

ZOO 501.1

Reg. No.

CREDIT BASED FIFTH SEMESTER B.Sc. DEGREE EXAMINATION – OCTOBER 2013

ZOOLOGY (OPTIONAL)

CELL BIOLOGY, MOLECULAR BIOLOGY, GENETIC ENGINEERING

Duration: 3 hours

Max marks: 80

Note: Answer any **TEN** Questions from Part-A

Answer **SIX** questions from Part-B choosing any two questions from each unit.

PART A

I. Answer any **TEN** of the following:

2x10=20

1. Name any two functions of lysosome.
2. What is symport?
3. Name the types of chromosomes based on the position of centromere.
4. Mention any two functions of microtubules.
5. What is sarcoma? Give an example.
6. What is a tetrad stage?
7. Mention the significance of mitosis.
8. What is heterokaryon?
9. Write the chemical structure of Adenine.
10. What is gene cloning?
11. What is a triplet code? Mention an example.
12. Define the term splicing.

PART-B

UNIT-I

- II. a) Explain the ultrastructure of the chromosome based on the nucleosome model. 07
- b) Explain the terms – Impermeable, Semi-permeable and selectively permeable membranes. 03
- III. a) What are giant chromosomes? Give an account of the structure and function of Lampbrush chromosomes. 07
- b) Write short notes on desmosomes. 03

- IV. a) What are intermediate filaments? Describe their structural organization. 05
b) Write short notes on active transport. 05

UNIT-II

- V. a) Enumerate the characteristics of cancer cells with an illustration. 07
b) Draw a neat labeled diagram of Diplotene stage of Meiosis-I 03

- VI. a) Explain nucleocytoplasmic interactions in Acetabularia to demonstrate differentiation. 07
b) Write short note on biological carcinogens. 03

- VII. a) Write short notes on Vitamins as protective agents against cancer. 05
b) Write short notes on mitotic inhibitors. 05

UNIT-III

- VIII. a) Give a brief account of enzymes of DNA replication. 07
b) Mention the functions of different types of RNA. 03

- IX. a) What is a recombinant DNA? Explain briefly the technique involved in the production of recombinant DNA. 07
b) What are code, codon and anticodon? 03

- X. a) Write notes on gene library. 05
b) Explain the process of translation. 05



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CELL BIOLOGY, MOLECULAR BIOLOGY, GENETIC ENGINEERING

Duration: 3 hours

Max marks: 80

Note: Answer any TEN Questions from Part-A

Answer SIX questions from Part-B choosing any two questions from each unit.

PART A

I. Answer any TEN of the following:

2x10=20

13. What are giant chromosomes? Give an example.
14. Define antiport and symport?
15. Mention any two functions of microtubules.
16. What is cell differentiation?
17. What is malignant neoplasm?
18. What is amphiastral mitosis?
19. Mention the significance of mitosis.
20. What is crossing over?
21. What is Charagaff's rule?
22. Mention the function of helicase.
23. Name any two enzymes of DNA replication
24. What is a splicosome?

PART-B

UNIT-I

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|------|----|--|----|
| II. | a) | Explain the types, nature and functions of heterochromatin. | 07 |
| | b) | Name any two cell organelles and their respective functions. | 03 |
| III. | a) | Write a note on the chemical composition of the plasma membrane. | 07 |
| | c) | Write short notes on gap junctions. | 03 |
| IV. | a) | Explain the nucleosome model of chromosomes. | 05 |
| | b) | What are microfilaments? Explain their structural organization. | 05 |

UNIT-II

- V. a) Enumerate the characteristics of cancer cells with an illustration. 07
b) Write a note on mitotic inhibitors. 03
- VI. a) With the aid of labeled diagrams. Explain prophase-I of meiosis 07
b) Write short notes on vitamin C as protective agents against Cancer. 03
- VII. a) Explain nucleo-cytoplasmic interactions in Acetabularia to demonstrate nucleocytoplasmic interactions. 05
c) Explain the cell cycle with an illustration. 05

UNIT-III

- VIII. a) What is PCR? Explain the various stages of PCR technique. 07
c) What are the requirements of protein biosynthesis. 03
- IX. a) Give a brief account of transcription. 07
b) What is semi-conservative method of DNA replication. 03
- X. a) Write a note on gene library. 05
b) Explain the chemical components of a nucleotide. 05

CREDIT BASED FIFTH SEMESTER B.Sc. DEGREE EXAMINATION OCTOBER 2016

ZOOLOGY**CELL BIOLOGY, MOLECULAR BIOLOGY, GENETIC ENGINEERING**

Duration: 3 hours

Max Marks: 80

Note: Answer any TEN Questions from Part-A**Answer SIX questions from Part-B choosing any two questions from each unit.****PART A****I. Answer any TEN of the following: 10x2=20**

1. Mention the functions of Centrosome.
2. Write two differences between euchromatin and heterochromatin
3. Define active transport.
4. Mention any two functions of intermediate filaments.
5. Differentiate between benign and malignant tumours ?
6. What is heterokaryon?
7. Distinguish between Karyokinesis and cytokinesis.
8. Write a note on spindle formation.
9. Give the chemical structure of Adenine.
10. What is gene library?
11. What are code, codon and anticodon?
12. What is the role of m-RNA in protein biosynthesis.

PART-B**UNIT-I**

- | | | |
|---------|--|----|
| II. a) | Give an account of Morphology of eukaryotic chromosomes. Add a note on their different types based on the position of centrosome.? | 07 |
| b) | Give a brief account of Golgi complex. | 03 |
| III. a) | Explain the fluid mosaic model of plasma membrane. | 07 |
| b) | What are Balbiani rings? Write their significance. | 03 |
| IV. a) | Write a note on desmosomes. | 05 |
| b) | Describe the chemical composition and structural organization of microfilaments. | 05 |

UNIT-II

- V. a) With the aid of labeled diagram explain prophase of meiosis I. 07
b) Write short note on mitotic inhibitors. 03
- VI. a) Enumerate the characteristics of cancer cells. 07
b) Mention the significance of mitosis. 03
- VII. a) What is nucleocytoplasmic interaction? Explain Hammerling's experiments to demonstrate the same. 05
b) Write short note on vitamin A as a protective agent against cancer. 05

UNIT-III

- VIII. a) Give an account of DNA replication. 07
b) Draw a labeled diagrammatic representation of initiation complex during protein synthesis. 03
- IX. a) Explain the various stages of PCR technique. 07
b) Write short note on spliceosome. 03
- X. a) Enumerate the application of DNA fingerprinting. 05
b) What is molecular cloning? Explain the process with reference to recombinant DNA technology. 05
