



Indian School Al Wadi Al Kabir

Assessment 1

Biology (Code: 044)

SET 1

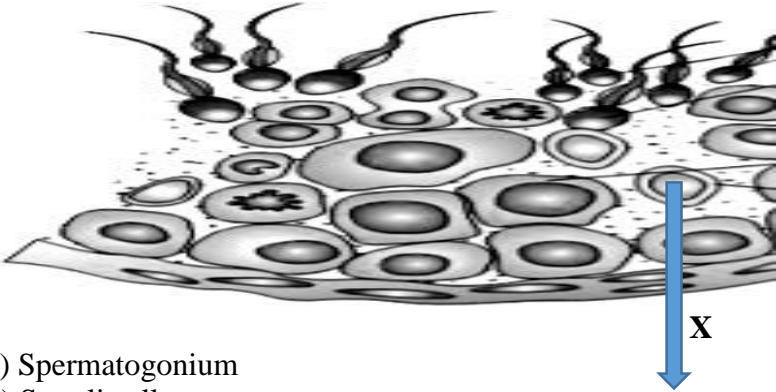
Class : XII
Date : 25/09/2022

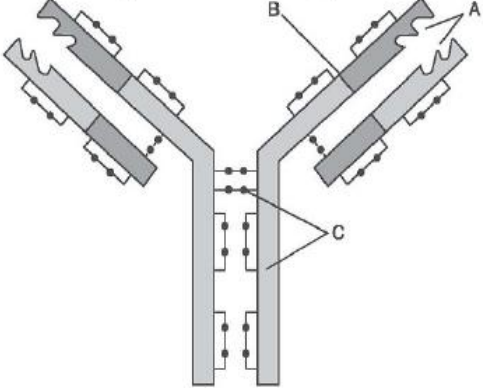
Time: 3 Hours
Max. Marks : 70

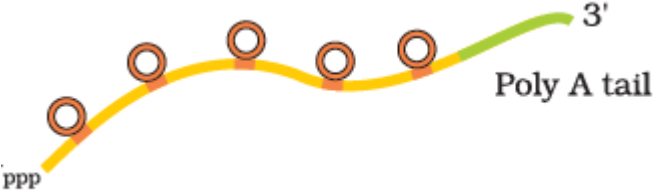
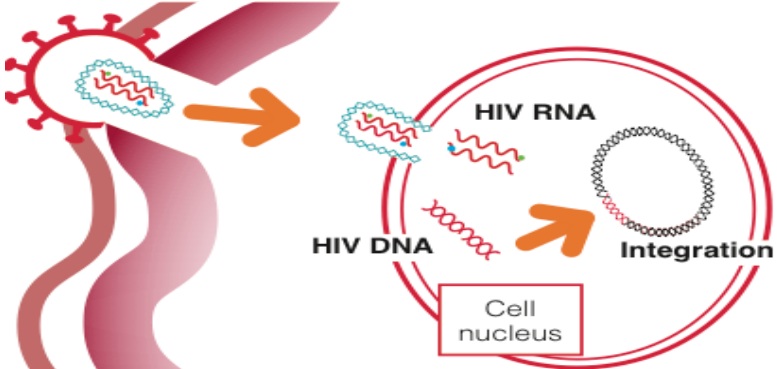
General Instructions:

- i) All questions are compulsory.
- ii) The question paper has five sections and 29 questions.
- iii) Section–A has 10 questions of 1 mark each; Section–B has 7 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section–D has two case-based questions of 5 marks and Section–E has 3 questions of 5 marks each
- iv) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- v) Wherever necessary, neat and properly labeled diagrams should be drawn

SECTION A		
Sl. No.		MKS
1	If an inherited mutation is observed in a population at high frequency, it is referred as (a) DNA polymorphism (b) Expressed sequence tags (c) Linkage (d) Sequence annotation	1
2	Which among the following character is an example for incomplete dominance (a) Flower colour of Pisum (b) Flower colour of snap dragon (c) Blood groups in humans (d) Pod colour of garden pea	1
3	Pleiotropic gene ----- (a) Controls only one phenotype (b) Controls several phenotypes	1

