



INDIAN SCHOOL AL WADI AL KABIR

UNIT TEST (2023 - 24)

Class: XII
Date: 30.05.2023

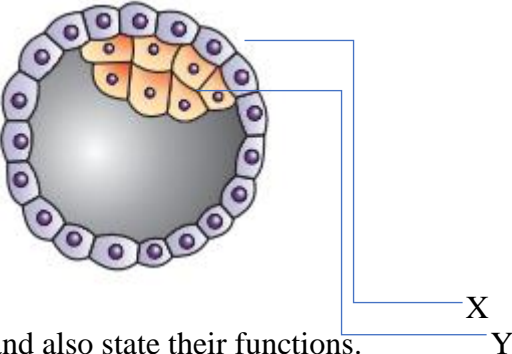
Sub: BIOLOGY (044)
Set - 1

Max Marks: 30
Time : 1 hour

GENERAL INSTRUCTION:

- (i) This question paper consists of five sections A, B, C, D & E. Section A contains 6 questions of one mark each, Section B is of 3 questions of two marks each, Section C is of 3 questions of three marks each and section D is 1 question which is case-based of four marks and Section E of 1 question of 5 marks.
- (ii) All questions are compulsory.
- (iii) There is no overall choice. However, an internal choice has been provided in one question of 2 marks, in one question of 3 marks and one question of 5 marks weightage. Attempt only one of the alternatives in such questions.
- (iv) Wherever necessary, the diagrams drawn should be neat and properly labelled.

SECTION A		
Q.NO.	QUESTIONS	MARKS
1	Which of the following statements are true about the males in a colony of honey bees? i) They have 16 chromosomes per cell. ii) They produce sperms by meiosis. iii) They have grandfather but no father. iv) All males in the colony are haploid except one. (a) i) and (iii) only (b) ii) and (iii) only (c) iii) and (iv) only (d) ii) and (iv) only	1
2	A particular species of plant produces sticky pollen in large numbers and its flowers are large or when small form an inflorescence. These modifications facilitate pollination by: a. Insects b. Water c. Wind d. Animals.	1
3	Spermiation is the process of: - a. Maturation of sperms in the Epididymis b. Transport of sperms through the Vas Deferens c. The release of sperms from Seminiferous tubules d. Formation of Sperms	1

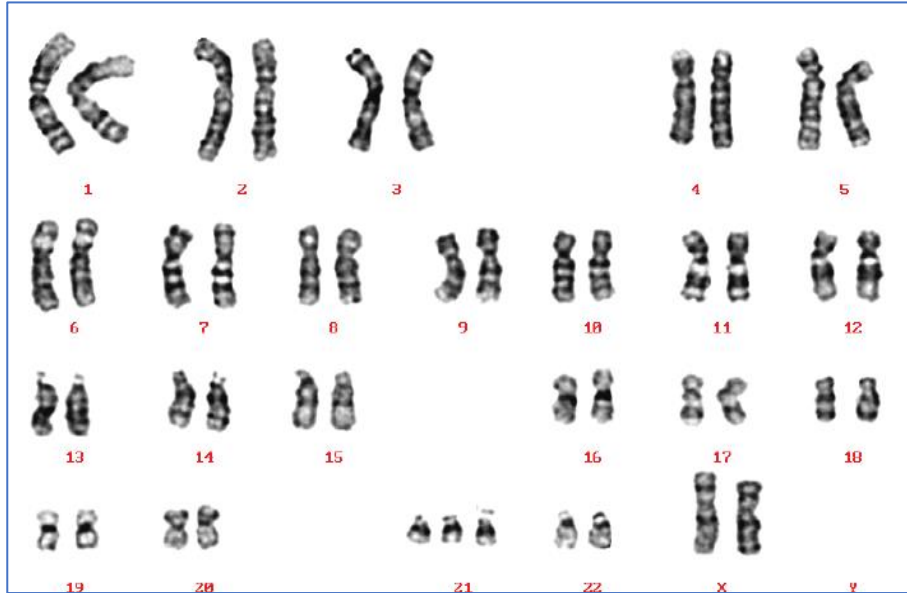
4	Which of the following hormones is not secreted by human placenta? a. HCG b. Estrogen c. Progesterone d. LH	1
5	Assertion: In a monohybrid cross between tall plants and dwarf plants, the F ₂ generation showed tall and dwarf plants in the ratio of 3:1 Reason: There is blending of traits in the F ₂ generation. a. Both assertion and reason are true, and the reason is the correct explanation of the assertion. b. Both assertion and reason are true, but the reason is not the correct explanation of the assertion. c. Assertion is true but reason is false. d. Both assertion and reason are false	1
6	Assertion: Human skin colour is a classic example of Polygenic inheritance Reason: In a polygenic trait the phenotype reflects the contribution of each allele and the effect of each allele is additive. a. Both assertion and reason are true, and the reason is the correct explanation of the assertion. b. Both assertion and reason are true, but the reason is not the correct explanation of the assertion. c. Assertion is true but reason is false. d. Both assertion and reason are false	1
SECTION B		
7	Draw a neat and labelled diagram showing a diagrammatic view of a typical anatropous ovule.	2
8	Given below is the Blastocyst stage of the human embryo, answer the questions in relation to it.  Label the parts X and Y and also state their functions.	2
9	Identify the type of inheritance shown by phenylketonuria, how can you relate this disorder to pleiotropy. OR a) Identify the type of inheritance shown by Haemophilia and what is the cause of the disease. b) The possibility of female becoming Haemophilic is rare---Comment	2

