

## **B.Sc., BIOCHEMISTRY**

### **ELECTIVE**

#### **SEMESTER – VI**

#### **Theory: BCT-601-Microbiology and Molecular Biology**

##### **Unit- I : Microbiology**

**12 hours**

Introduction to brief history of microbiology. Classification of microorganisms- prokaryotic and eukaryotic microorganisms. Isolation and cultivation of bacteria. Selective media and enriched media. Bacterial growth curve and kinetics of growth. Gram's staining- Gram positive and Gram negative bacteria, motility and sporulation. Structure and composition of viruses. Isolation and cultivation of bacterial plaques. Lytic and lysogenic life cycle of  $\lambda$  phage. Retro viruses- HIV.

##### **Unit II-Applied Biochemistry**

**12 hours**

Fermentation Technology: Batch, continuous culture techniques, principle types of fermentors. Industrial production of chemicals- alcohol, acids (citric acid), solvents (acetone), antibiotics (penicillin), Enzyme Technology: Immobilization of enzymes and cells, different methods. Industrial applications. Production of transgenic plants and their applications. Introduction to Bioinformatics- definitions of proteomics and genomics. Gene bank, NCBI, DDBJ, Swissprot, PDB. Sequence alignments- BLAST and FASTA.

##### **Unit- III : DNA Replication and Transcription**

**12 hours**

Nature and structure of the gene. DNA replication- models of replication, Meselson-Stahl's experimental proof for semi-conservative model. DNA polymerases I, II and III of *E.coli*, helicase, topoisomerases, primase, ligase. Bidirectional replication model. Okazaki fragments, leading and lagging strands of DNA synthesis. Inhibitors of DNA replication. Transcription - RNA synthesis, RNA polymerases of prokaryotes. Promoters, Initiation- sigma factors and their recognition sites. Elongation- role of core enzyme. Termination- rho dependent and rho independent.

##### **Unit- IV: Protein Synthesis and Regulation of Gene Expression**

**12 hours**

Introduction to protein synthesis- Genetic code, deciphering of genetic code, Nirenberg's and Khorana's experiments, wobble hypothesis, degeneracy of genetic code. Protein synthesis- activation of amino acids (aminoacyl t-RNA synthetases). Ribosome structure. Initiation, elongation and termination of protein synthesis. Post- translational modifications- signal hypothesis. Inhibitors of protein synthesis. Regulation of prokaryotic gene expression- induction and repression. Lac operon.

##### **Unit- V: Recombinant DNA technology**

**12 hours**

Outlines of cloning strategies. DNA sequencing- Maxam Gilbert and Sanger's methods. Tools of r-DNA technology: Enzymes- Restriction endonucleases, ligase, phosphatases, reverse transcriptase, polynucleotide kinases, terminal transferase nucleases- $S_1$  and RNAase H. Restriction mapping. Cloning vectors- Plasmid, Expression vector - Host- *E.coli*. Construction of c-DNA and genomic libraries. Isolation and sequencing of cloned genes- colony hybridization, nucleic acid hybridization.

Polymerase chain reaction- principle and applications. Outlines of blotting techniques-Southern, Northern and Western.

Applications of gene cloning- production of insulin and human growth hormone, production of Bt cotton and edible vaccines.

**Practical: BCP-601: Microbiology and Molecular Biology**

**45 hrs**

**(3 periods/week)**

**List of Experiments:**

1. Preparation of culture media and sterilization methods.
2. Isolation of pure cultures: (i) Streak plate method. (ii) Serial dilution method.
3. Gram staining.
4. Motility of bacteria by hanging drop method.
5. Antibiotic sensitivity by paper disc method.
6. Isolation of DNA from onion/liver/coconut endosperm.
7. Estimation of DNA by diphenylamine method.
8. Estimation of RNA by orcinol method..
9. Sequence alignments of insulin/BSA with other proteins using BLAST and FASTA.
10. Examination of milk quality by MBRT method.

**CLUSTER ELECTIVE – 1**  
**Theory BCT-602: Biochemistry of Cell**

**60hrs**  
**(5 periods/week)**

**Unit- I: Biomolecules in their cellular environment**

**No. of Hours : 12**

The cellular basis of life. Cellular structures – prokaryotes and eukaryotes. Chemical principles in biomolecular structure. Major classes of biomolecules. Role of water in design of biomolecules.

