



BIOLOGY

BOOKS - XII BOARDS PREVIOUS YEAR

SAMPLE PAPER 2019

Section A Part A

1. Androgens are synthesized by

A. Sertoli Cells

B. Leydig cells

C. Seminal vesicles

D. Bulbourethral gland

Answer: B



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Section A Part B

1. A procedure that finds use in testing for genetic disorders, but is also misused for

female foeticide is

A. Lactational amenorrhea

B. Amniocentesis

C. Artificial insemination

D. Parturition

Answer: B



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2. Rheumatoid arthritis is caused when ...

(i) Lymphocytes become more active

(ii) Body attacks self cells

(iii) More antibodies are produced in the body

(iv) The ability to differentiate pathogens or foreign molecules from self -cells is lost

Choose the correct answer from the options given below

A. i and ii

B. iii and iv

C. i and iii

D. ii and iv

Answer: D



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Section A Par A

1. Which type of immune response is responsible for the rejection of tissue/organs in the patient's body post transplantation ?

A. auto-immune reSQPonse

B. humoral immune reSQPonse

C. physiologica immune reSQPonse

D. cell-mediated immune reSQPonse

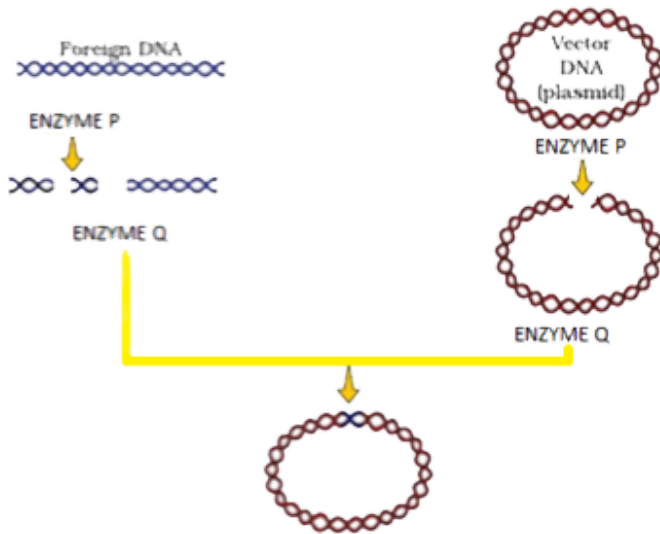
Answer: D



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Section A

1. Name the enzymes 'P' and 'Q' that are involved in the processes given below.



A. Enzyme P-Exonuclease and Enzyme Q-
Permease

B. Enzyme P-Exonuclease and Enzyme Q-Ligase

C. Enzyme P-Endonuclease and Enzyme Q-Permease

D. Enzyme P-Restriction endonuclease and Enzyme Q-Ligase

Answer: D



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2. A biotechnologist wanted to create a colony of E.coli possessing the plasmid pBR322, sensitive to Tetracycline. Which one of the following restriction sites would he use to ligate a foreign DNA ?

A. Sal I

B. Pvu I

C. Eco RI

D. Hind III

Answer: A



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3. The most important cause of biodiversity loss is

A. Over exploitation of economic Species

B. Habitat loss and fragmentation

C. Invasive Species

D. Breakdown of plant-pollinator relationships

Answer: B



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Section B Part A

1. How does an encysted Amoeba reproduce on return of favourable conditions ?



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Section B Part B

1. What are gemmules and conidia ? Name one organism each in which these are formed ?



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Section B

1. Name any two copper releasing IUD's. State how they act as a contraceptive



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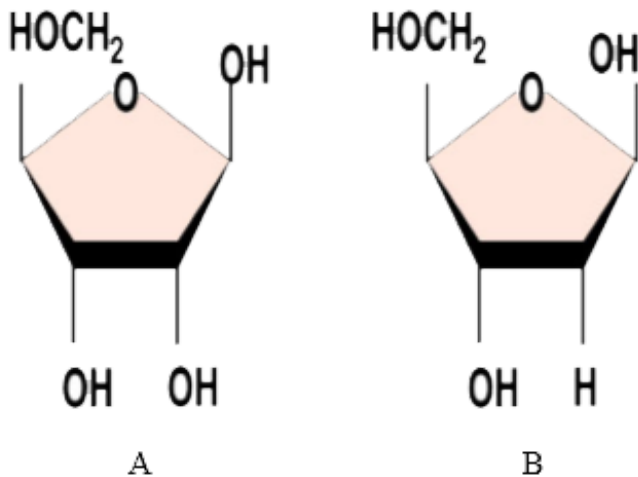
2. Why is it not possible to study the pattern of inheritance of traits in human beings, the same way as it is done in pea plant ? Name the alternate method employed for such an analysis of human traits.



