology is called</p> <p style="text-align: center;"> (A) GIFT (B) ZIFT (C) ICSI (D) ET </p>	1
Q.5	<p>Which of the following is not observed in a monohybrid cross–</p> <p>(1) Recessive parental trait is expressed without any blending in the F₂-generation (2) Recessive parental trait is expressed without any blending in the F₁-generation (3) Dominance also explains the proportion of 3 : 1 obtained at the F₂ (4) Genotype ratio is 1 : 2 : 1</p>	1
Q.6	<p>There are 10 flowers in one individual plant of Pea. In each microsporangium of every stamen of all the flowers there are 30 microspore mother cells. How many pollen grains are formed from that plant?</p> <p style="text-align: center;"> A) 4000 B)10,000 C) 24,000 D)48,00 </p>	1
Q.7	<p style="text-align: center;">Assertion and reason based questions</p> <p>A) both assertion and reason are true and reason is the correct explanation of assertion B) both assertion and reason are true and reason is not the correct explanation of assertion C) assertion is true but reason is false</p>	1

BIOLOGY-- XII
FIRST UNIT TEST(May,24)
ANSWER KEY AND MARKING SCHEME **Set-A**
SECTION-A

Q.1	D	1
Q.2	C	1
Q.3	D	1
Q.4	A	1
Q.5	A	1
Q.6	A	1
Q.7	A	1
Q.8	C	1

SECTION-B

Q.9	Eggs are stimulated and collected using IVF methods. Then the eggs are mixed with sperm in the lab. Fertilized eggs (zygotes) are then returned to the fallopian tubes with laparoscopic surgery.	1
	The zygote or the early embryo upto 8 blastomeres (cells that are produced during cleavage of a zygote) is transferred into fallopian tube in zygote intra fallopian transfer (ZIFT) technique. If embryo contains more than 8 blastomeres and it is transferred into uterus than it is called intra uterine transfer (IUT).	1
Q.10	A) A - Oestrogen	1/2
	B) Role of A (Oestrogen) - leads to changes in the ovary and uterus / regeneration of endometrium through proliferation	1/2
	Role of B (Progesterone) - Maintenance of endometrium fertilised ovum/ maintenance of other events of pregnancy	1/2

SECTION-C

Q.11	A)	1/2
	(a) inbreeding depression.	1/2
	(b)	1
	- self incompatibility	1/2
	- The pollen of a plant is not allowed to germinate on the stigma of the same flower or on a different flower of the same plant due to pollen-pistil interactio	1
	B)Yes, parthenocarpy is different from apomixis. In parthenocarpy, the fruit is produced without the fertilization of the female gamete. It is used for the production of fruits without seeds such as banana and grapes for commercial purposes. Apomixis is the process in which the seeds are produced without fertilization but the process occurs in the female reproductive tract of the plant. In this, the megaspore mother cell does not undergo meiosis. It is used for the commercial production of hybrid varieties and in the production of virus-free varieties.	1
Q.12	A)Parturition is a process where vigorous contraction of the uterus at the end of pregnancy causes expulsion/delivery of the foetus.	1/2×

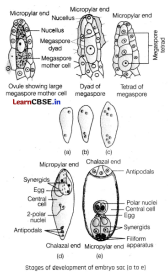
	<p>The signals for parturition originate from the fully developed fetus and the placenta which induce mild uterine contractions called foetal ejection reflex.</p> <p>This triggers release of oxytocin from the maternal pituitary. Oxytocin acts on the uterine muscle and causes stronger uterine contractions, which in turn stimulates further secretion of oxytocin.</p> <p>The stimulatory reflex between the uterine contraction and oxytocin secretion continues resulting in stronger and stronger contractions. 1 mark</p> <p>This leads to expulsion of the baby out of the uterus through the birth canal – parturition, after the infant is delivered; the placenta is also expelled out of the uterus.</p> <p>B) A-Haploid ; B-Diploid</p>	<p>4=2</p> <p>1</p>
Q.13	<p>(a) Corn: Wind. Numerous flowers are packed in an inflorescence; the tassels seen in the corn cob are the stigma and style which wave in the wind to trap pollen grains.</p> <p>(b) Water hyacinth: Insects or wind. In water hyacinth the flowers emerge above the level of water and are pollinated by insects or wind as in most of the land plants.</p> <p>(c) Vallisneria: Water, In Vallisneria - the female flower reaches the surface of water by the long stalk and the male flowers or pollen grains are released onto the surface of water. They are carried passively by water currents; some of them eventually reach the female flowers and the stigma.</p>	<p>1</p> <p>1</p> <p>1</p>