SECTION C

10

Given below is the karyotype of an individual showing a chromosomal disorder, answer the following in relation to this disorder.

- Identify the Chromosomal disorder with reason.
- What is the cause of this genetic disorder.
- State any two identifying features of an individual suffering this disorder.



3

11

Answer the following

- Some plants such as Viola produce two types of flowers, what advantage does the plant get due to it.
- Geitonogamy is genetically similar to autogamy but even then, it is considered as cross pollination, give reasons
- A typical angiosperm embryo sac, at maturity, though 8-nucleate is 7-celled- comment

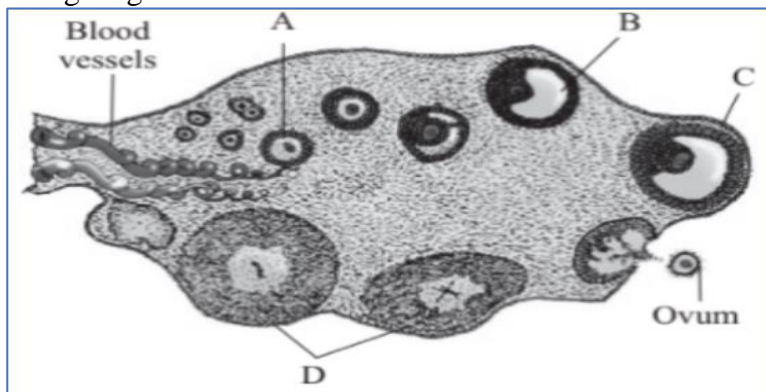
OR

- T.S. of anther shows four layers, diagrammatically represent it.
- Name and State the function of the innermost layer.
- How many male gametes and female gametes are produced by:
 - 5 Microspore mother cells
 - 5 megaspore mother cells

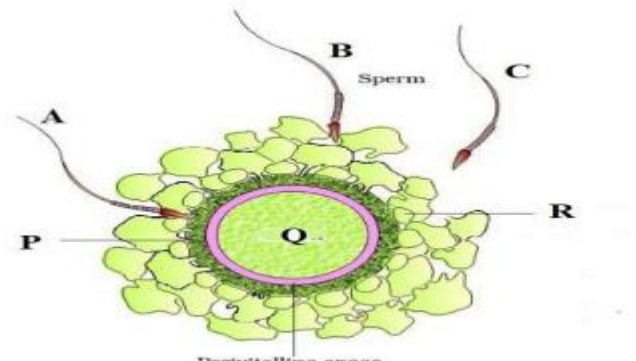
3

12

The diagram given below shows the events occurring in an ovary during Oogenesis in a human female.



