

PHYSIOLOGY: LIFE SUSTAINING SYSTEMS

Paper 8

THEORY

(48 Periods)

Unit 1: Physiology of Digestion

(14)

Structural organization of gastrointestinal tract; Mechanical and chemical digestion of food; Absorption of carbohydrates, proteins, lipids, water, minerals and vitamins; Nervous and hormonal control of digestion

Unit 2: Physiology of Respiration

(12)

Mechanism of breathing, Pulmonary ventilation, Respiratory volumes and capacities, External and internal respiration, Transport of oxygen and carbon dioxide in blood, Factors affecting transport of gases, Control of respiration

Unit 3: Renal Physiology

(8)

Structure of kidney and its functional unit, Mechanism of urine formation, Regulation of water balance, Regulation of acid-base balance.

Unit 4: Cardiovascular physiology

(14)

Blood: Composition, Haemostasis

Heart: Structure of mammalian heart, Origin and conduction of the cardiac impulse, Cardiac cycle, Cardiac output and its regulation, ECG.

PHYSIOLOGY: LIFE SUSTAINING SYSTEMS

Paper 8

PRACTICAL

1. Preparation of haemin and haemochromogen crystals.
2. To enumerate the RBC and WBC count using haemocytometer.
3. Estimation of haemoglobin using Sahli's haemoglobinometer.
4. Effect of posture, exercise and stress on blood pressure.
5. Examination of permanent histological sections of mammalian oesophagus, stomach, duodenum, rectum, liver, kidney, lung, testis, ovary
6. Video demonstration of heart perfusion.
7. Calculation of the rate of heart beat from the recording provided.
8. Preparation of histological sections (Microtomy) – Any two tissues

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.