**Unit –II : Amino acids and Lipids**

**No. of Hours : 12**

Types of amino acids and their chemistry, derivatives of amino acids and their biological role. Introduction to biologically important peptides. Various classes of lipids and their distribution, storage lipids, structural lipids in membranes, lipids as signals, cofactors and pigments.

**Unit- III: 3 Sugars and Nucleic Acids**

**No. of Hours : 12**

Basic chemistry of sugars, optical activity. Disaccharides, trisaccharides and polysaccharides - their distribution and biological role. Structures and chemistry, DNA structures and their importance, different types of RNA. Unusual DNA structures, other functions of nucleotides.

**Unit- IV : Vitamins, coenzymes and metal ions**

**No. of Hours : 12**

Occurrence and nutritional role of vitamins. Coenzymes and their role in metabolism. Metal ion containing biomolecules - heme, porphyrins and cyanocobalamin; their biological significance.

**Unit- V: Signalling molecules**

**No. of Hours : 12**

Second messengers - cAMP, cGMP, IP<sub>3</sub>, , diacyl glycerol, Ca<sup>2+</sup>, NO. Brief account of their importance and role in signalling and signal transduction.

**CLUSTER ELECTIVE – 1**  
**Practical – 602 : Biochemistry of Cell**

**45 h 60hrs**  
**(3 p (5 periods/week))**

1. General safety procedures in a laboratory. Use of auto pipettes. Making solutions and buffer preparation - acetate and tris buffers.
2. Qualitative tests for biomolecules - carbohydrates, lipids, amino acids, proteins, bases and nucleic acids.
3. Separation of amino acids by paper chromatography.
4. Separation of sugars/bases by TLC and their identification.
5. Estimation of ascorbic acid in fruit juices.

**SUGGESTED READINGS**

1. Lehninger: Principles of Biochemistry (2013) 6<sup>th</sup> ed., Nelson, D.L. and Cox, M.M., W.H. Freeman and Company (New York), ISBN:13; 978-1-4641-0962-1 / ISBN:10-146410962-1.
2. Textbook of Biochemistry with Clinical Correlations (2011) 7<sup>th</sup> ed., Devlin, T.M., John Wiley & Sons, Inc. (New York), ISBN:978-0-470-28173-4.

## CLUSTER ELECTIVE – 2

60hrs  
(5 periods/week)

### Theory: BCT-603: Biochemical Correlations in Diseases

60 hrs  
(5 periods/week)

#### **Unit- I : Inborn errors of metabolism**

**No. of Hours : 12**

Alkaptonuria, Phenylketonuria, Glycogen and Lipid storage diseases, SCID, Clotting disorders.

#### **Unit- II: Nutritional Deficiency and Life style diseases**

**No. of Hours : 12**

Kwashiorkor, Marasmus, Beri-beri, Scurvy, Pellagra, Anaemia, Night blindness, Rickets, Osteomalacia, Osteoporosis, Wilson's disease. Obesity, Cardiovascular diseases, Atherosclerosis, Diabetes mellitus-II. Inflammatory Bowel Disease (IBD).

#### **Unit- III: Hormonal Imbalances and Autoimmune diseases**

**No. of Hours : 12**

Outline of hormone action and imbalances leading to disease - precocious puberty, hyper and hypopituitarism. Hyper and hypothyroidism. Concepts in immune recognition - self and non self discrimination, organ specific autoimmune diseases – Hashimoto's thyroiditis, Grave's disease, myasthenia gravis; Systemic diseases - SLE, rheumatoid arthritis; Diabetes Mellitus-I.

#### **Unit- IV : Diseases caused due to misfolded proteins**

**No. of Hours : 12**

Alzheimer's, Huntington's disease, Kuru, Creutzfeldt-Jakob disease, Sickle cell anaemia, Thalassemia.

#### **Unit- V: Infectious diseases**

**No. of Hours : 12**

Viral infection (polio, measles, mumps, influenza, HIV); Bacterial infections (tetanus, diphtheria, tuberculosis, typhoid, cholera); Protozoan (*Plasmodium* and *Trypanosoma*) and parasitic infections. Vaccines against diseases. General strategies in the design and development of vaccines.

