



INDIAN SCHOOL SOHAR  
SECOND TERM EXAM-2017  
BIOLOGY

No Of Printed Pages:4

STD XII  
28.11.17

Marks:70  
Time:3Hrs

**General Instructions:-**

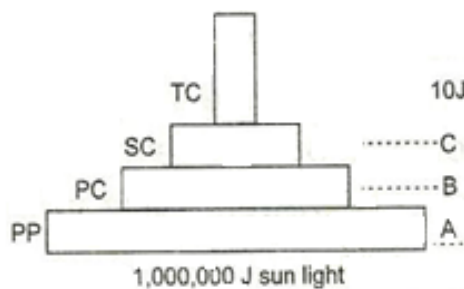
- (i) This question paper consists of five sections **A, B, C, D and E**. Section **A** contains **5** questions of **1** mark each, section **B** is of **5** questions of **2** marks each, section **C** is of **12** questions of **3** marks each, Section **D** contains **1** question of **4** marks 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. State the 'Competitive Exclusion Principle'. 1
2. Why is Agrobacterium mediated genetic transformation described as natural genetic engineer in plants? 1
3. In paddy fields, cyanobacteria serve as an important biofertiliser. Justify 1
4. The possibility of a female becoming haemophilic is extremely rare. Give reason. 1
5. What is the relationship between the number of chromosomes of meiocytes and gamete? 1

**SECTION-B**

6. Diagrammatically show the formation of pollen grains from a microspore. 2
7. Study the given figure and answer the following: 2



- (a) What is the amount of energy available at A, B and C?
- (b) Pyramid of energy is always upright. Give reason.

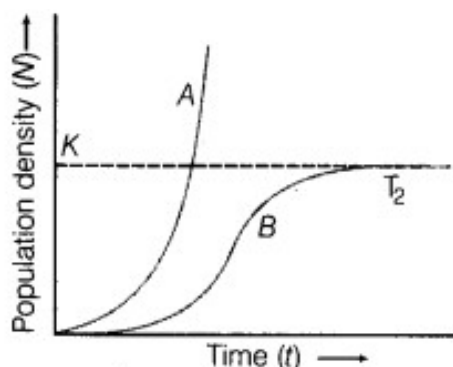
**OR**

Differentiate between mutualism and commensalism, giving one example of each.

8. Differentiate between pleiotropy and multiple allelism, with an example each. 2
9. A wide range of pathogens, affect the yield of cultivated crop species, especially in tropical climates. What are the advantages of breeding disease resistant plants? 2
10. Some microorganisms are being grown as human food. Cite two examples and give two advantages of such microbes to mankind. 2

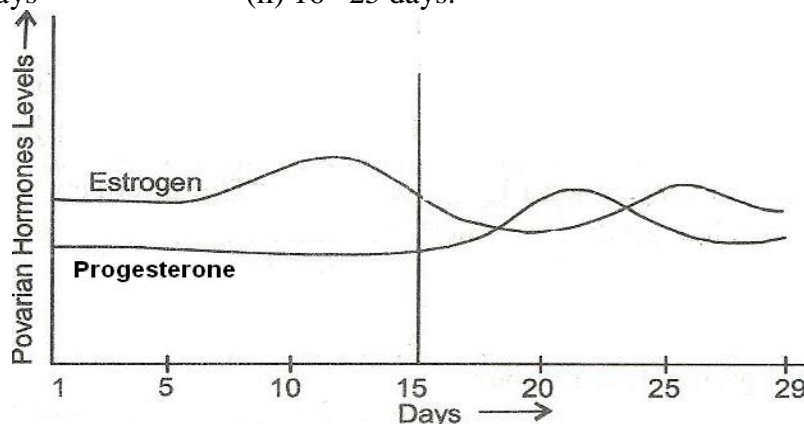
### SECTION-C

11. (a) Ecological succession tends to progress from unstable biotic community to stable biotic community. Trace the succession of plants in a water body. 3  
 (b) Secondary succession is faster than primary succession. Give reason.
12. Study the graph given below and answer the following: 3



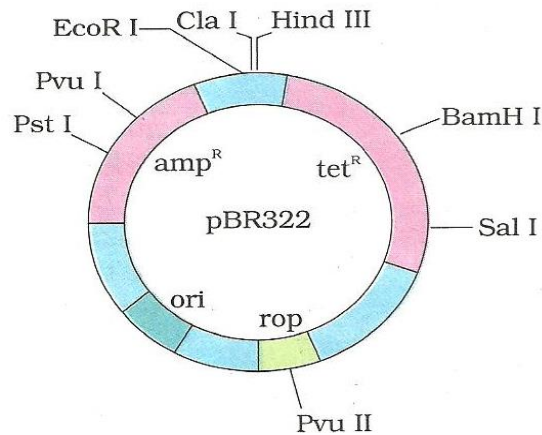
- (a) Identify the growth curves 'A' and 'B'  
 (b) Which one of the two curves is considered to be more realistic and why?  
 (c) Give the equation for 'B'. What does 'K' denote in the equation?
13. (a) Draw a neat labelled diagram of a biogas plant. 3  
 (b) How can sewage be used to generate biogas?
14. Darwin's finches, Australian marsupials and placental mammals are suitable examples of adaptive radiation and convergent evolution. Explain giving reasons. 3
15. DNA fingerprinting is a quick way to compare the DNA sequences of any two individuals. 3  
 (a) Enumerate the steps involved in DNA fingerprinting analysis.  
 (b) Mention the role of SAT chromosomes in DNA fingerprinting.
16. (a) What is point mutation? Give an example. 3  
 (b) Point out any two similarities between the behavior of genes and that of chromosomes.
17. (a) How do cellular barriers and cytokine barriers provide innate immunity in humans? 3  
 (b) Cancer patients given substances called biological response modifiers. Justify.
18. (a) Study the graph given below showing the level of ovarian hormones during menstruation and correlate the uterine events that take place according to the hormonal levels. 3

