EXAMINATION PAPERS – 2008

CBSE (Delhi)

SET–I

Time allowed: 3 hours **Maximum marks: 70**

General Instructions:

(i) *All questions are compulsory.*

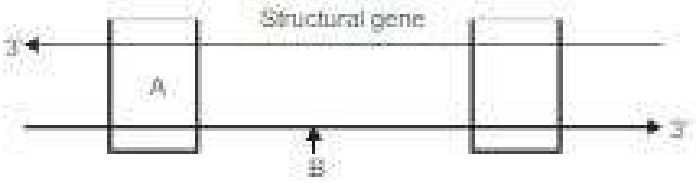
(ii) *The question paper consists of four sections A, B, C and D. Section A contains* ***8*** *questions of 1 mark each, Section B is of* ***10*** *questions of* ***2*** *marks each, Section C has* ***9*** *questions of* ***3*** *marks each whereas Section D is of* ***3*** *questions of* ***5*** *marks each.*

(iii) *There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of* ***3*** *marks and all the three questions of* ***5*** *marks weightage. A student has to attempt only one of the alternatives in such questions.*

(iv) *Wherever necessary, the diagrams drawn should be neat and properly labelled.*

SECTION–A

1. What causes speciation according to Hugo de Vries?
2. When and why do some animals like frogs hibernate?
3. List any two economically important products for humans obtained from *Apis indica*.
4. Name the Indian variety of rice patented by an American company.
5. What role do macrophages play in providing immunity to humans?
6. Name the parts 'A' and 'B' of the transcription unit given below.



7. Name the world's most problematic aquatic weed. What is the nature of the water body in which the weeds grow abundantly?
8. What is the major difference you observe in the offsprings produced by asexual reproduction and in the progeny produced by sexual reproduction?

SECTION–B

9. The flower of brinjal is referred to as chasmogamous while that of beans is cleistogamous. How are they different from each other?
10. Name the interaction in each of the following:
    (a) Cuckoo lays her eggs in the crow's nest.
    (b) Orchid grows on a mango tree.
    (c) Ticks live on the skin of dogs.
    (d) Sea anemone is often found on the shell of hermit crab.
11. A man with blood group A married a woman with B group. They have a son with AB blood group and a daughter with blood group O. Work out the cross and show the possibility of such inheritance.

OR

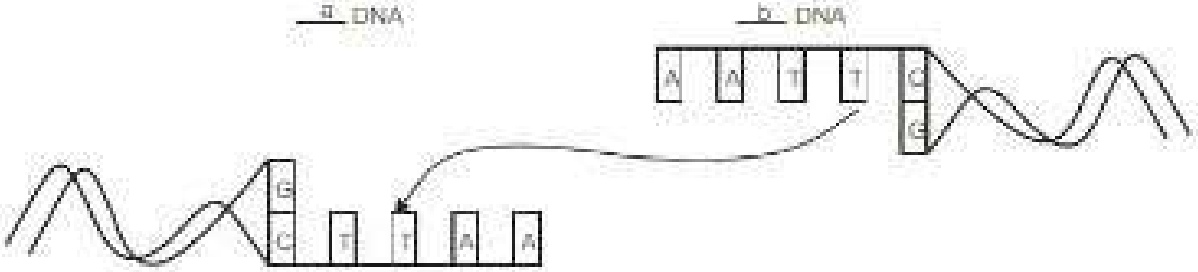
The male fruit fly and female fowl are heterogametic while the female fruit fly and the male fowl are homogametic. Why are they called so?

12. Why is using tobacco in any form injurious to the health? Explain.

13. Differentiate between a detritivore and a decomposer giving an example of each.

14. A mother of one year old daughter wanted to space her second child. Her doctor suggested CuT. Explain its contraceptive actions.

15.



Study the linking of DNA fragments shown above:

(i) Name 'a' DNA and 'b' DNA.

(ii) Name the restriction enzyme that recognises this palindrome.

(iii) Name the enzyme that can link these two DNA fragments.

16. What is divergent evolution? Explain taking an example of plants.

17. Name the blank spaces a, b, c and d in the table given below:

Type of Microbe	Name	Commercial Product
Fungus	a	Penicillin
Bacterium	*Acetobacter aceti*	b
c	*Aspergillus niger*	Citric acid
Yeast	d	Ethanol

18. Thermal power plants are inevitable in an industrial and densely populated country like ours. What harm do they do to the environment? Also mention any precaution that could be taken to save our environment.

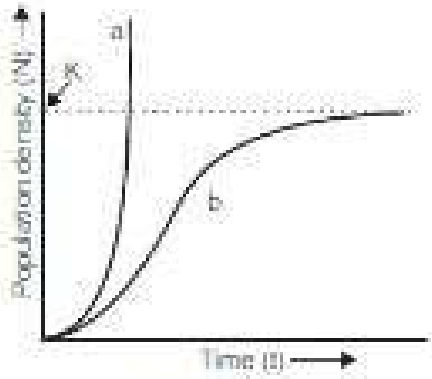
SECTION–C

19. Draw a labelled diagram of the microscopic structure of a human sperm.

20. Expand MOET. Explain the procedure of this technology in cattle improvement.

21. One of the codons on *m*RNA is AUG. Draw the structure of tRNA adapter molecule for this codon. Explain the uniqueness of this tRNA.

22. Study the population growth curves in the graph given below and answer the questions that follow:



(i) Identify the growth curves 'a' and 'b'.

(ii) Which one of them is considered a more realistic one and why?

(iii) If $\frac{dN}{dt} = rN\left(\frac{K-N}{K}\right)$ is the equation of the logistic growth curve, what does K stand for?

(iv) What is symbolised by N?

23. How and why is the bacterium *Thermus aquaticus* employed in recombinant DNA technology? Explain.

OR

(a) What are "molecular scissors"? Give one example.

(b) Explain their role in recombinant DNA technology.

24. Given below is a part of the template strand of a structural gene:

TAC CAT TAG GAT

(a) Write its transcribed mRNA strand with its polarity.

(b) Explain the mechanism involved in initiation of transcription of this strand.

25. (i) How and at what stage does *Plasmodium* enter into a human body?

(ii) With the help of a flow-chart, only show the stages of asexual reproduction in the life cycle of the parasite in the infected human.

(iii) Why does the victim show symptoms of high fever?

26. It has been recorded that the temperature of the earth's atmosphere has increased by 0.6°C.

(a) What has caused this increase?

(b) Explain its consequences.

27. Explain the pattern of inheritance of haemophilia in humans. Why is the possibility of a human female becoming a haemophilic extremely rare? Explain.

SECTION–D

28. Draw a labelled diagram of the sectional view of a mature pollen grain in angiosperms. Explain the functions of its different parts.

OR

Give a schematic representation of oogenesis in humans. Mention the number of chromosomes at each stage. Correlate the life phases of the individual with the stages of the process.

29. (a) Mention the role of vectors in recombinant DNA technology. Give any two examples.

(b) With the help of diagrammatic representation only, show the steps of recombinant DNA

OR

(a) What is plasmid?

(b) What is meant by ADA deficiency? How is gene therapy a solution to this problem? Why is not a permanent cure?

30. Explain Hershey-Chase experiment. What was proved through this experiment?

OR

(a) A true breeding pea plant, homozygous for inflated green pods is crossed with another pea plant with constricted yellow pods (ffgg). What would be the phenotype and genotype of F_1 and F_2 generations? Give the phenotype ratio of F_2 generation.

(b) State the generalisation proposed by Mendel on the basis of the above mentioned cross.