SECTION-D

Q.14	<p>a) Each primary spermatocyte will undergo meiosis-I and meiosis-2 which will result in 4 spermatozoa $300 \text{ million}/4=75 \text{ million}$</p> <p>b) 300 million</p> <p>c) Since replication has occurred by this stage $46 \times 2 = 92$ chromatids in primary oocyte</p> <p>Meiosis –I is completed by this time $23 \times 2 = 46$ chromatids in first polar body</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>
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SECTION-E

Q.15	<p>In angiosperms, the process of megasporogenesis starts inside the nucellus of the ovule. During megasporogenesis, the Megaspore Mother Cell (MMC) undergoes meiosis resulting in the production of four megaspores. Out of the four megaspores, only one is functional while the other three degenerate.</p> <p>The functional megaspore undergoes mitosis to form two nuclei, which migrate to opposite poles, forming a 2-nucleate embryo sac.</p> <p>Further, mitotic divisions lead to the formation of 4-nucleate and 8-nucleate stages of the embryo sac. In these mitotic divisions, nuclear division is not followed by cell division. After the 8-nucleate stage, cell walls are laid down and a typical female gametophyte or embryo sac is formed.</p> <p>Among the 8 nuclei, 6 are enclosed by cell walls and organised into cells, while the remaining 2 nuclei (polar nuclei) are situated above the egg apparatus in a large central cell.</p> <p>Out of the six cells, three are grouped at the micropylar end and constitute the egg apparatus. It is made up of two synergids and one egg cell. The other three cells are located at the chalazal end and are called antipodals. Thus, a typical angiosperm embryo sac after maturity is 8-nucleate and 7-celled</p>	<p>1/2×</p> <p>3=6</p>
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ANSWER KEY AND MARKING SCHEME **Set-B**
SECTION-A

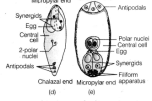
Q.1	D	1
Q.2	C	1
Q.3	C	1
Q.4	C	1
Q.5	B	1
Q.6	D	1
Q.7	A	1
Q.8	C	1

SECTION-B

Q.9	In IVF and ET techniques, the male and female gametes are made to fertilize in the laboratory environment. The zygote thus formed is introduced in the uterus of the acceptor during the secretory phase. The eight-celled embryos or the early embryos are transferred to the fallopian tube while the embryos more than eight cells are transferred to the uterus.	2
Q.10	(a) - Leydig cells - Sertoli cells - Spermatogonium - Primary spermatocyte	1
	(b) - Leydig cells - produces androgens	1

SECTION-C

Q.11	A)a) Selection of parents b) Emasculation c) Bagging d) Collection of pollen e) Dusting of pollen on the stigma f) Rebagging	1
	B)Yes, parthenocarpy is different from apomixis. In parthenocarpy, the fruit is produced without the fertilization of the female gamete. It is used for the production of fruits without seeds such as banana and grapes for commercial purposes. Apomixis is the process in which the seeds are produced without fertilization but the process occurs in the female reproductive tract of the plant. In this, the megaspore mother cell does not undergo meiosis. It is used for the commercial production of hybrid varieties and in the production of virus-free varieties.	1 1
Q.12	Implantation Zygote divides rapidly by mitotic division called cleavage and as a result 2 4 8 16 daughter cells are produced which are termed as blastomeres.Embryo with 8–16 blastomeres is called a morula. The morula changes into a large mass of cells called blastocyst which passes further into the uterus. Blastomeres in the blastocyst are arranged into an outer layer called trophoblast and an inner group of cells attached to trophoblast called inner cell mass.The trophoblast layer gets attached to the cells of the endometrium and the inner cell mass gives rise to the embryo.The cells of	1/2× 4=2



Stages of development of embryo sac (a to e)

