SEMESTER – VI

BIOCHEMISTRY OF DISEASES

THEORY

Programme: B.Sc. **Max. Hours: 45**
Course Code: U20/BIC/DSE/604 **Hours per week: 3**
Course Type: DSE – 2 **Max. Marks: 100**
No. of credits: 3

Course Objective:

Our Graduate students will be ready to pursue Masters in any branch / specialization of Biochemistry especially clinical courses. They will be ready for Industry jobs related to applied life sciences.

Course Outcomes:

CO1: Understand biochemical concepts of various types of diseases and disorder.

CO2: Analyze disease indications for diagnostic relevance.

CO3: Interpret and summarize disease occurrence with the understanding of Biochemistry.

CO4: Create knowledge dimensions for future endeavors.

MODULE I: METABOLIC AND LIFESTYLE DISORDERS (11 Hrs)

Obesity and eating disorders – Anorexia & Bullemia, Diabetes mellitus – a metabolic disorder and relationship with hypertension , obesity, hypothyroidism and stress. Inflammatory Bowel Disease (IBD)- biochemistry behind the disease and the influence of diet , stress and environment to the condition. Fatty Liver, Cardiovascular diseases and atherosclerosis – understanding the factors contributing the disorder, biochemical aspect and management of the condition. Inborn errors of Metabolism

MODULE II: MULTIFACTORIAL COMPLEX DISORDERS AND CANCER (12 Hrs)

Understanding multifactorial disease and polygenic diseases. Relationship of environmental factors and genetic makeup in the onset of such diseases.
Cancer- Etiology and stages of cancer, biochemistry of cancer, proto-oncogenes, tumor suppressor genes, mutations and tumor viruses, Biochemical analysis of cancer and Biomarkers.
Disorders of Mood – Schizophrenia, Dementia and anxiety disorders.
Poly Cystic Ovarian Syndrome, Parkinson's disease

MODULE III: DISORDERS DUE TO PROTEIN MISFOLDING AND GENETIC ANOMALIES (11 Hrs)

Overview of protein misfolding and genetic anomalies. Prions and prion diseases. Alzheimer, kuru, creutzfelt-Jakob disease, Huntington's Syndrome. Sickel cell anemia and Thalaessemia.
Down's Syndrome, , Edward's Syndrome, Klinefelter Syndrome, Turner Syndrome and XXX, Sickle cell anemia, Thalassemia

MODULE IV: INFECTIOUS DISEASES (11 Hrs)

Viral infection (polio, measles, mumps, influenza, HIV); Bacterial infections (tetanus, diphtheria, tuberculosis, typhoid, cholera); parasitic infections – Protozoan (Plasmodium and Trypanosoma); Fungal infections: Candidiasis, Ringworm infection; Vaccines against diseases.

Reference Books:

1. Devlin, Text book of Biochemistry with Clinical Correlations (2011) T.M. John Wiley & Sons, Inc. (New York).

2. Coico, R and Sunshine, Immunology: A Short Course (2009) 6th ed. G. John Wiley&sons,Inc (New Jersey).

3. Berg, J.M., Tymoczko, J.L. and Stryer, L.Biochemistry (2012) 7th ed, W.H Freeman and Company.

4. Snustad, D.P. and Simmons, Genetics (2012) 6th ed., M.J., John Wiley & Sons. (Singapore).

BIOCHEMISTRY OF DISEASES

MODEL QUESTION PAPER

THEORY

Course Code: U20/BIC/DSE/604 **Max Marks: 60**
Credits: 3 **Time: 2 Hrs**

I. Answer the following questions **4 x 10 = 40 M**

1. Discuss Diabetes Mellitus as a metabolic disorder

(OR)

2. What are inborn errors of metabolism? Discuss with examples.

3. Discuss the causes of cancer. Write a note on biomarkers.

(OR)

4. Discuss disorders of mood and anxiety with their management

5. Explain Sickle cell anemia and its biochemical considerations

(OR)

6. What are prion diseases? Explain giving examples.

7. Explain the symptoms and causes of viral infection using examples.

(OR)

8. Explain the symptoms and causes of Tuberculosis along with the diagnostic criteria.

II. Answer any <u>FOUR</u> **4 x 5 = 20 M**

9. Fatty Liver
10. Oncogenes
11. Polycystic Ovarian Syndrome
12. Down's syndrome
13. Fungal Infections
14. Thalassemia