

**ASSORTED PHYSIOLOGY ESSAYS FROM DIFFERENT PAST PAPERS FOR MBCHB AND BPHARM LEVEL 2**

**A TRIBUTE TO THE LATE PROF. HASSAN SAIDI. BSc (Anatomy), MBChB, MMed (Surg), FACS.**



1. Discuss the regulation of thyroid function.
2. Discuss the hormones of anterior pituitary gland under the following subheadings:
  - (a) Properties and classification.
  - (b) Target tissues and actions.
  - (c) Effects of deficiencies and excesses.
  - (d) Feedback control.
3. Discuss the physiology of micturition.
4. Write an essay on the determinants of blood pressure and their control under the following subheadings:
  - (a) The determinants for control of blood pressure
  - (b) The need for control of blood pressure.
  - (c) Neural control.
  - (d) Hormonal control.
  - (e) Renal control.
  - (f) Circulatory and cardiac reflexes.
5. Discuss the regulation of blood pH.
6. Discuss the process of absorption and digestion and absorption of lipids.
7. Discuss the upper gastrointestinal motility (i.e. mouth, oesophagus and stomach).
8. Describe the factors which control the activation of calcitriol.
9. Write an essay on the renal counter-current multipliers.
10. Describe and explain the mechanisms of the micturition reflex.
11. Write an essay on "Water and electrolyte absorption in the GIT".
12. Explain the mechanism of lung inflation and deflation and why in pneumothorax, lung inflation is not possible.
13. Discuss the physiology of learning and memory.
14. Discuss the enteric nervous system under the following headings:
  - (a) Anatomical location.
  - (b) Components.
  - (c) Its role in digestive physiology.
  - (d) Name one congenital defect nervous system malformation associated with the enteric.
  - (e) Embryonic origin of the enteric nervous system.
15. Discuss the regulation of secretions of exocrine pancreas.
16. Write an essay on control of ventilation under the following headings:
  - (a) The need for control.
  - (b) The theoretical control model.
  - (c) The control centres.
  - (d) The sensors.
  - (e) The respiratory drives.
  - (f) The response to exercise.
17. Discuss renal autoregulation.
18. Discuss anterior pituitary hormones under the following sub-headings:
  - (a) Table of anterior pituitary hormones showing structural classification, target tissues and hormones.
  - (b) Regulating factors and pattern of release.

- (c) Feedback pathways.
  - (d) Disorders of excess secretion and insufficient production.
19. Discuss the role of parathyroid hormone in calcium ions homeostasis.
  20. Describe the pressure volume cycle of the human left ventricle under the following sub-headings:
    - (a) Ventricular filling.
    - (b) Isovolumetric contraction.
    - (c) Ventricular ejection.
    - (d) Isovolumetric relaxation.
    - (e) Heart sounds.
  21. Discuss the mechanisms for renal excretion of dilute and concentrated urine.
  22. Write an essay on cardiovascular control mechanisms under the following headings:
    - (a) The need for control.
    - (b) The neural mechanisms of control.
    - (c) The hormonal mechanisms of control.
    - (d) Renal mechanisms of control.
    - (e) The circulatory reflexes.
    - (f) The cardiac reflexes.
  23. Discuss the control and regulation of motility in digestive system.
  24. Write an essay on vision under the following:
    - (a) Compare rods and cones with respect to their locations, synaptic connections and functions.
    - (b) Describe the neural pathways from the retina, explaining the differences in pathways from different regions of the visual field to the visual cortex.
    - (c) Explain how visual accommodation is achieved and describe the defects associated with myopia, hyperopia, and astigmatism.
  25. Describe the pressure volume loop of the left ventricle for a single cardiac cycle.
  26. Compare the processes of oogenesis and spermatogenesis.
  27. Discuss the structure, properties and functions of cell membrane.
  28. Explain how the rays of light from an object are focused onto the retinal surface.
  29. Explain the role of neuropeptides in chemical synaptic transmission.
  30. Write an essay on "The control of respiration".
  31. Describe the similarities and differences of pulmonary and systemic blood circulation under the following subheadings:
    - (a) Systolic and diastolic blood pressure.
    - (b) Oncotic pressure.
    - (c) Partial pressure of CO<sub>2</sub> and O<sub>2</sub>.
    - (d) Factors that affect the affinity of haemoglobin for O<sub>2</sub> and CO<sub>2</sub>.