	(c) Masks the effect of another gene (d) Inhibits crossing over	
4	Which triplet codon does not have a tRNA associated with it? (a) UAA (b) UUA (c) UUU (d) AUG	1
5	The diagram given below is the sectional view of the seminiferous tubules, identify the marked X 	1
6	Viola (common pansy) that has both Cleistogamous and Chasmogamous flower one of the two flower types withered and developed no further due to some unfavorable condition, but the other flower type on the same plant survived and it resulted in an assured seed set. Which of the following will be correct? a) The flower type which survived is Cleistogamous and it always exhibits autogamy. b) The flower type which survived is Chasmogamous and it always exhibits geitonogamy. c) The flower type which survived is Cleistogamous and it exhibits both autogamy and geitonogamy. d) The flower type which survived is Chasmogamous and it never exhibits autogamy.	1
7	Assertion: Not all aquatic plants use water for pollination. Reason: Water pollinated plants are <i>Vallisneria</i> and <i>Hydrilla</i> a) Both A and R are true and R is the correct explanation of A b) Both A and R are true and R is not the correct explanation of A c) A is true but R is false d) A is False but R is true	1

8	<p>Assertion: The acrosome is filled with enzymes that help fertilisation of the ovum. Reason: This secretion helps the sperm enter into the cytoplasm of the ovum through the zona pellucida and the plasma membrane</p> <p>a) Both A and R are true and R is the correct explanation of A b) Both A and R are true and R is not the correct explanation of A c) A is true but R is false d) A is False but R is true</p>	1
9	<p>In anatropous ovule, the characteristic distribution of cells within the typical embryo sac from the chalazal end, micropylar end to the central cell are:</p> <p>a) 3-3-2 b) 3-2-3 c) 2-3-3 d) 2-2-4</p>	1
10	<p>Which of the following methodology is used to identify all the genes that are expressed as RNA in Human Genome Project (HGP)?</p> <p>a) Sequence Annotation b) Expressed Sequence Tags c) Karyotyping d) Autoradiography</p>	1
SECTION B		
11	<div style="text-align: center;">  </div> <p>Identify A, B, C from the schematic diagram of an antibody given above and also its chemical nature.</p> <p style="text-align: center;">OR</p> <p>Identify the type of lymphoid organs thymus and spleen are with reasons.</p>	2
12	<p>What is pollen pistil interaction, why is it considered as dynamic process and very important to the plant breeders.</p>	2
13	<p>Male honeybees do not have father and thus cannot have sons, but have a grandfather and can have grandsons, explain</p>	2

14	<p>i) What is a codon and what is its significance in translation.</p> <p>ii) Draw a tRNA with the anticodon of AUG codon and its cognate amino acid</p>	2
15	Discuss the importance of apomixis in hybrid seed industry	2
16	How did Alfred Hershey and Martha Chase arrive at the conclusion that DNA is the genetic material?	2
17	<p>i) Represent the central dogma of Molecular Biology.</p> <p>ii) From the figure given below which represents an mRNA, identify the number of exons.</p>	2
		
SECTION C		
18	<p>i) How is the disease in which there is uncontrolled division of cells caused, identify any two methods that can help to detect this disease.</p> <p>ii) How is metastasis related to this disease.</p> <p>iii) How does α-interferons help in controlling the disease?</p>	3
19	<p>i) Explain why do the symptoms of malaria not appear immediately after the entry of the causative organism into the human body when bitten by female Anopheles?</p> <p>ii) Give the scientific name of the malarial parasite that causes malignant malaria in humans.</p> <p>iii) Give a flow chart to depict the life cycle of this parasite in the primary host.</p> <p style="text-align: center;">OR</p> <p>Study the diagram showing the replication of HIV in human and answer the questions given below accordingly.</p> <div style="text-align: center;">  </div> <p>i) Write the chemical nature of the viral coat.</p> <p>ii) Identify the enzyme that acts on the virus to produce molecule X, identify X</p> <p>iii) Mention the name of the host cells the virus attacks first, uses it as a factory to multiply and also name the other cells it subsequently attacks when it enters the human body.</p>	3

