K22U 1535

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/ Improvement Examination, April 2022
(2019 Admission Onwards)
COMPLEMENTARY ELECTIVE COURSE IN BIOCHEMISTRY
4C04BCH : Biochemistry – IV

Time : 3 Hours Max. Marks : 32

SECTION – A

Answer **all** questions. **Each** question carries **1** mark. **(5×1=5)**

1. Define Vmax.
2. Give the chemical name of auxin.
3. Name the precursor of androgens.
4. Where is cytokinin synthesized ? In roots.
5. Why are enzymes called specific in nature ?

SECTION – B

Answer **any 4** questions. **Each** question carries **2** marks. **(4×2=8)**

6. Differentiate between cofactor and coenzyme.
7. Give the structure of T4.
8. What is R state and T state with reference to allosteric enzymes ?
9. State two functions of insulin.
10. How does an enzyme catalyze a biological reaction ?
11. Cite an example for application of enzyme in therapeutics.

P.T.O.

SECTION – C

Answer **any 3** questions. **Each** question carries **3** marks. **(3×3=9)**

12. How do you arrive at LB plot ?
13. List out three functions of gibberellins.
14. Briefly explain lock and key model.
15. Discuss the LB plot for noncompetitive inhibition.
16. How does pH and temperature affect enzyme activity ?

SECTION – D

Answer **any 2** questions. **Each** question carries **5** marks. **(2×5=10)**

17. Discuss allosteric regulation of aspartate transcarbamoylase.
18. Elaborate the biosynthesis of estrogens.
19. Describe the IUB classification of enzymes.
20. Describe biosynthesis of naturally occurring cytokinin in plants.

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K22U 1537

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/ Improvement Examination, April 2022
(2019 Admission Onwards)
GENERAL AWARENESS COURSE IN BIOTECHNOLOGY
4A03BTC : Biostatistics

Time : 3 Hours Max. Marks : 40

PART – A

Write short notes on **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(6×1=6)**

1. Differentiate random and non random sampling.
2. What is cumulative frequency distribution ?
3. Objectives of tabulation.
4. What is histogram ? Mention its use.
5. What is correlation coefficient ?
6. Give any two properties of normal distribution.

PART – B

Write notes on **any six** of the following. **Each** question carries **2** marks. **(6×2=12)**

7. Calculate mean and median for the following data :

Weight :	50 – 55	55 – 60	60 – 65	65 – 70	70 – 75	75 – 80
No. of patients :	10	8	14	9	5	2

8. What is meant by skewness ? Mention the methods of identifying the same.
9. Write short notes on Type I and Type II errors.
10. Explain the uses of biostatistics.

P.T.O.

11. Make a note on student T test.
12. Explain the regression analysis.
13. Give an account on advantages of Chi-square test.
14. Make a note on frequency distribution.

PART – C

Write short essay on **any four** of the following. **Each** question carries **3** marks. **(4×3=12)**

15. Explain the concepts of standard error.
16. What are the main methods of collecting primary data ?
17. Define Mode. Give the formula for calculating it for different type of data.
18. Briefly explain simple random sampling and stratified sampling.
19. Define scatter diagram and its uses.
20. Explain the difference between population and sample. Describe the methods of sampling.

PART – D

Write essay on **any two** of the following. **Each** question carries **5** marks. **(2×5=10)**

21. Calculate the arithmetic mean and standard deviation for the following data :

Age in Years	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80
No. of Persons	8	7	15	18	22	14	10	5

22. Two bags contain 8 white, 5 black, 4 white, 6 black balls. One ball is randomly transferred from first bag to second and then a ball is drawn from the second. It is found to be a black ball. Find the probability that the transferred ball is white.
23. Explain in detail on the different graphs and diagrams in bio statistical representation of data.
24. Explain the following and its merits and demerits :

    i) t-test ii) Z-test iii) Chi-square test

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IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/ Improvement Examination, April 2022
(2019 Admission Onwards)
GENERAL AWARENESS COURSE IN BIOTECHNOLOGY
4A04BTC : Bioinformatics

Time : 3 Hours Max. Marks : 40

PART – A

Write short notes on **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(6×1=6)**

1. PROSITE
2. Proteome
3. DDBJ
4. EMBL
5. CATH
6. KEGG.

PART – B

Write notes on **any six** of the following. **Each** question carries **2** marks. **(6×2=12)**

7. Write an overview of NCBI.
8. What are the different types of Multiple Sequence Alignment (MSA) ?
9. Describe Nucleic acids.
10. Describe the use of PDB.
11. Write a note on SWISS PROT.

P.T.O.

