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(Pages : 2)

Name.....

Reg. No.....

**FIFTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
NOVEMBER 2025**

Botany

BOT 5B 09—CELL BIOLOGY AND BIOCHEMISTRY

(2019 Syllabus)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer all questions.**Each question carries 2 marks.**Ceiling : 20 Marks.*

1. What is prokaryotic cell ?
2. Write the function of golgi complex.
3. Differentiate nucleus and nucleolus.
4. Find the significance of mitosis
5. What is Aneuploidy ?
6. Define polytene chromosomes.
7. What are the significance of secondary metabolites ?
8. What are Macromolecules ? Give examples.
9. What are the functions of nucleotides ?
10. What is allosteric enzymes ?
11. Note the biological functions of proteins.
12. What is the process of metabolic intermediates ?

Turn over

Section B

*Answer all questions.
Each question carries 5 marks.
Ceiling : 30 Marks.*

13. Describe the structure of mitochondria with neat sketches.
14. Brief account on nuclear membrane.
15. What are the chromosomal changes of structural aberrations ?
16. Find the chemical composition and organization of chromosomes.
17. Describe the structure and functions of simple sugars and compound carbohydrates.
18. Explain the native conformation and biological functions of proteins.
19. A brief account of secondary metabolites.

Section C

*Answer any one question.
The question carries 10 marks.*

20. What are the structure and function of Endoplasmic reticulum and Golgi complex with neat sketches ?
21. Write an essay on enzymes classification and their mechanism of enzyme action.

(1 × 10 = 10 marks)

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NOVEMBER 2024**

Botany

BOT 5B 09—CELL BIOLOGY AND BIOCHEMISTRY

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer all questions.**Each question carries 2 marks.**Ceiling : 20 Marks.*

1. Mitochondria is the power house of the cell, why ?
2. What is Vacuole ? Comment on its functions.
3. Distinguish between polyploidy and aneuploidy.
4. What are Lipids ? Give an example for simple lipids.
5. Which are the different phases of interphase ? Comment on its significance.
6. What are the significance of crossing over ? Name the meiotic stage at which it happens.
7. Write the roles of centrioles in a cell.
8. Define Nucleotide. What are its components ?
9. What is Coenzyme ? Give an example.
10. What are Dipeptides ?
11. Name the major classes of enzymes based on IUB nomenclature.
12. How does monosaccharide differ from oligo saccharide ?

Turn over

Section B

*Answer all questions.
Each question carries 5 marks.
Ceiling : 30 Marks.*

13. Draw the structure of chromosome and explain the various types of chromosomes based on morphology.
14. With a suitable labelled diagram, explain the fluid mosaic model of plasma membrane.
15. Explain the types of enzyme inhibition.
16. With a labelled diagram, explain the structure and significance of polytene chromosome.
17. Write an account on secondary metabolites in plants and their roles.
18. Describe the structural levels of proteins. Give any one example for each.
19. Explain the classification of amino acids.

Section C

*Answer any one question.
The question carries 10 marks.*

20. Explain the various phases of mitosis with labelled diagram of each stage. Mention its significance.
21. Write an essay on the classification and chemistry of carbohydrates.

(1 × 10 = 10 marks)

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NOVEMBER 2023**

Botany

BOT 5B 09—CELL BIOLOGY AND BIOCHEMISTRY

(2019 Admission onwards)

Time : Two Hours

Maximum : 60 Marks

Section A*Answer all questions.**Each question carries 2 marks.**Ceiling : 20 Marks.*

1. What is Interphase ? Mention its significance.
2. Draw the labelled diagram of mitochondria.
3. Differentiate between rough and smooth endoplasmic reticulum.
4. What are complex lipids ? Give an example.
5. Name the meiotic stage at which crossing over happens. Mention the genetic effects of crossing over.
6. What is Mitosis ? Mention its significance.
7. What are the functions of vacuoles in a cell ?
8. What is fatty acid ? Give an example for saturated fatty acid.
9. What is Isozyme ? Give an example.
10. Define Dipeptide.
11. Differentiate between active site and allosteric site.
12. What are poly saccharides ? Give an example.

Turn over

Section B

Answer all questions.

Each question carries 5 marks.

Ceiling : 30 Marks.

13. With a suitable diagram, explain the fluid mosaic model of plasma membrane.
14. Discuss the numerical aberrations of chromosomes.
15. Describe the important events that occur during prophase-1 of meiosis.
16. Write an account on secondary metabolites in plants and discuss their roles.
17. Briefly explain the structural levels of proteins.
18. Write a note on classification of carbohydrates with examples.
19. How do you classify amino acids.

Section C

Answer any one question.

The question carries 10 marks.

Ceiling : 10 Marks.

20. Explain the structure and functions of special types of chromosomes.
21. Discuss the mechanism of enzyme action and the factors which influences it. Describe the various ways of enzyme inhibition.

(1 × 10 = 10 marks)