45 hrs  
(3 per/week)

## **CLUSTER ELECTIVE – 2**

**Practical BCP- 603: Biochemical Correlations in Diseases**

**60hrs  
(5 periods/week)**

1. Glucose tolerance test.
2. Lipid profile: triglycerides and total cholesterol.
3. Obesity parameters.
4. RBC counting and haemoglobin estimation.
5. Blood pressure measurements.
6. Bone density measurements (visit to a nearby clinic).
7. T<sub>4</sub>/TSH assays.
8. Tridot Test/ Lateral flow test for viral diseases

### **SUGGESTED READINGS**

1. Textbook of Biochemistry with Clinical Correlations (2011) Devlin, T.M. John Wiley & Sons, Inc. (New York), ISBN: 978-0-4710-28173-4.
2. Immunology: A Short Course (2009) 6<sup>th</sup> ed., Coico, R and Sunshine, G., John Wiley & sons, Inc (New Jersey), ISBN: 978-0-470-08158-7
3. Biochemistry (2012) 7<sup>th</sup> ed., Berg, J.M., Tymoczko, J.L. and Stryer, L., W.H Freeman and Company (New York), ISBN: 13:978-1-4292-7635-1.
4. Genetics (2012) 6<sup>th</sup> ed., Snustad, D.P. and Simmons, M.J., John Wiley & Sons. (Singapore), ISBN: 978-1-118-09242-2.

## CLUSTER ELECTIVE – 3

### Theory BCT-604: Molecular Basis of Infectious Diseases

60hrs  
(5 periods/week)

#### **Unit-I : Classification of infectious agents**

**No. of Hours : 12**

Bacteria, Viruses, protozoa and fungi. Past and present emerging and re-emerging infectious diseases and pathogens. Source, reservoir and transmission of pathogens, Antigenic shift and antigenic drift. Host parasite relationship, types of infections associated with parasitic organisms. Overview of viral and bacterial pathogenesis. Infection and evasion.

#### **Unit-II: Overview of diseases caused by bacteria**

**No. of Hours : 12**

Detailed study of tuberculosis: History, causative agent, molecular basis of host specificity, infection and pathogenicity, Diagnostics, Therapeutics, inhibitors and vaccines. Drug resistance and implications on public health. Other bacterial diseases including Typhoid, Diphtheria, Pertussis, Tetanus and Pneumonia.

#### **Unit –III: Overview of diseases caused by Viruses**

**No. of Hours : 12**

Detailed study of AIDS, history, causative agent, pathogenesis, Diagnostics, Drugs and inhibitors. Other viral diseases including hepatitis, influenza, rabies, chikungunya and polio.

#### **Unit-IV: Overview of diseases caused by Parasites**

**No. of Hours : 12**

Detailed study of Malaria, history, causative agents, Vectors, life cycle, Host parasite interactions, Diagnostics, Drugs and Inhibitors, Resistance, Vaccine development. Other diseases including leishmaniasis, amoebiasis.

#### **Unit-V: Overview of diseases caused by other organisms**

**No. of Hours : 12**

Fungal diseases, General characteristics. Medical importance of major groups, pathogenesis, treatment.



## **CLUSTER ELECTIVE – 3**

### **PRACTICAL BCP-604: MOLECULAR BASIS OF INFECTIOUS DISEASES**

**45 hrs**  
**3 periods/ Week**

#### **List of Experiments:**

1. Permanent slides of pathogens. Mycobacterium tuberculosis, Leishmania, Plasmodium falciparum
2. WIDAL test
3. Gram staining
4. Acid fast staining
4. PCR based diagnosis
5. Dot Blot ELISA
6. Immunization Programme- Field visit.

#### **SUGGESTED READINGS**

1. Prescott, Harley, Klein's Microbiology (2008) 7<sup>th</sup> Ed., Willey, J.M., Sherwood, L.M., Woolverton, C.J. Mc Graw Hill International Edition (New York) ISBN: 978-007126727.
2. Mandell, Douglas and Bennett.S, Principles and practices of Infectious diseases, 7<sup>th</sup> edition, Volume, 2. Churchill Livingstone Elsevier.
3. Sherris Medical Microbiology: An Introduction to Infectious Diseases by Kenneth J.Ryan, C. George Ray, Publisher: McGraw-Hill
4. Medical Microbiology by Patrick R. Murray, Ken S. Rosenthal, Michael A. Pfaller, Elsevier Health Sciences