12. What do you mean structural database ?

13. Describe the method of protein sequencing.

14. What is a sequence similarity search ?

PART – C

Write notes on **any four** of the following. **Each** question carries **3** marks. **(4×3=12)**

15. Describe the significance and scope of Bioinformatics.

16. Explain the general overview of NHGRI.

17. Write a note on human genome project.

18. What is proteomics ?

19. Explain the concept of similarity and homology.

20. Write a note on BLAST and FASTA.

PART – D

Write notes on **any two** of the following. **Each** question carries **5** marks. **(2×5=10)**

21. Describe the process of phylogenetic analysis.

22. What are the implications of genomics ?

23. Explain the methods of sequence alignment.

24. Describe the major biological databases.

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Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/ Improvement Examination, April 2022
(2019 Admission Onwards)
CORE COURSE IN BIOTECHNOLOGY
4B05BTC : Molecular Biology

Time : 3 Hours Max. Marks : 40

PART – A

Write short notes on **each** of the following in **2** or **3** sentences. **Each** question carries **1** mark. **(6×1=6)**

1. Nucleoside
2. Rolling circle replication
3. What is the role of enhancer in transcription ?
4. Reading frame
5. Photoreactivation
6. Define operon.

PART – B

Write notes on **any six** of the following. **Each** question carries **2** marks. **(6×2=12)**

7. Make a comparative assessment about t-RNA, m-RNA and r-RNA.
8. The Meselson-Sthal experiment.
9. Give a detailed account on Self-splicing.
10. Explain Wobble hypothesis.
11. Make a note on polysomes.
12. Explain the role of attenuation in trp operon.
13. Explain the process of proof reading in DNA replication process.
14. Make a note on organization of DNA in chromosomes.

P.T.O.

PART – C

Write short essay on **any four** of the following. **Each** question carries **3** marks. **(4×3=12)**

15. Explain various forms of DNA with necessary diagram.
16. Discuss the repair mechanism initiated by the light.
17. Explain the structure and role of ribosomes in protein synthesis.
18. Explain in detail about different antigen-antibody interactions.
19. Explain the role of Ribozymes.
20. Explain Ribosome Recycling Factor (RRF).

PART – D

Write essay on **any two** of the following. **Each** question carries **5** marks. **(2×5=10)**

21. Give a detailed account on enzymes involved in eukaryotic DNA replication and explains their role with a neat sketch.
22. Explain the RNA modification mechanisms in eukaryotes.
23. Explain positive and negative regulation of operon.
24. Explain the structure and role of DNA polymerase.

K22U 1571

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree CBCSS (OBE) Regular/Supplementary/ Improvement Examination, April 2022
(2019 Admission Onwards)
COMPLEMENTARY ELECTIVE COURSE IN MICROBIOLOGY
4C05MCB : Applied Microbiology – II

Time : 3 Hours

Max. Marks : 32

PART – A

Short Answers

Answer **all** the questions (**5** questions × **1** mark **each** = **5** marks).

1. DDT
2. BOD
3. Root nodules
4. Nitrogenase
5. Membrane filter.

PART – B

Short Essay

Answer **any 4** questions (**4** questions × **2** marks **each** = **8** marks).

6. Cometabolism
7. Bioaugmentation
8. Coliform Bacteria
9. GMO
10. Super chlorination.

P.T.O.

PART – C

Essay

Answer **any 3** questions (**3** questions × **3** marks **each** = **9** marks).

11. Xenobiotic metabolism.

12. Classification of Mycorrhiza.

13. Microorganisms involved in sewage treatment.

14. Advantages of Biofertilizer over Chemical fertilizer.

15. Disinfection of Potable water.

PART – D

Long Essay

Answer **any 2** questions (**2** questions × **5** marks **each** = **10** marks).

16. Define Biological Nitrogen fixation. Explain the mechanism of symbiotic nitrogen fixation.

17. Define composting and write down the methods of composting.

18. Write in brief about Municipal sewage treatment.

19. Microbial decomposition of herbicides, insecticides and fungicides.

K22U 1759

Reg. No. : .....

Name : .....

IV Semester B.Sc. Degree (CBCSS – Supplementary) Examination, April 2022

(2016-18 Admissions)

COMPLEMENTARY COURSE IN MICROBIOLOGY

4C05 MCB : Applied Microbiology – II

Time : 3 Hours Max. Marks : 32

SECTION – A

Answer **all** the **five** questions in a **single** word :

1. Name one symbiotic nitrogen fixing bacterium.
2. Reverse osmosis is an example of _____ treatment of waste water.
3. _____ is a group of pesticides with very low biodegradation but having high affinity to fatty tissues.
4. Name two bacteria that can be used as indicator microorganisms.
5. _____ is the major product in acetogenesis. **(5×1=5)**

SECTION – B

Answer very briefly on **any four** of the following :

Comment on the following :

6. Orchidaceous mycorrhizae.
7. Oxidation pond.
8. Differentiate between septic tank and imhoff tank.
9. Methanogens.
10. Insecticides.
11. Nitrogenase. **(4×2=8)**

P.T.O.

SECTION – C

Write short notes on **any three** of the following :

12. Describe the methods for isolation and identification of VAM fungal spores.
13. Trickling filter system.
14. Describe the process of vermicomposting.
15. Symbiotic nitrogen fixing bacteria.
16. Xenobiotics. **(3×3=9)**

SECTION – D

Write short notes on **any two** of the following in detail :

17. Describe various approaches used for solid waste management.
18. What are biofertilizers ? Explain their advantages over chemical fertilizers with one bacterial biofertilizer as example.
19. What is biogas ? Describe different models of gobar gas plant technology.
20. Microbial decomposition of insecticides. **(2×5=10)**