## TRIBUTE TO THE LATE PROFESSOR HASSAN SAIDI

PROF. SAIDI WAS A CELEBRATED GENERAL AND LAPAROSCOPIC SURGEON AT KENYATTA NATIONAL HOSPITAL AND AGA KHAN HOSPITALS, A FELLOW OF THE AMERICAN COLLEGE OF SURGEONS AND MEMBER OF THE KENYA MEDICAL ASSOCIATION. CHAIRMAN DEPARTMENT OF HUMAN ANATOMY, PRESIDENT SURGICAL SOCIETY OF KENYA, EDITOR IN CHIEF OF THE ANNALS OF AFRICAN SURGERY JOURNAL, ASSOCIATE DEAN SCHOOL OF MEDICINE UNIVERSITY OF NAIROBI, BOARD CHAIR NAIROBI SURGICAL SKILLS CENTRE.

*We celebrate his life legacy for being an excellent teacher of Anatomy, with a thirty-year experience in instruction and teaching Human Anatomy at the University of Nairobi, Aga Khan University Nairobi and University of Pennsylvania. He has mastery of Embryology, Gross Anatomy, Histology and molecular biology, with surgical anatomy as his pet subject. Having taught over 4000 undergraduate medical students, supervised over 40 B.Sc. Anatomy students, 30 Master of Medicine Surgery students, and 4 Master of Anatomy students. He mentored many renowned surgeons, doctors and clinical officers.*

*Prof. Hassan Saidi was able to publish over 60 high impact peer reviewed articles in local and international journals. His research activity focused on clinical anatomy in all its aspects, trauma, oncology and surgery of the digestive tract. He published a book on histology and was in the process of publishing a text book of Surgical Anatomy. Prof. Hassan Saidi held many leadership roles in the University of Nairobi, initially as a course coordinator and rising to become the chairman of thematic areas within the department. He was the substantive Chairman of the Department of Human Anatomy until the time of his death. Prof. Hassan Saidi was also the associate dean, Preclinical departments of the University of Nairobi. During his tenure as a chairman, he shepherded the establishment of the Nairobi Surgical Skills Centre, publication of the Kimani's Histology Text and Atlas, Establishment of the Anatomy Journal of Africa, supported staff development, training and promotion as well as supporting many local and international staff retreats.*

*Prof Hassan indeed had many friends. He definitely did not know all of them, but yet he would never deny any genuine person seeking assistance. Taking time to engage with different age groups and this he did effortlessly. An opportunity to watch football, play some basketball or just have a 'chat' (always very insightful and refreshing) over some coffee snack was a sought-after opportunity by many. In his 36hr day, he would still find time to call up and catch up with his friends, his objective to savour every moment with friends to improve them in one way or another. What better HE WAS!*

*Prof. Hassan Saidi was married, with three sons. He was actively involved in charity and volunteer activities through HAIBA foundation and other charity groups. He was a mentor, a great teacher, researcher and a surgeon.*

*He surely fought a good fight and finished the race. He will be missed by many but his legacy lives on forever in our hearts and lives, till always and forever!!!*

WHAT ARE YOU DOING TO EMULATE THE KIND OF LIFE PROF. SAIDI LIVED? IN ALL THE ABOVE CITED ACHIEVEMENTS, AND THE IMPACT HE GENERATED IN ALL WALKS OF LIFE, DO YOU THINK IT'S POSSIBLE TO LEAVE A TRAIL OF THE SAME MAGNITUDE OF EXQUISITION?

YES IT IS! START WITHIN YOUR SPHERE OF INFLUENCE. LOOK FOR A WAY TO BLESS AND MOULD YOUR FELLOW MEDICS. STUDY MEDICINE WITH PASSION, TRANSFORMATIVE PURPOSE AND PURSUE EXCELLENCE WITH DISTINCTIONS IN ALL YOU DO. ABOVE IT ALL, PURSUE GOD WITH ALL OF YOUR BEING WHILE PLUGGING INTO HIS SOURCE TO HELP YOU ACHIEVE IT ALL IN KEEPING PROF. SAIDI'S LEGACY ALIVE!!!

ALL THE BEST IN YOUR STUDIES AND UPCOMING EXAMS AS GOD LEADS YOU INTO THE GREAT DOCTORS HE ORCHESTRATED YOU TO BE!!!



Where  
God guides,  
He provides

ISAIAH 58:11



**WHERE GOD LEADS, HE PROVIDES. WHERE HE GUIDES, HIS GRACE IS SUFFICIENT!!!**