(i) 6 - 15 days (ii) 16- 25 days.



- (b) Mention the principle that works behind the following contraceptive methods.  
 (i) Barrier methods (ii) IUDs.
19. (a) Name the respective forms in which the malarial parasite gains entry into: 3  
 (i) human body (ii) body of female anopheles.  
 (a) Where does the sexual and asexual reproduction take place respectively?  
 (b) Why do the symptoms of malaria occur periodically?

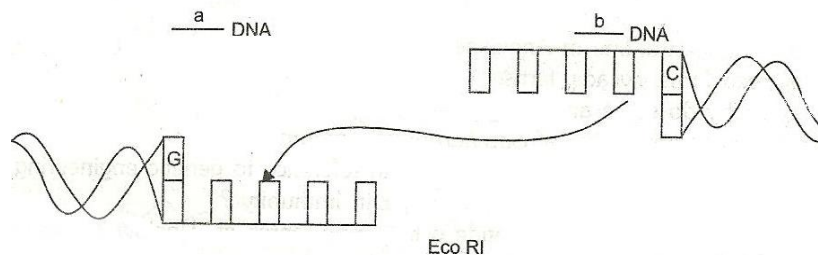
20. How is a bacterial cell made 'competent' to take up the DNA which cannot pass through the cell membranes? 3
21. Gene therapy allows the correction of a defective gene that has been in a child or embryo. Illustrate this taking an example. 3
22. Study the figure of *E.coli* cloning vector pBR322 shown below, and answer the following: 3



- (a) Identify the selectable markers in the diagram of *E.coli* vector shown above.
- (b) How is the coding sequence of B-galactosidase considered a better marker than the ones identified by you in the diagram? Explain

**OR**

The following figure depicts the linking of DNA fragments:



- (a) Name 'a' DNA and 'b' DNA in the above figure.
- (b) Name the restriction enzyme that: (i) can recognize the specific nucleotide sequence shown in the DNA strand, (ii) links these two DNA fragments.
- (c) What are the nucleotide sequences in the DNA that each restriction enzyme can recognize called and name them?

### SECTION-D

23. On a typical day on planet earth we will lose our rainforests, deserts, biodiversity etc. as a result of human mismanagement and overpopulation. We will lose 40 to 100 species and no one knows whether the number is 40 or 100. Today we will add 2700 tons of CFC's and 15 million tons of carbon to the atmosphere. Tonight the earth will be a little hotter the waters more acidic and the fabric of life more threadbare. The truth is that many things on which our future depends on are in dire jeopardy. It is worth noting that this is all due to human activities. 4
- (a) Name the phenomenon that has led to considerable heating of the earth's surface.
- (b) Enumerate two expected effects of these human activities.
- (c) As individuals, mention two steps that you would take to minimize this, in order to ensure the well-being of our future generations.

## SECTION-E

24. (a) Outline the salient features of Carbon cycling in an ecosystem. 5  
(b) Decomposition is an oxygen requiring process. List the important steps in the process of decomposition.

**OR**

- (a) The accelerated rates of species extinctions that the world is facing now are largely due to human activities. Explain, the four major causes of biodiversity losses citing examples.  
(b) A particular species of wild cat is endangered. In order to save them from extinction, which is a desirable approach *in situ* or *ex situ*? Justify your answer and give one difference between the two approaches.
25. (a) Explain the process of aminoacylation of tRNA. Mention its role in translation. 5  
(b) Describe 'initiation' and 'termination' phases of protein synthesis.  
(c) What are untranslated regions? Give its significance.

**OR**

"It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material".(Watson and Crick,1953).

- (a) What does this scheme suggest?  
(b) How was this experimentally proved using E.coli?  
(c)What conclusion can be drawn from the above experiment?
26. (a) Explain the events after pollination leading to the formation of a seed in angiosperms. 5  
(b) Seed is the basis of our agriculture. Mention two advantages seeds offer to angiosperms.

**OR**

- (a) Explain the changes that occur in an ovum during fertilization.  
(b) STDs are a major threat to a healthy society. Name two STDs caused by bacteria. State three principles to be followed to be free of these infections.

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