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3. Carefully examine structures A and B of pentose sugar given below. Which one of the

two is more reactive ? Give reason



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4. Name the technology and write the procedure that can help a scientist to recover virus free sugarcane plants from diseased canes for his crop breeding experiments



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5. Explain the events that occur in the host cell on introduction of nematode-resistant gene into the tobacco plant by using *Agrobacterium* vectors



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6. Construct a pyramid of biomass starting with phytoplankton. Label its three trophic

levels. Is the pyramid upright or inverted ?

Justify your answer.



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Section C

1. Draw a well-labelled diagram of L.S of a pistil of a flower showing the passage of growing of pollen tube up its destination

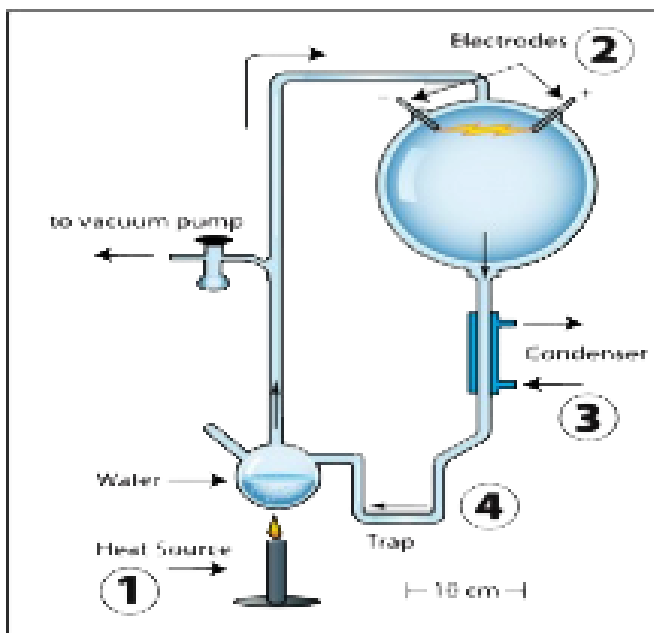


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2. 'Apomixes is a form of asexual is a form of asexual reproduction that mimics sexual reproduction in plant". Explain with the help of a suitable example



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3.

(a) State the hypothesis which S.L. Miller tried to prove in the laboratory with the help of the set up given above.

(b) Name the organic compound observed by him in the liquid water at the end of his experiment.

(c) A scientist simulated a similar set up and added CH_4 , CH_3 and water vapour at $800^\circ C$

Mention the important component that is missing in his experiment ?



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4. (a) Study the table given below and identify

(i), (ii), (iii) and (iv)

Amino acid	Phe	Val
DNA Code in Gene	AAA	CAC
Codon in mRNA	(i)	(ii)
Anticodon in tRNA	(iii)	(iv)

(b) A polypeptide consists of 14 different

amino acids.

(i) How many base pairs must be there in the processed mRNA that codes for this polypeptide?

(ii) How many different types of tRNA are needed for the synthesis of this polypeptide ?



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5. How is inbreeding advantageous as well as disadvantageous in cattle breeding

programme? (Mention any two advantages and two disadvantages)



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6. “Specific Bt Toxin gene is incorporated into cotton plant so as to control infestation of Bollworm”. Mention the organism from which the gene was isolated and explain its mode of action.



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7. When the gene product is required in large amounts, the transformed bacteria with the plasmid inside the bacteria are cultured on a large scale in an industrial fermenter which then synthesizes the desired protein. This product is extracted from the fermenter for commercial use.

(a) Why is the used medium drained out from one side while fresh medium is added from the other ? Explain.

(b) List any four optimum conditions for achieving the desired product in a bioreactor.



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Section C Part A

1. How does gain or loss of chromosome(s) takes place in humans ? Describe one example each of chromosomal disorder along with the symptoms involving an autosome and a sex chromosome.



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2. State any two criteria for determining biodiversity hotspot. Name any two hotspot designated in India



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Section C Part B

1. A small stretch of DNA strand that codes for a polypeptide is shown below:

3' -- ---- CAT CAT AGA TGA AAC --- --- -- 5'

(a) Which type of mutation could have

occurred in each type resulting in the following mistake during replication of the above original sequence ?

i. 3' CAT CAT AGA TGA ATC... 5'

ii. 3'CAT ATA GAT GAA AC..... 5'

(b) How many amino acids will be translated from each of the above strands (i) and (ii) ?



