



TRIPURA UNIVERSITY

(A Central University)

Suryamaninagar

SYLLABUS

OF

Human Physiology

(General)

Semester- II

UNDERGRADUATE

HUMAN PHYSIOLOGY (GENERAL)

Semester 02

Paper 02

Total Marks — 100

THEORY (G2A)

Total Marks — 50

Unit V: Cardiovascular and Respiratory Systems (25)

Cardiovascular System:

1. Anatomy of human heart and its innervations, course of circulation of blood through it.
2. Properties of cardiac muscle and junctional tissues, origin and spread of cardiac impulse.
3. Cardiac cycle and heart sound; significance of different heart sounds.
4. Cardiac output- its determination and factors controlling cardiac output- regulation of cardiac output.
5. Heart rate- factors controlling it, tachycardia, bradycardia.
6. Blood pressure- regulation of blood pressure, concept of hypertension.
7. Atherosclerosis, coronary thrombosis.
8. E.C.G. different lead systems, different waves and intervals, their significances.
9. Einthoven's law, determination of electrical axis.

Respiratory system:

10. Anatomy of respiratory tree and histology of trachea, alveoli, lung compliance, surfactants, airways resistance.
11. Respiratory muscles, mechanism of respiration.
12. Regulation of respiration.
13. Transport of respiratory gases, oxygen dissociation curve, factors affecting dissociation curve and their significances.
14. Spirometry, lung volume and capacity.
15. Coronary and pulmonary circulation.

Unit VI: Digestion and Metabolism (25)

Digestion:

- I. Anatomy, histology and function of alimentary tract and digestive glands.

2. Composition of different digestive juices, mechanism of secretion. Formation of saliva. HCl, gastric juice, pancreatic juice, bile-functions.
3. Digestion and absorption: Carbohydrates, Proteins, Fats.
4. Movements of alimentary tract.
5. Absorption of Iron, Vitamin B12, Calcium.
6. Gastrointestinal hormones- gastrin, secretin, CCK: source and function.

Metabolism:

7. Enzymatic steps in glycolysis, TCA cycle, Cori cycle and their significance. HMP pathway and its significance.
8. Glycogenesis, glycogenolysis, gluconeogenesis.
9. Energy during glycolysis and TCA cycle, brief description of E.T.C, oxidative phosphorylation.
10. Beta oxidation: steps, energy change. ketone bodies, prostaglandins-significance.
11. Deamination and transamination of amino acids. Urea formation.

Add on topics:

1. Angina pectoris, Angioplasty.
2. Dietary time management
3. Cellular respiration and metabolism – basic idea and relationship.
4. Vomiting and Defecation reflex.
5. Disorders of GI tract.
6. Obesity and its impact on human health
7. Metabolic syndrome

Suggested Readings:

- i. Human Physiology – CC Chatterjee.
- ii. Text Book of Physiology – A. K. Jain.
- iii. Essentials of Medical Physiology - Anil Baran Singha Mahapatra; G S Mahapatra.
- iv. Ganong's Review of Medical Physiology- Kim E Barrett; Susan M Barman; Jason Yuan.

PRACTICAL (G2B)

Total Marks — 50

A) Hematological Experiments: 07 marks

1. Preparation of blood film and identification of blood cells.
2. Arneth count, differential count.
3. Estimation of hemoglobin.
4. Total count of RBC and WBC.
5. Blood group determination.
6. Coagulation time and bleeding time.
7. Preparation of Hemin crystal.

B) Measurement of blood pressure, heart rate. 07 marks

C) Study of microscope and squamous epithelium. 05 marks

D) Qualitative identification of physiological important substances- 07 marks

HCL, Lactic acid, Uric acid, Albumin, Peptone, Gelatine, Starch, Dextrin, glucose,
Fructose, Lactose, Maltose, Sucrose, Urea, Bile salt, acetone, glycerol.

E) Study of human skeleton. 04 marks

Examination:

End term: 40 marks

Internal assessment: 10 marks

End term:

- a. Experiment- 30
- b. Viva- voce- 5
- c. Lab note book - 5