

**Time Allowed: 3 Hrs.**

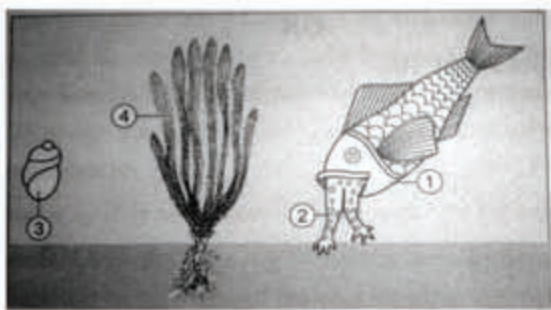
**Maximum Marks : 70**

**General Instructions:**

- There are a total of 26 questions and five sections in the question paper. All questions are compulsory.
- Section A contains question number 1 to 5, Very Short Answer type questions of one mark each.
- Section B contains question number 6 to 10, Short Answer type I questions of two marks each.
- Section C contains question number 11 to 22, Short Answer type II questions of three marks each.
- Section D contains question number 23, Value Based Question of four marks.
- Section E contains question number 24 to 26, Long Answer type questions of five marks each.
- There is no overall choice in the question paper, however, an internal choice is provided in one question of two marks, one question of three marks and all three questions of five marks. An examinee is to attempt any one of the questions out of the two given in the question paper with the same question number.

**Section -A**

- What modification is done to the T1 plasmid of *Agrobacterium*, to convert it into a cloning vector?
- Thymus of a new born child was degenerating right from birth due to genetic disorder predict its two impacts on the health of the child.
- Name the phenomenon and one bird where the female gamete directly develops into a new organism.
- In the picture provided what is relationship between 1 and 2 with respect to population interaction and between 3 and 4 with respect to trophic levels.



- Identify the reason for selection of DNA polymerase from *Thermus aquaticus* for polymerase chain reaction.

**Section -B**

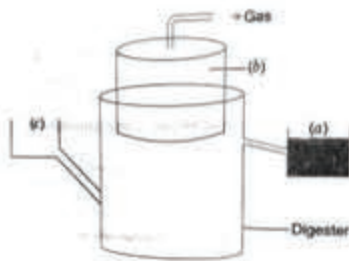
- Protein synthesis machinery revolves around RNA but in the course of evolution it was replaced by DNA. Justify.
- In a dihybrid cross white eyed, yellow bodied female *Drosophila* crossed with red eyed, brown bodied male. *Drosophila* produced in F2 generation, 1.3 percent recombinants and 98.7 per cent progeny with parental type combination. This observation of Morgan deviated from Mendelian F2 phenotypic dihybrid ratio. Explain, giving reasons and Morgan's observation.
- Explain how has *Bacillus thuringiensis* contributed in developing resistance to cotton bollworms in cotton plants.

OR

- What is micropropagation? Why are the plants produced by it called somaclones?
  - Name the technique by which healthy plants can be recovered from the diseased plants.
- Q.9 define animal husbandary. What is the danger of continuous inbreeding?
- Q.10 What did Hensling observe in insects? What is it called now?

**Section -C**

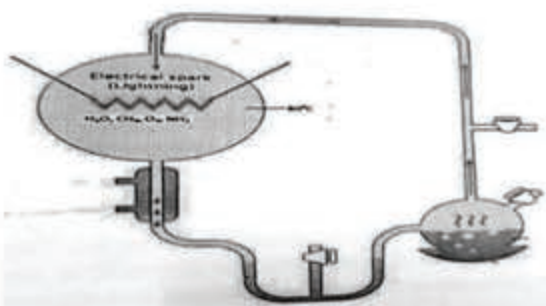
- Explain three out breeding devices in plants.
- The diagram given below is that of a typical bio gas plant.
  - Explain the sequence of events occurring in a bio gas plant.
  - Identify a, b and c.



- There is greater biodiversity in the tropical regions than that in temperate regions. Justify with the three hypothesis proposed.

OR

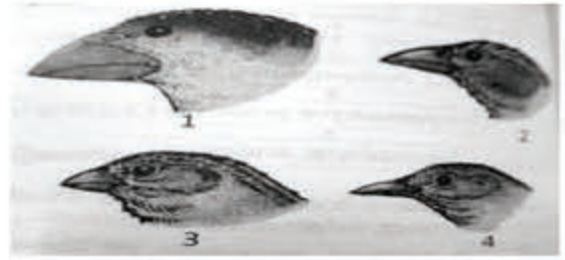
- Why is the diversity of animals more while diversity of plants is only 22%.
  - Why does diversity decreases at high altitudes.
- Q.14 (a) Name the respective form in which the malarial parasite gains entry into:-
- Human Body
  - Body of female Anopheles
- Name the host where the sexual & asexual reproduction of Malarial parasite occur respectively.
  - Name the toxin responsible for the appearance of symptoms of Malaria in humans. Why do these symptoms occur periodically?
- Q.15 A student was simulating Urey & Miller's experiment to prove the origin of life. The setup used by the student is given:



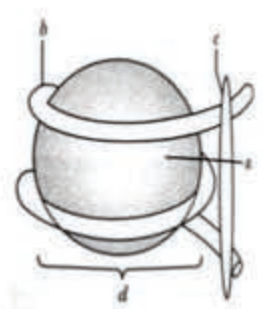
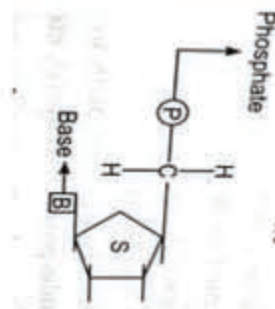
- Find out the reason why he could not get desired results?
  - What conclusion was drawn by Urey & Miller through this experiment?
  - Compare the conclusion drawn with the theory of spontaneous generation.
- Q.16 Work out a cross between true breeding red & white flowered dog, flower plants upto F2 progeny. Explain the results of F1 &

F2 generations.

- (A) In which part of the human females reproductive system do the following events take place?
  - Release of 1<sup>st</sup> polar body
  - Release of 2<sup>nd</sup> polar body
  - Fertilization
  - Implantation
- (B) What triggers release of oxytocin from pituitary gland?
- (A) Name the enzyme that catalyses the transcription of hn RNA.
- (B) Why does the hn RNA need to undergo changes? List the changes hn RNA undergoes & where in the cell such changes take place?
- Enumerate any 6 adaptive floral characteristics of a wind pollinated plant.
- (A) Write your observations on the variations seen in the Darwin's finches shown below.



- How did Darwin explain the existence of different varieties of finches on Galapagos island?
- Q.21 (A) Name the programme that is involved in improving success rate of production of desired hybrid & herd size of cattle.
- (B) Explain the method used for carrying this programme for cows.
- Q.22 (a) Mention the carbon positions to which the nitrogenous base and the phosphate molecule are respectively linked in the nucleotide given below in Fig(a)-



- (i) What is diagram representing in Fig(i)?
- (ii) Name the parts a, b and c.

**Section -D**

- Q.23 Aditi went to a supermarket with her mother to buy rice. They saw that two types of products are available – one is organically grown and second is conventionally grown. The organically grown crops are costlier so Aditi's mother does not want to purchase it.

Answer the following questions based on the above information.

- Which rice should be purchased? Why?
- What values are not exhibited by Aditi's mother?

**Section -E**

- Q.24 (A) Explain the development of a mature embryo sac from a mega spore mother cell in an angiosperm.
- (B) Draw labelled diagram of fertilized ovule. (with any 4 label lines.)
- OR
- Name a virus that cause AIDS in human being.
  - Explain the sequence of events that follows when virus attack to cause immune deficiency in human being.
- Q.25 Observe the representation of genes involved in the lac-operon given below-

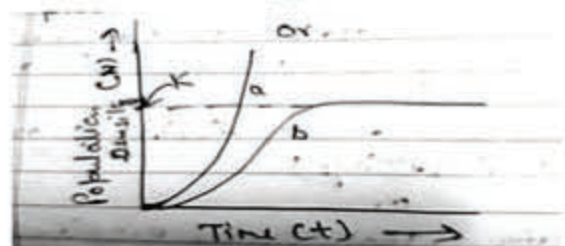


- Identify the region where the repressor protein will attach normally.
- Under certain condition repressor is unable to attach this site. Explain.
- If repressor fails to attach to said site what products will be formed what products will be formed by z, y & a?
- Analyze why this kind of regulation is called negative regulation.

OR

- How Meselson and Stahl proved that DNA replication is semi-conservative? Explain their experiment with suitable diagrams.
- Q.26 How is a transgenic tobacco plant protected against meiotic drive? Explain the procedure.

OR



- Study the population growth curves shown above.
- Identify curves 'a' & 'b'.
  - Mention the conditions responsible for the curves 'a' & 'b' respectively.
  - What does 'k' stands for? Explain it.
  - Write down equation for 'a' & 'b'.

**TIPS**

- For successful preparation in CBSE exams go through NCERT books thoroughly.
- Be cool & calm before and during examination.
- Try to avoid any type of tension & pressure.
- Take proper diet & sound sleep.
- Before attempting the question paper, readout it completely with cool mind & don't make hurry.
- Attempt the question paper completely section wise.
- Attempt that section first where you feel comfort.
- Highlight the value points.



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