

PBM3D001

QUANTITATIVE PHYSIOLOGY:

Module-1

Introduction to Human Physiology; Physical laws governing physiological functions with correlation (Law of Gravitation, Coulomb's Law, Stoke's Law, Hooke's Law, Universal Gas Law, Law of Thermodynamics);

Module-2

System-1 (Musculoskeletal system): Classification of skeletal muscles, estimation of TM potential by

Nernst Equation, AP, EPP, mechanism of skeletal muscle contraction, types of contractions (profile and measurement), mechanism of smooth muscle contraction; System-2 (cardiovascular system): vessels, calculation of lateral wall pressure, heart and its chambers, cardiac output calculation (dye and temperature dilution methods, Fick's method and 2D/3D echocardiographs methods); System-3

(Respiratory system): Lungs and segments, Inspiration and expiration profile by P-V plot; lungs volumes and capacities, measurement of TV by He dilution and N₂ washout methods, gaseous exchange system (O₂ and CO₂), calculation of gas exchange across blood-alveolar interface;

Module-3

Nervous System: Pathways of pressure, touch, pain and temperature sensation, pathways for vision,

audition, olfaction and accommodation, pain measurement and peripheral receptors; Fluid system: Acid-base balance of body, calculation and prediction of acidosis and alkalosis