

**APEEJAY SCHOOL, SHEIKH SARAI**  
**FIRST TERM EXAMINATION, 2019-20**

**SS-20**

**CLASS-XI**  
**BIOTECHNOLOGY**

*Time allowed : 3 Hrs.*

**M.M. : 70**

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**General Instructions :**

1. *All questions are compulsory.*
  2. *Question paper consists of 4 sections A, B, C, and D*
  3. *Questions numbers 1 to 15 are very short questions carrying 1 mark each.*
  4. *Questions numbers 16 to 22 are short answer questions carrying 2 marks each.*
  5. *Questions numbers 23 to 29 are also short answer questions carrying 3 marks each.*
  6. *Questions numbers 30 to 33 are long answer questions carrying 5 marks each.*
  7. *Use of calculator is not allowed. However you may use long tables if necessary.*
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**SECTION-A**

1. What is the starting point of DNA replication? \_\_\_\_\_
2. When and where does replication occur? \_\_\_\_\_
3. What are three nucleotides together called on mRNA? (ie: ACA) \_\_\_\_\_
4. The mRNA codons can be used in a chart of find: \_\_\_\_\_
5. What molecule contains an anti-codon? \_\_\_\_\_
6. Translation takes place in the \_\_\_\_\_ on a \_\_\_\_\_.
7. Transcription and translation together is the process of \_\_\_\_\_
8. Define an International unit of enzyme activity.
9. Where is ciliated epithelium present in humans? Write down its function.
10. In which stage of prophase I crossing over takes place?
11. What are the traits governed by several genes known as?

Directions : Complete each sentence.

12. Guanine, cytosine, thymine, and \_\_\_\_\_ are the four \_\_\_\_\_ in DNA.
13. In DNA guanine always forms hydrogen bonds with \_\_\_\_\_.

**P.T.O.**

14. The process of \_\_\_\_\_ produces a new copy of an organism's genetic information, which is passed on to a new cell.
15. The double coiled, "staircase" shape of DNA is called a \_\_\_\_\_

#### SECTION-B

16. What is the importance of biodiversity on ecosystem?
17. Write down the names of the organelle along with their function
  - (a) Suicidal bag of the cell
  - (b) powerhouse of the cell
18. What are different conformations of DNA? which form predominates in nature?
19. Mention the role of proteins in plasma membrane.
20. Write a short note on apomixis

Or

What do you mean by PCD? What is its significance?

21. Draw and label immunoglobulin molecule.
22. Write a short note on plastids.

#### SECTION-C

23. Differentiate between totipotent, pluripotent and multipotent stem cells.
24. (a) What are nucleosomes?
  - (b) How are ribosomes of prokaryotes different from those of eukaryotes?

Or

What do you mean by cytoskeleton? How are microfilaments different from microtubules?

25. Explain briefly different stages in development of animals.
26. (a) Why there is a need to regulate water in the body?
  - (b) How is water regulated in different animals and plants?
27. Explain how a muscular tissue is specialised to carry out contraction. Support your answer with a diagram.
28. How do plants defend themselves? (any 3 points)
29. Draw a dihybrid cross to prove law of independent assortment.

#### SECTION-D

30. (a) Draw and label cell cycle.
  - (b) How is cell cycle regulated? Explain in detail.

Or

- (a) What are mutations?
- (b) Write down types of genome mutations.
- (c) How are transitions different from transversions?

31. (a) With the help of labelled diagrams explain various stages of mitosis

Or

Explain prophase I of meiosis with the help of labelled diagrams

- 32. How is pathogen killed when it enters the human body? Name and explain the primary and secondary lymphoid organs.
- 33. Write down prominent features of genetic code.



Roll No.	
Name	
Class & Section	

**APEEJAY COMMON ANNUAL EXAMINATION, 2019-20**

**BIOTECHNOLOGY**

**Time Allowed : 3.00 Hrs.**

**Class – XI**

**Maximum Marks : 70**

**General instructions :**

- (i) *All the questions are compulsory.*
- (ii) *Read each question carefully and answer to the point.*
- (iii) *Section-A contains question numbers 1-12 that carry one mark each.*
- (iv) *Section-B contains short answer questions with numbers 13- 19 that carry two marks each.*
- (v) *Question numbers 20-26 belong to section C. They carry three marks each.*
- (vi) *Section-D contains question numbers 27- 30 that carry five marks each.*
- (vii) *There is no overall choice however internal choices have been given in all the sections. Students need to answer any one of the choices in those cases.*

**Section-A**

1. Name an imino acid. Which group is present in it?
2. Name the first protein to be sequenced. Who invented a sequencing technique which has been automated?
3. How is mitosis different from meiosis?
4. Define synapsis.

