



INDIAN SCHOOL SOHAR  
PRE-BOARD EXAM-2018  
BIOLOGY

No Of Printed Pages:4

STD XII

Marks:70

16.1.18

Time:3Hrs

General Instructions:-

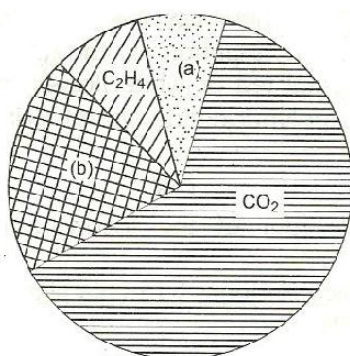
- (i) This question paper consists of five sections **A, B, C, D and E**. Section **A** contains **5** questions of **1** mark each, section **B** is of **5** questions of **2** marks each, section **C** is of **12** questions of **3** marks each, Section **D** contains **1** question of **4** marks and section **E** is of **3** questions of **5** marks each.
- (ii) All questions are compulsory.
- (iii) There is no overall choice. However, an internal choice is provided in one question of **2** marks, one question of **3** marks and all questions of **5** marks weightage. Attempt only **one** of the choices in such questions.
- (iv) Questions of section **A** are to be answered in one word or one sentence each, section **B** in approximately 20-30 words each, section **C** in 30-50 words each and section **D** in 30-40 words and section **E** in 80-120 words each.
- (v) Wherever necessary, the diagrams drawn should be neat and properly labeled.

**SECTION-A**

1. How would an organism reproduce if syngamy fails to occur? Give an example. 1
2. Why in a test cross did Mendel cross a tall pea plant with a dwarf pea plant only? 1
3. What is significance of DNA polymorphism? 1
4. Why do the toxic insecticidal proteins secreted by *Bacillus thuringiensis* kill the insect and not the bacteria itself? 1
5. Why is an antibody represented as 'H<sub>2</sub>L<sub>2</sub>'? 1

**SECTION-B**

6. Give a brief account of four factors that affect the genetic equilibrium. 2
7. The figure given below shows relative contributions of various greenhouse gases to the total global warming. 2



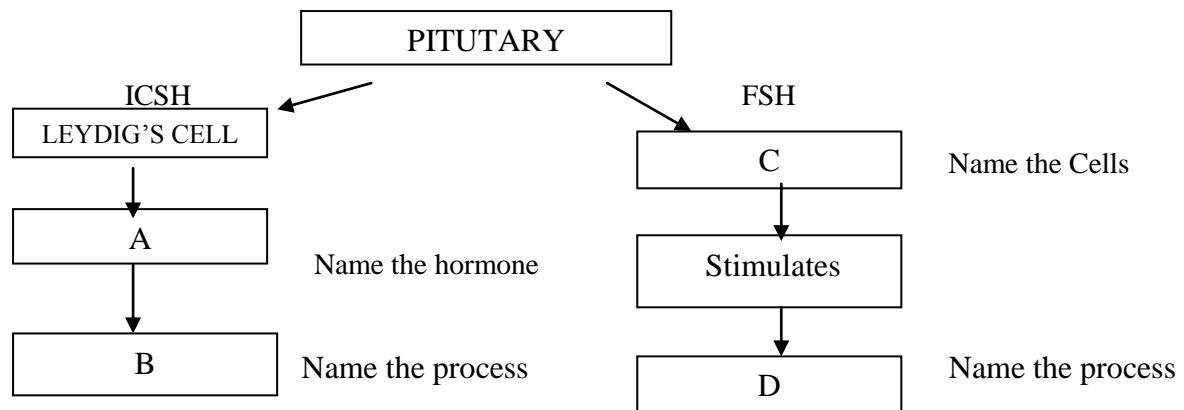
- (a) Name the gases (a) and (b).
- (b) Refrigerants are considered to be a necessity in modern living, but are said to be responsible for ozone holes. Justify.

**OR**

How do bears and zooplanktons avoid stressful conditions? Why is polar region not a suitable habitat for tiny humming birds?

8. Early detection of cancer is essential for successful treatment. Briefly explain two techniques used in detecting cancers of internal organs. 2

9. List any two situations when a doctor would recommend injection of performed antibodies into the body of a patient. Name this kind of immunization. 2
10. Given below is an incomplete chart showing influence of hormones on gametogenesis in males. Observe the flow chart carefully and fill in the blanks A, B, C and D. 2