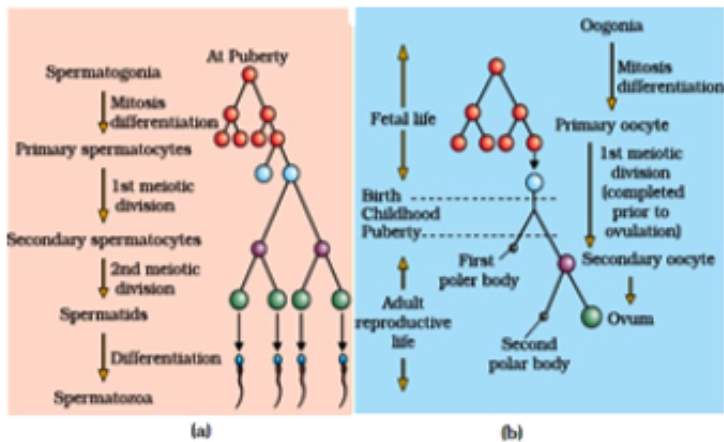
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2. Differentiate between in-situ and ex-situ approaches for conserving biodiversity. Give

an example for each.

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Section D



1.

With reference to the above schematic representation of (a) SQPermatogenesis and

(b) Oogenesis answer the following questions:

(a) About 300 million Spermatozoa may be present in a human male ejaculation at one time. Calculate how many Spermatocytes will be involved to produce 300 Spermatozoa.

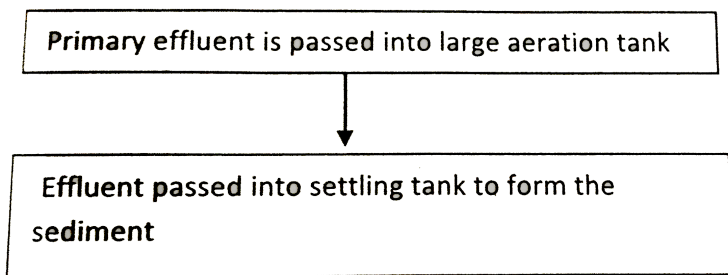
(b) How many chromatids are found during Oogenesis in (i) Primary oocyte and (ii) First polar body in a human female?



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2. Large quantities of sewage is generated everyday in cities and towns, which is treated in Sewage Treatment Plants (STPs) to make it less polluted. Given below is the flow diagram of one of the stages of STP.

Observe the given flow diagram and answer the questions accordingly



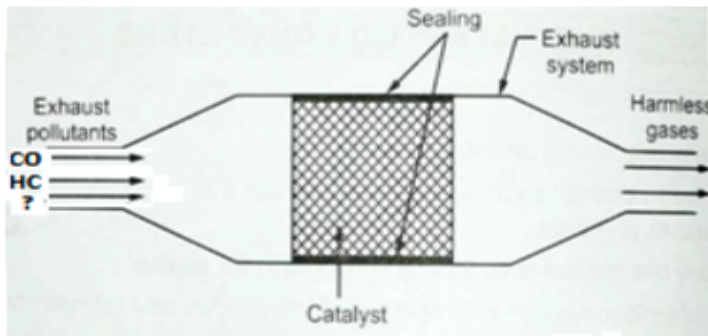
(a) Why primary effluent is passed into large aeration tanks?

(b) Write the technical term used for the sediment formed? Mention its significance

(c) Explain the final step that results in the formation of biogas in the large tank before the treated effluent is released into water bodies.



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3.

Observe the diagram of the catalytic converter and answer the questions which follow:

- (a) Name any two metals used as catalyst in the catalytic converter.
- (b) Name the gases that are released after passing the exhaust hydrocarbons through the catalytic converter.
- (c) Name the other poisonous gas which is

missing (?) in the exhaust pollutant of an automobile in the above diagram?



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Section E Part A

1. Certain phenotypes in human population are spread over a gradient and reflect the contribution of more than two genes. Mention the term used for the type of inheritance?

Describe it with the help of an example in human population.



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2. (a) What is mutation breeding? Give an example of a crop and disease to which resistance was induced by this method.

(b) Differentiate between pisci-culture and aquaculture.



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3. 'Indiscriminate human activities have strengthened the greenhouse effect resulting in Global Warming". Give the relative contribution of various Green House Gases in the form of a pie chart and explain the fate of the energy of sunlight reaching the earth's surface contributing towards Global Warming.



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Section E Part B

1. Summarize the process by which the sequence of DNA bases in Human Genome Project was determined using the method developed by Frederick Sanger. Name a free living non-pathogenic nematode whose DNA has been completely sequenced.



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2. (a) If a patient is advised anti-retroviral drug, name the possible infection he/she is likely to

be suffering from. Name the causative organism.

(b) How do vaccines prevent subsequent microbial infection by the same pathogen?

(c) How does a cancerous cell differ from a normal cell?

(d) Many microbial pathogens enter the gut of humans along with food. Name the physiological barrier that protects the body from such pathogens.



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3. Given below is a table depicting population interactions between SQPecies A and SQPecies

B.

Type of interaction	SQPecies A	SQPecies B
(a)	(-)	(+)
(b)	(+)	(-)

Name the type of interactions (a) and (b) in the above table.

Justify giving three reason, how the type of interaction (b) is important in an ecological context



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