S.No. 4571

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(For candidates admitted from 2016–2017 onwards)

M.Sc. DEGREE EXAMINATION, APRIL 2023.

Biochemistry – Elective

ECOLOGY AND ENVIRONMENTAL SCIENCES

Time : Three hours

Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. Define symbiosis.

2. Comment on Hydrosphere.

3. Write the concept of habitat and expansion of NICHE.

4. Define community ecology.

5. Define aquatic ecosystem.

6. What is ecological succession?

7. Define Environmental monitoring.

8. Comment on health impact of climate change.

9. Biosphere reserve — Interpret.

10. Recall the benefits of conservation.

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

11. (a) Write short note on inter relationship with living organism.

Or

(b) Briefly explain the Species interactions and Carnivores.

12. (a) Illustrate the community structure and attributes.

Or

(b) Write an account on niche width, overlap and its types.

13. (a) Illustrate Mineral cycling (P,S).

Or

(b) Elaborate the primary production and decomposition.

14. (a) Illustrated the Global environmental change.

Or

(b) Discuss about Biodiversity.

15. (a) Summarize the Biogeography of island.

Or

(b) Write notes on terrestrial biomes.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

16. Write account on population ecology and population characteristic.

17. Illustrate the levels of species diversity and its measurement.

18. Describe the structure and function of Terrestrial ecosystem.

19. Outline the environmental pollution and how it affects the environment.

20. Summarize the case studies on project tiger in India.

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M.Sc. DEGREE EXAMINATION, APRIL 2023

Biochemistry

ENDOCRINOLOGY

Time : Three hours　　　　　　　　Maximum : 75 marks

SECTION A — (10 × 2 = 20)

Answer ALL questions.

1. Define cretinism.

2. Write different type of hormones and locations of their receptors.

3. How are the thyroid hormones (T3 and T4) synthesized?

4. What are the effects of thyroid hormones on growth?

5. What is the action of aldosterone?

6. What is Addison's disease and its main features?

7. What is somatostatin?

8. List the tests of detection of pregnancy.

9. Write few examples where cGMP acts as second messenger.

10. What are signal receptors and signal molecules?

SECTION B — (5 × 5 = 25)

Answer ALL questions, choosing either (a) or (b).

11. (a) Describe the mode of action of parathormone.

Or

(b) Discuss the physiological role of oxytocin.

12. (a) Explain the role of parathyroid gland in calcium metabolism.

Or

(b) Highlight the diseases associated with hyperthyroidism.

13. (a) Write a note on congenital adrenal hyperplasia.

Or

(b) Discuss on Gushing syndrome.

14. (a) Describe the biological effects of estrogen and progesterone.

Or

(b) How hypogonadism affects?

15. (a) What are the different types of signalling? Explain.

Or

(b) Emphasize the importance of G-protein coupled receptors.

SECTION C — (3 × 10 = 30)

Answer any THREE questions.

16. Discuss in detail the hypothalamic hormones and their biochemical functions.

17. Describe the biosynthesis of thyroid hormones and their transport, mechanism of action inside the cell.

18. Classify adrenocortical hormones. Describe the function of glucocorticoids.

19. Organize the stages of menstrual cycle. What is the hormonal control of these stages?

20. Relate the role of cGMP, Ca++, IP3, DAG and NO as the second messengers in signal transduction.

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M.Sc. DEGREE EXAMINATION, APRIL 2023.

Biochemistry

BIOINFORMATICS

Time : Three hours   Maximum : 75 marks

PART A — (10 × 2 = 20)

Answer ALL the questions.

1. Define Bioinformatics?

2. Expand EBI.

3. Expand GOR.

4. What is Rosetta?

5. What is BLAST?

6. What is PAM and BLOSUM.

7. What is UNIX.

8. Mention the application of Rasmol.

9. Comment on human genome.

10. What is SWISS 2D PAGE database?

PART B — (5 × 5 = 25)

Answer ALL the questions, choosing either (a) or (b).

11. (a) Discuss about the applications of Bioinformatics.

Or

(b) Examine the network protocol, architecture, topology and utility in exploring Bioinformatics.

12. (a) How do you determine protein structure in Bioinformatics.

Or

(b) Write about Chou-Fasmann rules.

13. (a) Describe any four types of different biological databases.

Or

(b) Explain pairwise alignment with example.

14. (a) Write about the softwares RASMOL and Swiss PDB viewer in detail.

Or

(b) Write a note on CATH database.

15. (a) List of the achievements of Human genome project.

Or

(b) Examine principle and applications of microarray.

PART C — (3 × 10 = 30)

Answer any THREE questions.

16. Explain about classification of bioinformatics databases in detail.

17. Elucidate nucleic acid and protein sequence databases and their respective tools for exploration.

18. Explain about multiple sequence alignment in detail with example.

19. Explain about classification, alignment and analysis in SCOP and CATH.

20. Explain the role of bioinformatics in drug designing.

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