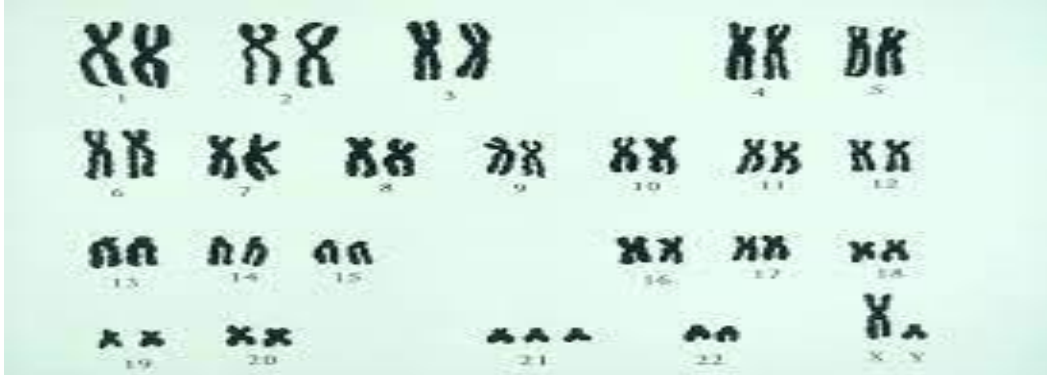
	iv) Name the widely used diagnostic test for this disease.	
20	<p>Draw a neat and labelled diagram of a human sperm.</p> <p style="text-align: center;">OR</p> <p>Diagrammatic sectional view of the female reproductive system and label all the parts.</p>	3
21	<p>i) Seeds offer several advantages to angiosperms, List its any 3 advantages.</p> <p>ii) Differentiate between True fruits, False Fruits and parthenocarpic fruits.</p>	3
22	<p>In a maternity clinic, for some reasons the authorities are not able to hand over the two new-borns to their respective real parents.</p> <p>i) Name and State the principle of the technique that can be done to sort out the matter</p> <p>ii) Describe the steps of the technique.</p>	3
23	<p>Given above is the pedigree chart of Haemophilia answer the questions given below in relation to it</p> <p>i) Identify the type of disease and the cause of this disorder.</p> <p>ii) Study the pedigree chart and analyse the pattern of how the disease is passed on to the next generation.</p> <p>iii) Why are the females in the pedigree chart not Haemophilic.</p> <p>iv) Give the genotype of the 3rd and 4th individual in the pedigree chart.</p>	3
24	<p>In 1928, Frederick Griffith, in a series of experiments with <i>Streptococcus Pneumoniae</i>, witnessed a miraculous transformation in this bacterium. During the course of his experiment, a living organism (bacteria) had changed in physical form. When <i>Streptococcus pneumoniae</i> (pneumococcus) bacteria are grown on a culture plate, some produce smooth shiny colonies (S) while others produce rough colonies (R). This is because the S strain bacteria have a mucous (polysaccharide) coat, while R strain does not.</p> <p>Answer the questions given below in relation to this experiment.</p> <p>i) With the help of a flow chart illustrate the above experiment and the observations he made.</p> <p>ii) What was the conclusion of his experiment.</p>	3

SECTION D (CASE STUDY)

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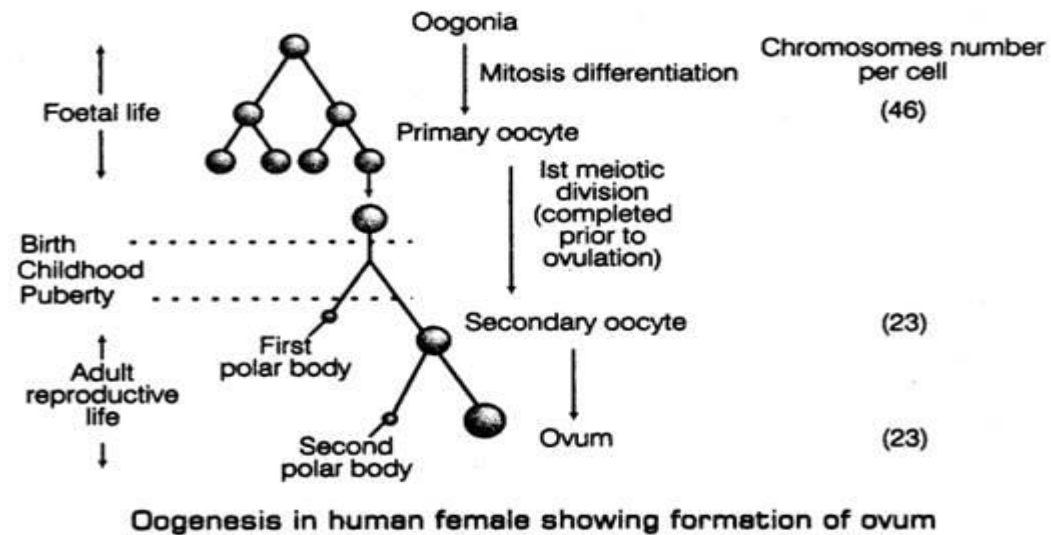
Given below is the Karyotype of an individual suffering from a genetic disorder.

