



TRIPURA UNIVERSITY

(A Central University)

Suryamaninagar

SYLLABUS

OF

Human Physiology

(Hons.)

Semester- II

UNDERGRADUATE

# **HUMAN PHYSIOLOGY (HONOURS)**

**Semester 02**

**Paper 02**

**Total Marks — 100**

## **THEORY (H2A)**

**Total Marks — 60**

### **Unit -V: Physiology of Excitable Cell (30)**

1. Structure, properties and classification of nerve cell and fibres.
2. Degeneration and regeneration of nerve fibres.
3. Properties of nerve fibres, modern concept of generation of resting potential, generator potential,
4. Action potential. Propagation of nerve impulse.
5. Structure of synaptic junction. Properties of synapse. Classification.
6. Transmission of nerve impulse across the synaptic junction.
7. Neuro-muscular junction-structure
8. propagation of nerve impulse across the neuro-muscular junction.
9. Mechanism of transduction of stimuli from sensory receptor.
10. Reflex arc & reflex action. Properties of reflex action, classification of reflexes. Conditioned and unconditioned reflexes.
11. E-C coupling, sliding filament theory, Modern concept of muscle contraction, isotonic and isometric contraction.

### **Unit -VI: Cardio vascular system (30)**

1. Anatomy of the heart, innervations of heart and blood vessels.
2. Junctional tissues of heart, origin and spread of cardiac impulse, conduction defects: arrhythmia, AV block, bundle branch block.
3. Cardiac output, measurements, factors controlling cardiac output.
4. Heart sounds-significances, murmur-causes
5. Blood pressure: factors affecting blood pressure, regulation of blood pressure with special reference to sino-aortic mechanism. Bradycardia, Tachycardia, hyper-tension: primary and secondary.

6. E.C.G: different lead systems, different waves and intervals, their significances.
1. Einthoven's law, determination of electrical axis, significance.
2. Courses, peculiarities of coronary circulation.
3. Atherosclerosis, CHD, Cardiac failure, Angina pectoris, CVS shock, mitral stenosis,
4. Hemorrhage - effects and compensatory adjustment.

**Add on topics:**

1. Walk along theory of muscle contraction.
2. Muscular dystrophy.
3. Role of  $\text{Ca}^{++}$  and ATP in muscle contraction.
4. Angioplasty, pacemaker implantation.
5. How to keep our heart healthy.
6. Obesity and its impact on human health
7. Metabolic syndrome

**Suggested Readings:**

- i. Text Book of Physiology – A. K. Jain.
- ii. Essentials of Medical Physiology - Anil Baran Singha Mahapatra; G S Mahapatra.
- iii. Guyton and Hall text book of Medical Physiology - John E. Hall; Michael E Hall.
- iv. Ganong's Review of Medical Physiology- Kim E Barrett; Susan M Barman; Jason Yuan.

## **PRACTICAL (H2B)**

Total Marks — 40

- |                                                                         |          |
|-------------------------------------------------------------------------|----------|
| <b>A) Hematological Experiments:</b>                                    | 10 marks |
| 1) Preparation of blood film, identification of different blood cells.  |          |
| 2) Total count of RBC and WBC, Differential count, Arneth count.        |          |
| 3) Determination of hemoglobin concentration.                           |          |
| 4) Determination of MCV, MCH, MCHC.                                     |          |
| 5) Blood group determination.                                           |          |
| 6) Coagulation time, bleeding time and ESR.                             |          |
| 7) Preparation of Hemin crystal.                                        |          |
| <b>B) Measurement of Heart rate, blood pressure, effect of posture:</b> | 06 marks |
| <b>C) Study of microscope and squamous epithelium</b>                   | 04 marks |
| <b>D) Study of human skeleton</b>                                       | 04 marks |

### **Examination:**

End term: 32 marks

Internal assessment: 8 marks

End term:

- a. Experiment- 24
- b. Viva- voce- 4
- c. Lab note book - 4