### SECTION-C

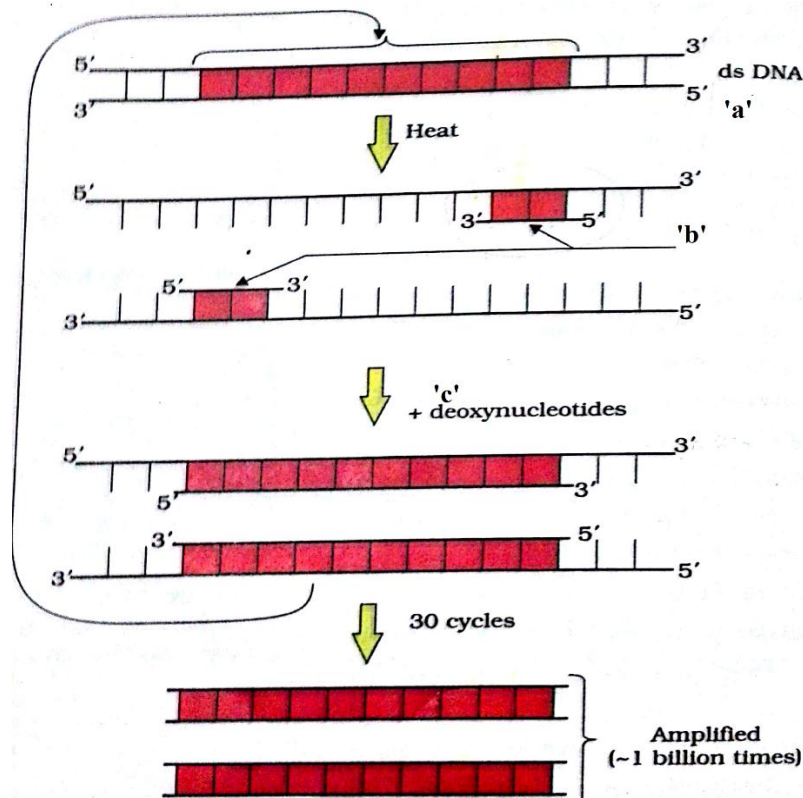
11. Explain, three devices developed by flowering plants to discourage inbreeding depression and to encourage cross-pollination. 3
12. Draw a neat diagram of the sectional view of the female reproductive system and label the following parts : 3
- (i) the last part of the oviduct, (ii) the cavity of the cervix,  
 (iii) the birth canal, (iv) the inner glandular wall of the uterus.
13. Stanley Miller and Harold Urey performed an experiment by recreating lab conditions similar to the probable conditions of the atmosphere of the primitive earth. 3
- (a) Whose theory was put to test?  
 (b) Enumerate the energy sources on primitive earth, and those supplied for the chemical reactions to occur under lab conditions.  
 (c) What was the inference drawn from this experiment?
14. DNA separated from one cell, when introduced in another cell, is able to bestow some of the properties of the former to the latter. 3
- (a) Give the technical term for the above change.  
 (b) Describe the experimental evidence which led to the discovery that DNA is the genetic material.
15. (a) Four children with different blood groups are born to parents where the mother has blood group 'A' and the father has blood group 'B'. Work out the cross to show the genotypes of the parents and all four children. 3
- (b) Explain the contribution of Alfred Sturtevant in 'Chromosome mapping'.

**OR**

HGP was called a mega project launched in 1990. List six salient observations drawn from it.

16. How can the following be made possible for biotechnological experiments? Explain briefly. 3
- (a) Isolation of DNA from a bacterial cell.  
 (b) Obtaining a recombinant protein in large scale.
17. (a) Name the nematode that infests and damages tobacco roots. 3
- (b) How are transgenic tobacco plants produced to solve this problem?
18. The use of biocontrol measures will greatly reduce our dependence on toxic chemicals and pesticides. Justify this statement by citing three examples.

19. Breeding of animals is an important aspect of animal husbandry. What is inbreeding depression? Mention the advantages of inbreeding in cattle. How can it be overcome? 3
20. HUM 468 is an improved variety developed by hybridization, the release of this variety took twelve years. Enumerate the steps that are essentially carried out in developing a disease resistant variety of crop under plant breeding programme. 3
21. A schematic representation of polymerase chain reaction is given below. Answer the questions that follow: 3



- (a) Name and explain the process 'a'.  
 (b) Identify 'b' and mention its role.  
 (c) How is 'c' achieved? Mention the importance of 'c' in PCR.
22. Where would you expect more species diversity - in the tropics or in the polar region? Give reasons to support your answer. 3

#### SECTION-D

23. The air quality in Delhi and National Capital Region (NCR) is one of the worst in the world, as per a WHO survey of 1600 world cities. Two other cities in India that have worse air quality than Delhi includes - Gwalior in Madhya Pradesh, and Raipur in Chhattisgarh. Air pollution in India is the fifth largest killer and it is estimated to kill 1.5 million people every year. In Delhi, poor quality air damages irreversibly the lungs of 2.2 million or 50 percent of all children. In November 2016, in an event known as the Great smog of Delhi, the air pollution spiked far beyond acceptable levels. Levels of PM 2.5 and PM 10 particulate matter hit 999 micrograms per cubic meter, while the safe limits for those pollutants are 60 and 100 respectively. 4
- (a) How is particulate matter in the air harmful to human health?  
 (b) All the buses of Delhi were converted to run on CNG by the end of 2002. Why is CNG considered a better fuel in automobiles.  
 (c) As responsible citizens what steps can we take to control vehicular emissions?

## SECTION-E

24. (a) Explain, the Phosphorus cycle in an ecosystem with a neat labeled diagram. 5  
(b) The pyramid of energy is always upright, can never be inverted, but the pyramid of biomass in sea is generally inverted. Give reason.

**OR**

- (a) Suggest two deleterious effects of the following human activities on man and his environment.  
(i) Agro-chemicals to the aquatic system.  
(ii) UV radiations on humans.  
(iii) Deforestation.  
(b) How is the 'Sixth Episode Of Extinction' of species on earth, presently in progress different from the previous episodes? How does loss of biodiversity affect a geographical region?

25. (a) Explain the role of DNA dependent RNA polymerase during transcription in a bacterial cell. 5  
(b) In eukaryotes, there are two additional complexities. What are the significances of such complexities?

**OR**

- (a) Who were the first to elucidate a transcriptionally regulated system?  
(b) Give a schematic representation and explain, the regulation of *lac* operon by repressor is referred to as negative regulation.

26. (a) Enumerate the events involved in the development of the female gametophyte. 5  
(b) Development of the female gametophyte is termed as monosporic in flowering plants. Give reason.

**OR**

- (a) A woman has conceived and implantation has occurred within her uterus. What are the major features of embryonic development at various months of pregnancy?  
(b) Breast feeding during the initial period of infant growth is recommended by doctors. Justify.

\*\*\*\*\*THE END\*\*\*\*\*