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- i) Identify the genetic disorder
- ii) Explain the reason that has caused this genetic disorder.
- iii) Give the symptoms of this disorder
- iv) Identify whether this is a Mendelian disorder or a Chromosomal disorder, give a reason for your answer.
- v) How is this disorder different from Turners Syndrome in relation to the number of chromosomes.

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A diagrammatic representation of oogenesis is given above answer questions in relation to the above concept.

- i) Which of the following statement is incorrect for Oogenesis process?
 - a) Oogenesis is initiated during the embryonic development stage
 - b) A couple of million gamete mother cells (oogonia) are formed within each foetal ovary

c) These cells start meiotic division and get temporarily arrested at the end of meiosis-I stage

d) No more oogonia are formed and added after birth.

ii)The primary Oocyte forms secondary Oocyte within

a) Secondary follicle

b) Graafian follicle

c) Tertiary follicle

d)Primary follicle

iii)The secondary oocyte forms a new membrane surrounding it called

a) Corpus luteum

b) Antrum

c) zona pellucida

d) Graafian follicle

iv) **Assertion:** The secondary follicle soon transforms into the secondary oocyte

Reason: Tertiary follicle is characterised by a fluid filled cavity called antrum

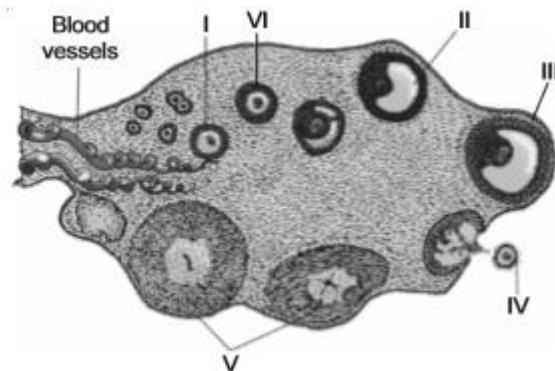
a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true and R is not the correct explanation of A

c) A is true but R is false

d) A is False but R is true

v)The figure given below depicts the Diagrammatic Section view of ovary, identify parts iv and v respectively.



a) Ovum, Graafian follicle

b) Ovum, Corpus luteum

c) Tertiary follicle, Primary follicle

d) Graafian follicle, Corpus luteum

SECTION E		
27	<p>(a) State the arrangement of different genes that in bacteria is referred to as operon. (b) Draw a schematic labelled illustration of lac operon in a 'switched on' state. (c) Describe the role of lactose in lac operon.</p> <p style="text-align: center;">OR</p> <p>a) How is transcription different from translation. b) Explain the significance of the splicing process in Eukaryotic transcription and the aminoacylation process in translation. c) Draw a schematic representation of the structure of a transcription unit</p>	5
28	<p>a) Humans have innate immunity for protection against pathogens that may enter the gut along with food, what are the two barriers that protect the body from such pathogens? b) Answer the following with respect to common cold and pneumonia: i)causative organism and target organ ii)Any two symptoms</p> <p style="text-align: center;">OR</p> <p>a) Colostrum and typhoid vaccine both provide immunity, how are these immunities different from each other. b) Name the parasite that causes filariasis in human, mention its two diagnostic symptoms. c)Name the plant source of the drug popularly called Smack. How does it affect the body of the abuser?</p>	5
29	<p>Sickle cell anaemia and Thalassemia are both Mendelian blood disorders, answer questions in relation to these two disorders. a) What are Mendelian disorders. b) How is the transmission of both the disease to their offspring similar to each other. c) Explain in detail how the genetic cause of both the diseases are different from each other.</p> <p style="text-align: center;">OR</p> <p>a) A single gene product may produce more than one type of Dominance effect; thus, it is not an autonomous feature of a gene-Explain this statement with an example. b) What is chromosomal theory of inheritance and who put forth this theory.</p>	5