**OR**

Write any two examples of autosomal recessive inheritance.

5. Name the enzyme that synthesizes RNA primer.
6. Why sucrose is not a reducing sugar?

**OR**

What is the complementary sequence of the following stretch of DNA?

5' TTGGCAGCTA 3'

7. Define auxotrophic mutations.

OR

What does the term residue denote?

8. In evolutionary terms, we have more in common with

- |                          |                  |
|--------------------------|------------------|
| (a) a spider             | (b) a chimpanzee |
| (c) a Chinese school-boy | (d) a mouse      |

9. Asexual reproduction takes place through budding in

- |            |                  |
|------------|------------------|
| (a) Amoeba | (b) yeast        |
| (c) hydra  | (d) both b and c |

10. The breakdown of pyruvate to give carbon-di-oxide, water and energy takes place in

- |                 |                  |
|-----------------|------------------|
| (a) cytoplasm   | (b) mitochondria |
| (c) chloroplast | (d) nucleus      |

11. The autotrophic mode of nutrition does not require

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|--------------|---------------------|
| (a) sunlight | (b) chlorophyll     |
| (c) proteins | (d) carbon-di-oxide |

12. (i) The xylem in plants is responsible for

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|------------------------------|-------------------------|
| (a) transport of amino acids | (b) transport of oxygen |
| (c) transport of water       | (d) transport of food   |

(ii) Mode of nutrition in amoeba is

- |                 |                 |
|-----------------|-----------------|
| (a) hoozoic     | (b) saprophytic |
| (c) autotrophic | (d) parasitic   |

(iii) Which of the following is an autosomal recessive trait

- |                         |                      |
|-------------------------|----------------------|
| (a) hair colour         | (b) colour blindness |
| (c) sickle cell anaemia | (d) haemophilia      |

(iv) A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bore violet flowers, but almost half of them were short. This suggests that the genetic make-up of tall parent can be depicted as

(a) TTWW

(b) Ttww

(c) TtWW

(d) TtWw

### Section-B

13. How do enzymes differ from inorganic catalysts?

14. Draw and label cell cycle.

OR

Define apoptosis. How is it different from necrosis?

15. Write down any two traditional fermented foods of both north India and western region of India.

16. Draw a labelled diagram of immunoglobulin.

17. Differentiate between totipotent and pluripotent stem cells.

18. A patient is suffering from Xeroderma pigmentosum.

(a) What is the cause and effect of this disease?

(b) Is this disease dominant or recessive?

OR

Explain how a muscular tissue is specialised to carry out contraction? Support your answer with a diagram.

19. Write down the events taking place during the Pachytene.

OR

Name the bond that joins amino acids to form a protein. Name the bond formed between the 3' C-OH of one deoxyribonucleotide and 5' phosphate residue of an adjacent deoxyribonucleotide.

### Section-C

20. Differentiate between the following processes
- fermentation and respiration
  - homo and heterofermentation
  - glycolysis and TCA cycle
21. Why is transport system of plants called vascular system and not circulatory system.

OR

Write the kinds of reactions involved in photosynthesis.

22. Write down the major features of Watson & Crick model of DNA structure.
23. Explain the methods by which genetic recombination occurs in bacteria.
24. (a) Which animals do not possess an immune system?  
(b) What are lymphoid organs. Explain in detail.
25. What are differences between DNA and RNA

OR

Differentiate between microtubules and microfilaments.

26. How does active defence take place in plants?

### Section-D

27. (a) Differentiate between
- nuclear genes and cytoplasmic genes
  - oligogenes and polygenes
  - uniparental and biparental inheritance
- (b) How is precursor RNA processed in the nucleus?

OR

- What are mutations?
- Write down types of genome mutations.
- How are transitions different from transversions?

28. Write down prominent features of genetic code.
29. How are genes regulated? Explain this regulation in prokaryotes.

**OR**

- (a) What are different mechanisms of DNA repair? Explain with the help of diagrams
- (b) What happens in case of (genetic constitution as well as effects)
- (i) Klinefelter syndrome
  - (ii) Turner's syndrome
  - (iii) Down syndrome
30. Write down the mechanism of translation. Explain with the help of labeled diagram.