

PHYSIOLOGY: CONTROLLING AND CO-ORDINATING SYSTEMS

Paper 7

THEORY

(48 periods)

Unit 1: Nerve and Sensory Physiology

(13)

Organization of nervous tissue, Ionic basis of resting and action potentials, propagation of nerve impulse in myelinated and non-myelinated nerve fibres, Synaptic transmission, Physiology of vision and hearing

Unit 2: Muscle Physiology

(10)

Ultrastructure of skeletal muscle, Mechanism of muscle contraction, Characteristics of muscle twitch: Summation, tetany and fatigue; Neuro-muscular junction; Motor unit

Unit 3: Endocrine Physiology

(15)

Structure and function of pituitary, thyroid, parathyroid, pancreas and adrenals; Hypothalamic control of hormone secretion; Feed-back mechanisms; Mode of hormone action

Unit 4: Reproductive Physiology:

(10)

Physiology of male reproduction: Hormonal control of spermatogenesis; Epididymal and accessory gland functions; Physiology of female reproduction: Hormonal control of oogenesis and menstrual cycle including ovarian and uterine changes

PHYSIOLOGY: CONTROLLING AND CO-ORDINATING SYSTEMS

Paper 7

PRACTICAL

1. Preparation of temporary mounts: Neurons and Striated muscles
2. Demonstration of Knee jerk reflex
3. Optometry: Retinal examination, concept of Myopia, Hyperopia, Presbyopia, Blind spot.
4. Measurement of lowest audible sound (threshold): Each ear separately tested
5. Video demonstration of simple muscle twitch.
6. Calculate the different phases of a simple muscle twitch from the myograph provided.
7. Examination of permanent histological sections of mammalian pituitary, thyroid, parathyroid, pancreas, adrenal, spinal cord, ovary, testis

ESSENTIAL READINGS

- Tortora, G.J. and Derrickson, B.H. (2009). *Principles of Anatomy and Physiology*, XII Edition, John Wiley and Sons, Inc.
- Widmaier, E.P., Raff, H. and Strang, K.T. (2008). *Vander's Human Physiology*, XI Edition, McGraw Hill
- Guyton, A.C. and Hall, J.E. (2011). *Textbook of Medical Physiology*, XII Edition, Harcourt Asia Pvt. Ltd/ W.B. Saunders Company

SUGGESTED READINGS

- Marieb, E. (1998). *Human Anatomy and Physiology*, IV Edition, Addison-Wesley.
- Kesar, S. and Vashisht, N. (2007). *Experimental Physiology*, Heritage Publishers
- Prakash, G. (2012.) *Lab Manual on Blood Analysis and Medical Diagnostics*, S. Chand and Company Ltd.