## **Recommended Books for UG Course -Biochemistry**

### **General Biochemistry**

1. Lehninger's Principles of Biochemistry – Nelson.D.L. and Cox.M.M., Freeman & Co.
2. Biochemistry – Berg.J.M., Tymoczko.J.L. and Stryer.L., Freeman & Co.
3. Biochemistry – Voet.D and Voet., J.G., John Wiley & Sons
4. Textbook of Biochemistry – West.E.S., Todd.W.R., Mason.H.S. and Bruggen, J.T.V., Oxford & IBH Publishers.
5. Principles of Biochemistry: General Aspects-Smith, E. L., Hill, R.L. Lehman, I. R. Lefkowitz, R.J. Handler, P., and White, A. McGraw-Hill
6. Outlines of Biochemistry – Conn.E.E., Stumpf.P.K., Bruening, G and Doi.R.H., John Wiley & Sons
7. Harper's Illustrated Biochemistry – Murray, R.K., Granner.D.K. & Rodwell,V.W., McGraw-Hill
8. Biochemistry-Lippincott's Illustrated Reviews. Champe, P.C. and Harvey, R. A. Lippincott
9. Fundamentals of Biochemistry –Jain, J.L., Jain, S., Jain, N. S. Chand & Co.
10. Biochemistry – Satyanarayana. U and Chakrapani. U, Books & Allied Pvt. Ltd.
11. Biochemistry – Rama Rao. A and Ratna Kumari. D, Kalyani Publishers.
12. Biochemistry- The Molecular Basis of Life – McKee. T and McKee, J. R, McGraw-Hill.

### **Enzymology**

1. Fundamentals of Enzymology – Price.N.C. and Stevens.L., Oxford University Press.
2. Understanding Enzymes – Palmer.T., Ellis Harwood.
3. Enzymes – Biochemistry, Biotechnology, Clinical Chemistry – Palmer.T., Affiliated East-West Press

### **Biochemical Techniques**

1. Principles and Techniques of Practical Biochemistry- Wilson, K. and Walker, J. Cambridge Press.
2. The Tools of Biochemistry- Cooper, T. G. John Wiley & Sons Press.
3. Physical Biochemistry- Friefelder, D. W.H. Freeman Press.
4. Analytical Biochemistry – Holme.D.J. and Peck.H., Longman.
5. Biophysical Chemistry: Principle and techniques- Upadhyay A, Upadhyay K and Nath. N. Himalaya Publishing House.
6. Experimental Biochemistry- Clark Jr. J.M and Switzer, R. L. Freeman & Co..

### **Physiology, Nutrition and Clinical Biochemistry:**

1. Textbook of Biochemistry and Human Biology – Talwar, G.P. and Srivastava. L.M., Printice Hall of India
2. Review of Medical Physiology-Ganong. McGraw-Hill.
3. Human Physiology – Chatterjee.C.C, Medical Allied Agency
4. Textbook of Medical Physiology – Guyton.A.G and Hall.J.E., Saunders
5. William's Textbook of Endocrinology – Larsen, R. P. Korenberg, H. N. Melmed, S. and Polensky, K. S. Saunders
6. Mammalian Biochemistry- White, A. Handler, P. and Smith, E. L. McGraw-Hill.
7. Textbook of Human Nutrition- Bamji, Pralhad Rao and Reddy V. Oxford & IBH Publishers.

8. Foods: Facts & Principle- Shakuntala and Shadaksharaswamy. Wiley Ester Press.
9. Essentials of Food and Nutrition – Swaminathan.M. Bangalore Press.
10. Human Nutrition and Dietetics. Davidson, S. and Passmore, J. R. ELBS.
11. A Textbook of Biochemistry: Molecular and Clinical Aspects. Nagini, S. Scitech Publishers.
12. *Tietz* Fundamentals of Clinical Chemistry- Burtis, A. A. and Ashwood, E. R. Saunders-imprint Elsevier Pub.
13. Textbook of Biochemistry with Clinical Correlations – Devlin.T.M.,Wiley – Liss
14. Textbook of Medical Biochemistry – Chatterjea.M.N. and Shinde.R, Jaypee Brothers Medical Publishers.
15. Textbook of Medical Biochemistry- Ramakrishnan, S., Prasannan, K. G. and Rajan, R. Orient Longman

### **Immunology:**

1. Immunology. Tizard, I. R. Thomson Press.
2. Kuby Immunology – Kindt.T.J., Goldsby.R.A. and Osborne.B.A., Freeman & Co.
3. Roitt's Essential Immunology – Roitt.I.M. and Delves.P.J., Blackwell Science.
4. Immune system- Parham. Garland Publishing.