3

	<p>a) Identify A, mention the phase when the process occurs in a human female.</p> <p>b) Identify D, name the hormone produced by it.</p> <p>c) Identify B, briefly describe this stage.</p>	
SECTION D		
Q. No. 13 case-based questions. Each question has 3 subparts with internal choice in one subpart.		
13	<p>The process of fusion of a sperm with an ovum is called fertilisation. Fertilisation can only occur if the ovum and sperms are transported simultaneously, this is the reason why not all copulations lead to fertilisation and pregnancy.</p>  <p>a) How will the sperm A get entry into the ovum.</p> <p>b) Identify the site where the fertilisation takes place in the female reproductive system.</p> <p>c) Describe the associated changes induced by it on P and Q.</p> <p style="text-align: center;">OR</p> <p>c) Describe the ovarian events and the ovarian hormone levels during the menstrual cycle.</p>	<p>1</p> <p>1</p> <p>2</p>
SECTION E		
14	<p>a) Design Mendel's test cross where violet colour flower is dominant over white colour flower to determine the genotype of the test organism.</p> <p>b) How is Mendel's concept of complete dominance different from incomplete dominance and Codominance.</p> <p style="text-align: center;">OR</p> <p>a) A child has blood group O. If the father has blood group B and mother blood group A, work out the genotypes of the parents and the possible genotypes of the other offspring.</p> <p>b) With the help of a cross explain the sex determination in grasshopper</p>	5

MARKING SCHEME

SECTION A		
Q.NO.	QUESTIONS	MKS
1	(a) i) and (iii) only	1
2	a. Insects	1
3	c. The release of sperms from Seminiferous tubule	1
4	d. LH	1
5	c) Assertion is true but reason is false.	1
6	a) Both assertion and reason are true, and the reason is the correct explanation of the assertion.	1
SECTION B		
7	Diagram + 4 labelling	0.5 X4
8	X-Trophoblast-implantation and Y-inner cell mass-embryo	0.5 X4
9	Autosomal recessive Pleiotropy-single gene controlling many phenotypes Any two symptoms with brief explanation OR a) Sex linked recessive Cause-single protein required from a cascade of proteins for clotting is absent b) for female to be haemophilic the father has to be diseased and the mother a carrier, diseased male not available in the latter stage of life.	0.5 0.5 1 0.5 0.5 1
SECTION C		
10	a) Down's syndrome + trisomy of the 21 st chromosome b) Failure of the chromatids to segregate during cell division c) any two identifying features	0.5+0.5 1 0.5+0.5
11	a) cleistogamous flowers-assured seed set + chasmogamous flower- variations b) genetically similar- same plant same DNA but functionally cross as it requires an agent to pollinate. c) 7 celled due to 2 polar nuclei in the common central cell. OR 7.i) diagrammatic representation ii) Tapetum + nourishment to the Sporogenous tissue iii) a)20 cells b) 5 cells	0.5+0.5 0.5+0.5 1 1 0.5+0.5 0.5+0.5
12	a) A-Primary follicle + birth to puberty b) D-corpus luteum + progesterone c) B-Tertiary follicle+ antrum+ meiosis-1 complete (any 2 pts.)	0.5+0.5 0.5+0.5 0.5+0.5
SECTION D		
13	a) acrosome dissolves zona pellucida. b) ampullary isthmic junction. c) P – changes in the zona pellucida Membrane and Q-meiosis 2 completed OR c) ovarian events -follicle formation and the ovarian hormone-oestrogen+ progesterone	1 1 1+1 1+1
SECTION E		
14	a) test cross. b) complete dominance + incomplete dominance + Codominance. OR a) crosses showing parent and child's genotype b) sex determination in grasshopper-XO type	2 1+1+1 3 2