

(BIC 20112)

M.Sc. DEGREE EXAMINATION, APRIL 2016.

Second Semester

Biochemistry

Paper I — PLANT BIOCHEMISTRY

(Regulation 2012)

Time : Three hours

Maximum : 70 marks

UNIT I

1. Explain the detailed structure and function of plant cell. (14)

Or

2. (a) Describe the mechanism of transport of water and ions in plants. (7)  
(b) Enzymatic components of antioxidative defence mechanism. (7)

UNIT II

3. Discuss in detail about the light phase of reactions of photosynthesis. (14)

Or

4. (a) Photophosphorylation.  
(b) CO<sub>2</sub> fixation CAM plants.

UNIT III

5. Discuss in detail about factors affecting seed germination and biochemical changes during seed germination. (14)

Or

6. (a) Explain the mechanism of action of Gibberelins. (7)  
(b) Discuss briefly structure and functions of Indole acetic acid. (7)

UNIT IV

7. Explain the nature, distribution, biosynthesis and function of phenolics during plant growth. (14)

Or

8. (a) Add a note on radiations and their impact on plant growth. (7)  
(b) Describe water stress mechanism in plants. (7)

UNIT V

9. Discuss in detail the structure and mechanism of action of Nitrogenase. Add a note on leghaemoglobin. (14)

Or

10. (a) Sulphate assimilation. (7)  
(b) Hydrogen evolution and uptake. (7)



(BIC 20212)

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Biochemistry

Paper II — INTERMEDIARY METABOLISM

(Regulation 2012)

Time : Three hours

Maximum : 70 marks

Answer FIVE questions, ONE from each Unit.

All questions carry equal marks.

(5 × 14 = 70)

UNIT I

1. Discuss in detail reactions of Tricarboxylic acid cycle and its regulation. (14)

Or

2. Write short notes on :

- (a) Glyoxalate cycle (7)
- (b) Glycosyl amino glycans. (7)

## UNIT II

3. Describe the formation of creatinine, ammonia and urea. (14)

Or

4. Write short notes on :

- (a) Protein turn over (7)
- (b) Transamination. (7)

## UNIT III

5. What are non essential amino acids? Describe the biosynthetic reactions of Alanine, Cysteine and Tyrosine. (14)

Or

6. Write short notes on :

- (a) Degradation of glutamine and proline. (7)
- (b) Degradative steps of Aspartic acid and serine.

## UNIT IV

7. Discuss the metabolism of Triacyl Glycerol phospholipids. (14)

Or

8. Write short notes on :

- (a) Role of carnitine in fatty acid metabolism. (7)
- (b) Arachidonic acid metabolism. (7)

## UNIT V

9. Discuss in detail the degradative steps in pyrimidine metabolism and its regulation. (14)

Or

10. Write short notes on

- (a) Biosynthesis and degradation of Heme. (7)
- (b) Polynucleotides. (7)

(BIC 20312)

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Biochemistry

Paper III — MICROBIAL BIOCHEMISTRY

(Regulation 2012)

Time : Three hours

Maximum : 70 marks

Answer ALL questions.

1. (a) Discuss the general characteristics of Rickettsiae and Mycoplasma.  
(b) Discuss about the structure of bacterial cell wall.

Or

2. (a) Describe briefly methods employed for the isolation and cultivation of bacteria.  
(b) Explain in detail about various factors influencing bacterial growth.
3. (a) Explain the principle and instrumentation of transmission electron microscope.  
(b) Write short notes on methods of sterilization.

Or

4. (a) Discuss the fermentative production of Riboflavin.

(b) Write notes on applications of microscopy.

5. (a) Explain the terms mixotrophy and parasitic mode of nutrition.

(b) Write a note on chemical methods of sterilization.

Or

6. (a) Explain the terms mutualism and commensalism in microbial interactions.

(b) Explain the methods of food spoilage.

7. (a) Discuss briefly about food borne diseases such as salmonellosis and staphylococcal food poisoning.

(b) Describe in detail about air borne disease diphtheria.

Or

8. (a) Discuss the etio pathology of conjunctivitis and syphilis.

(b) Write a note on the epidemiology of Leprosy.

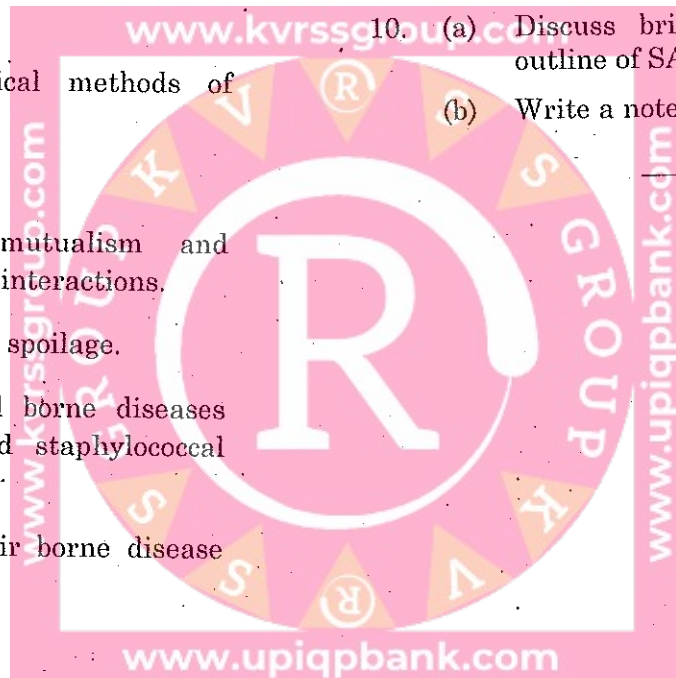
9. (a) Discuss the composition and structure of viruses.

(b) Write a note on prion diseases.

Or

10. (a) Discuss briefly the general features and outline of SARS.

(b) Write a note on tomato yellow leaf curl virus.



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Paper IV — MOLECULAR BIOLOGY

(Regulation 2012)

Time : Three hours

Maximum : 70 marks

Answer ALL questions.

UNIT I

1. Write an account on DNA replication in Eukaryotes. (14)

Or

2. (a) Fidelity of DNA replication. (7)  
(b) Meselson and Stahl experiment. (7)

UNIT II

3. (a) RNA polymerase (prokaryotic). (7)  
(b) DNA foot printing assay. (7)

Or

4. (a) Transcription termination. (7)  
(b) Processing of RNA. (7)

UNIT III

5. Discuss the events of protein synthesis in Eukaryotes. (14)

Or

6. (a) Wobble Hypothesis. (7)  
(b) Alternative protein transport Mechanism.

UNIT IV

7. (a) Zinc-Finger motif. (7)  
(b) Helix turn helix motif. (7)

Or

8. Give a detailed account on regulation of gene expression in lac operon in E.coli. (14)

UNIT V

9. Write an essay on DNA damage and repair. (14)

Or

10. Write short note on :

- (a) Photo reactivation. (7)  
(b) Evaluation of mutagens by Ames test and micronuclei test. (7)