### **Microbiology:**

1. Introduction to Microbiology: A Case History Approach- Ingraham and Ingraham. Thomson Press.
2. Textbook of Microbiology – Ananthanarayan, R and Jayaram Paniker, C.K., Orient Longman.
3. Microbiology – Prescott.L.M.,Harley.J.P. & Klein.D.A, McGraw-Hill.
4. Microbiology: An Introduction- Tortora, G. J. Funke, B. R. and Case, C. L., Pearson-Benjamin-Cummings Co.
5. Microbiology – Pelczar Jr.,M.J., Chan.E.C.S. and Krieg.N.R., Tata McGraw-Hill.
6. Textbook of Microbiology- Dubey, R. C. and Maheshwari, D. K. S. Chand & Co.

### **Molecular Biology and Biotechnology:**

1. Protein Biochemistry & Biotechnology- Walsh. John Wiley & Sons Press.
2. Molecular Biology of Cell- Alberts, B. Bray, D. Lewis, J. Raff, M. Roberts, K. and Watson, J. D. Garland Publishing.
3. Recombinant DNA and Biotechnology: A Guide for teachers- Helen and Massey. ASM Press.
4. Genes VIII – Lewin. B, Oxford University Press .
5. Molecular Biology- Freifelder. D. Naroasa Pub. House
6. Molecular Biology of the Gene- Watson. J.D., Baker, T.A, Bell, S.P.,Gann.A, Levine, M. and Losick.R, Pearson Education.
7. Molecular Biotechnology- Glick, B. R. and Pasternak, J. J. ASM Press
8. Principles of Gene Manipulation: An Introduction to GE- Old, R. V. and Primrose, S. B. Blackwell Sci. Pub.
9. A Textbook of Biotechnology-Dubey, R. C. S. Chand & Co.
10. Gene Biotechnology- Jogdand. Himalaya Pub. House.
11. Introduction to Biotechnology: An Agricultural Revolution-Herren. Thomson Press.
12. Molecular Cell Biology- Lodish, H., Berk, A., Matsudaira, P., Kaiser, C. A., Krieger, M. Scott M. P., Zipursky, S. L. and Darnell, J. Freeman & Co.

### **Bioinformatics**

1. Instant Notes-Bioinformatics- Westhead *et al.*, Viva Books (P), Ltd

2. Introduction to Bioinformatics- Attwood T K and Parry-Smith, D. J. Pearson Education.
3. Introduction to Bioinformatics- Lesk, A.M. Oxford University Press

### **Practical Biochemistry:**

1. Experimental Biochemistry: *A Student companion*- Sashidhar Rao, B and Deshpande, V. IK International (P) Ltd. Pub.
2. Modern Experimental Biochemistry- Boyer. R. Pearson Education
3. Biochemical Methods –Sadasivam, S and Manickyam, A.- New Age International publishers
4. An Introduction to Practical Biochemistry- Plummer, D. T. Tata McGraw-Hill.
5. Introductory Practical Biochemistry (ed) Sawhney, S. K. Randhir Singh- Narosa Publications House
6. Lab Manual in Biochemistry, Immunology and Biotechnology- Arti Nigam and Archana Ayyagari- Tata McGraw-Hill New Delhi
7. Enzyme Assays – A Practical Approach – Eisenthal, R and Dawson, M.J., IRL Press
8. Practical Biochemistry – Rameshwar. A, Kalyani Publisher.
9. Experiments and Techniques in Biochemistry – Sheel Sharma, Galgotia Publications.
10. Practical Clinical Biochemistry-Varley, H. CBS Publishers.
11. Practical Clinical Biochemistry –Methods and Interpretations –Ranjna Chawla- Jaypee
12. Manipal Manual of Clinical Biochemistry-Shivande Naik, B - Jaypee Brother Medical publications, New Delhi
13. Hawk's Physiological Chemistry- (ed) Oser, O. Tata-McGraw-Hill
14. Laboratory Manual in Biochemistry. Jayaraman, J. Wiley-Eastern
15. Biotechnology: A laboratory Project in Molecular Biology- Thiel, Bissen and Lyons. Tata McGraw-Hill.
16. Methods in Biotechnology- Hans-Peter Schmauder. Taylor & Francis.

### **Practical Microbiology:**

1. Microbiology – A Laboratory Manual- Cappuccino, J. G. and Sherman, N. Pearson Education.
2. Laboratory Experiments in Microbiology- Gopal Reddy, M., Reddy, M.N., Sai Gopal D. V.R. and. Mallaiah, K.V.
3. Experiments in Microbiology, Plant Pathology, Tissue Culture and Mushroom cultivation-Aneja, K. R - New Age International publishers.
4. Microbiology – A Laboratory Manual- Reddy, S. M. and Ram Reddy, S. Sri Padmavathi Pub.
5. Practical Microbiology- Dubey, R. C. and Maheshwari, D. K. S. Chand & Co.

### **Mathematical Problems in General Biochemistry:**

1. Biochemical Calculations- Segel, I.H. John Wiley & Sons.

### **Lab Reference Book:**

1. Lab Ref A Hand book of Recipes, Reagents and Other Reference Tools for Use at the Bench- (ed) Roskams, J. and Rodgers, L.- I.K International Pvt. Ltd, New Delhi.

S.V.UNIVERSITY DEGREE EXAMINATION – 2017

B.Sc., (Biochemistry) Sixth Semester

BCT-601: Microbiology and Molecular Biology

Time: Three hours

Maximum: 75 marks

**SECTION - A**

Answer any **FIVE** of the following ( $5 \times 3 = 15$  Marks)

- 1) Selective and enriched media
- 2) Transgenic plants
- 3) Okazaki fragments
- 4) Wobble hypothesis
- 5) Restriction endonucleases
- 6) Retro viruses
- 7) Proteomics
- 8) Southern blotting technique

**SECTION - B**

Answer **ALL** the questions ( $5 \times 12 = 60$  Marks)

9. (a) Explain in detail about bacterial growth curve and kinetics of growth.

Or

- (b) Describe the lytic and lysogenic life cycle of  $\lambda$  phage in detail.

10. (a) Discuss about the different methods of immobilization of enzymes and cells. Add a short on its industrial applications.

Or

- (b) Explain about sequence alignments BLAST and FASTA.

11. (a) Write in detail about Meselson-Stahl's experimental proof for semi-conservative model.

Or

- (b) Write in detail about RNA Transcription of prokaryotes.

12. (a) Describe in detail about the synthesis of protein in prokaryotes.

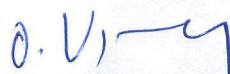
Or

- (b) Explain the regulation of prokaryotic gene expression by Lac operon.

13. (a) Describe about DNA sequencing- Maxam Gilbert and Sanger's methods.

Or

- (b) Write the principle and applications of Polymerase chain reaction.

  
**Prof. O.Vijaya Sarathi Reddy**  
Department of Biochemistry  
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TIRUPATI-517 502, (A.P.), India



S.V.UNIVERSITY DEGREE EXAMINATION – 2017

B.Sc., (Biochemistry) Sixth Semester

BCT-602: Biochemistry of Cell

Time: Three hours

Maximum: 75 marks

**SECTION - A**

Answer any **FIVE** of the following ( $5 \times 3 = 15$  Marks)

- 1) Biomolecular structure
- 2) Amino peptides
- 3) Types of RNA
- 4) Vitamins
- 5) Diacylglycerol
- 6) Heme
- 7) Lipids as signal
- 8) Nucleotides

**SECTION -B**

Answer **ALL** the questions ( $5 \times 12 = 60$  Marks)

9. (a) Elaborate on the cellular structures of eukaryotes.

Or

- (b) Discuss about the major classes of biomolecules.

10. (a) Write the types of amino acids and their biological role.

Or

- (b) Write the various classes, distribution and storage of lipids in membranes.

11. (a) Discuss in detail about the chemistry and biological role of sugars.

Or

- (b) Explain in detail about the structure of DNA.

12. (a) Describe in detail about the coenzymes and their role in metabolism.

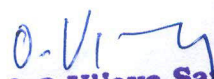
Or

- (b) Give an account on porphyrins and their biological significance.

13. (a) Discuss about the characteristics of second messengers-cAMP.

Or

- (b) Explain about the signaling and signal transduction.

  
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S.V.UNIVERSITY DEGREE EXAMINATION – 2017

B.Sc., (Biochemistry) Sixth Semester

BCT-603: Biochemical Correlations in Diseases

Time: Three hours

Maximum: 75 marks

SECTION - A

Answer any **FIVE** of the following ( $5 \times 3 = 15$  Marks)

- 1) Clotting disorder
- 2) Scurvy
- 3) Hypopituitarism
- 4) Creutzfeldt-Jakob disease
- 5) Polio
- 6) IBD
- 7) Rheumatoid arthritis
- 8) Plasmodium

SECTION -B

Answer **ALL** the questions ( $5 \times 12 = 60$  Marks)

9. (a) Explain in detail about glycogen storage diseases.

Or

(b) Give an account on Alkaptonuria and Phenylketanuria.

10. (a) Discuss about the protein malnutrition.

Or

(b) Explain about Cardiovascular diseases.

11. (a) Write in detail about the Hyperthyroidism.

Or

(b) Write in detail about the organ specific autoimmune diseases.

12. (a) Describe in detail about the Alzheimer's and Huntington's diseases.

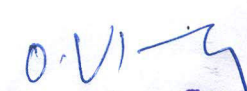
Or

(b) Give an account on Sickle cell anemia and Thalessemia.

13. (a) Discuss about the general strategies in the design and development of vaccines.

Or

(b) Explain about the Bacterial infections in details.

  
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Time: 3 hrs.

Max: 75 Marks

Section-A (5x3=15 Marks)

Answer any FIVE of the following.

- 1) Antigenic drift and Antigenic drift
- 2) Drug resistance of TB.
- 3) Rabies
- 4) Amoebiasis
- 5) ~~Fungal~~ & Eczema
- 6) Widal Test
- 7) <sup>Infectious</sup> Protozoans
- 8) Influenza.

SECTION B

(5x12=60 Marks)

Answer ALL questions.

- 9) a) ~~Write an account of fungal diseases in~~ <sup>clarify and write about the different infectious agent, in humans</sup>

OR

- b) Discuss the host parasite relationships in different infectious diseases.

- 10) a) Write in detail about Tuberculosis and its effects on human health.

OR

- b) How is Typhoid caused? What are its clinical symptoms? Write the therapeutic regimes.

11. (a) Describe in detail AIDS and its pathogenesis

OR

- (b) Write in detail about different types of Hepatitis.

(P.T.O)



Q2 (a) Describe the life cycle of malarial parasite.  
or

(b) What are vaccines? Write about different types of vaccines and their development.

Q3 (a) Write an account of different fungal diseases in humans.  
or

(b) Write the medical ~~importance~~ importance of fungi and the therapeutic regimen against fungal diseases.

for  
11/12/17

### **Distribution of Practical Exam Marks**

Practical Exam Time: 3 Hrs

Max marks: 50

1. Major Experiment	20 (Principle -5M, Methodology-10M, Results-05)
2. Minor Experiment	10 (Principle -2M, Methodology-05M, Results-03)
3. Spotters	10 (5 nos. x 2 M)
4. Record	05
5. Viva-voce	05

### **MODEL QUESTION PAPER FOR SEMESTER END PRACTICAL EXAMINATIONS**

**B.Sc., Course Semester End Practical examination**

**B.Sc., Biochemistry**

TIME: 3 hours

Max. Marks: 50

1. Major experiment.	20 marks
2. Minor experiment	10 marks
3. Identify the given spotter and write a brief note on it- A, B, C,D,E, F (5x2M)	10 marks
4. Record	05 marks
5. Viva-voce	05 marks

### **MID TERM EXAMINATIONS**

**(Ist and IInd Internal Assessment Examinations)**

Internal assessment; after completion of two Units one internal test will be conducted

No. of internal tests; Two

Average two internal tests will be taken

Total no. of Marks 25

Pattern; out of five short answers three questions have to be attempted each carries 5 Marks.

In essay questions out of two questions, one has to be attempted which carries 10 marks.

**MID SEM EXAM MODEL QUESTION PAPER**  
**Ist INTERNAL ASSESMENT EXAMINATION**  
**B. Sc Degree Course (CBCS-Semester pattern)**  
**B. Sc., Biochemistry**

**Time : 1 Hr**

**Max marks : 25**

**SECTION -A**

**(3 x 5 M= 15M)**

Attempt any **THREE** short questions of the following

- 1.
- 2.
- 3.
- 4.
- 5.

**SECTION – B**

**(1x 10M = 10 marks)**

Attempt any **ONE** essay question of the following

- 6.
- 7.

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**SECTION - A**

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- 1.
- 2.
- 3.
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**SECTION – B**

**(1x 10M = 10 marks)**

Attempt any **ONE** essay question of the following

- 6.
- 7.