

TRIBUTE TO THE LATE PROFESSOR HASSAN SAIDI

**ASSORTED PHYSIOLOGY SAQ'S FROM DIFFERENT
PAST PAPERS FOR MBCHB AND BPHARM LEVEL 2**

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



(a) RENAL PHYSIOLOGY

1. State the principles used in measuring renal clearance.
2. With a diagram, describe the interaction of various forces in glomerular filtration.
3. Explain the role of urea in the production of concentrated urine.
4. Write short notes on erythropoietin.
5. Write short notes on the nerve of filling and the nerve of emptying.
6. List the five factors which determine the net glomerular filtration pressure.
7. List five substances reabsorbed in the proximal convoluted tubule and the mechanisms of their reabsorption.
8. List five symptoms or signs of renal failure and for any three outline why they occur.
9. Outline four events that occur at the distal convoluted tubule of the kidney.
10. Describe and explain the renin-angiotensin-aldosterone system.
11. Describe the micturition reflex.
12. What are the causes of post-renal kidney failure?
13. Describe how nephrons handle urea.
14. Define shock, giving 4 examples and for each describe their mechanisms.
15. Describe water reabsorption from the collecting ducts of the kidney.
16. Briefly describe renal glucose reabsorption and its tubular maximum.
17. Briefly explain the factors that influence net filtration pressure at glomerulus.
18. Explain the pathophysiology associated with any two symptoms due to renal failure.
19. List the ions secreted at distal convoluted tubule and for each, the transport process.
20. Briefly explain how the renal clearance of a substance is measured.
21. Briefly describe the function of the thick ascending loop of Henle.
22. Briefly describe the role of autonomic nervous system in the control of micturition.
23. With a diagram, describe the interaction of various forces in glomerular filtration.

(b) GASTROINTESTINAL PHYSIOLOGY

1. State the constituents of a good, healthy diet.
2. Describe the role of secretions in the digestive system.
3. Describe the absorption and end products of carbohydrate digestion.
4. List the actions of insulin in glucose regulation.
5. List the carbohydrate 'brush border' enzymes and state their functions.
6. Explain the neuromyogenic control of gut function.
7. Using a diagram, illustrate how enterocytes absorb glucose and fructose.
8. Describe the stimulation and effects of duodenogastric reflex.
9. Using a diagram, illustrate how enterocytes absorb oligopeptides.
10. Describe enterohepatic circulation and state its function.
11. Describe the mechanism of vitamin B12 absorption.
12. Describe the motility of the colon.
13. Describe enterogastric reflex. State its stimulus and describe its effects.
14. For protein digestion, list the enzymes involved, their source of secretion and their site of action.
15. Briefly describe the role of intrinsic factor in vitamin B12 absorption.
16. Briefly describe the formation of HCL in the gastric mucosa

17. Briefly explain the process of carbohydrate digestion.

(c) RESPIRATORY PHYSIOLOGY

1. Describe one cause and one corrective response to respiratory alkalosis.
2. Explain the phenomena of hypoxic vasoconstriction and contrast it with systemic hypoxic response.
3. Outline and explain some of the possible complications of extracorporeal circulation.
4. Briefly describe the use of feed forward control mechanisms in exercise.
5. Describe the hypercapnic ventilator drive.
6. Describe and explain compliance in respiratory physiology.
7. Outline circumstances where oxygen therapy is essential and one circumstance where it can be detrimental.
8. List the common types of hypoxia and state whether oxygen therapy would be useful in each.
9. Describe the indirect measurement of blood pH by central chemoreceptors.
10. Explain the respiratory ventilation-perfusion ratios.
11. Describe acute mountain sickness.
12. Describe and explain what respiratory drive is.
13. Describe the non-respiratory functions of the lung.
14. Describe the role of intrapleural pressure in lung inflation and deflation.
15. Explain chloride shift as it occurs in lung tissue.
16. Describe the factors that affect Hemoglobin's affinity for oxygen.
17. Briefly describe and explain the significance of physiological dead space.
18. Describe the cause, effect and response in metabolic acidosis.
19. List the functions of the airway.
20. Explain how a rise in CO₂ may be detected by central chemoreceptors.
21. What factors determine the rate of gas transfer across the alveolar-capillary membrane?
22. Describe briefly the functions of larynx.
23. Describe the indirect measurement of blood pH by the central chemoreceptors.

(d) ENDOCRINE PHYSIOLOGY

1. Draw a diagram to illustrate at cellular level, the mechanism of action of the thyroid hormones.
2. Describe the mechanism of the physiological role of oxytocin.
3. List the main physiological functions where oestrogen hormone is involved.
4. Describe the hormonal control of cardiac output.
5. Describe the pattern of release of adrenocorticotrophic hormone (ACTH) and list its effects on the adrenal cortex.
6. List the actions of insulin in glucose regulation.
7. Describe the control of blood glucose.
8. Explain the renal actions of calcitonin.
9. With the aid of a diagram, describe the mechanism of steroids.
10. Describe the mechanism of regulation of the physiological action of oxytocin.
11. List the physiological function of cortisol.

12. List the physiological function of calcitriol(1,25DHCC)
13. Describe the possible causes of adrenal hypersecretion of androgens.
14. Briefly describe heat exhaustion and its effects.
15. Briefly explain five abnormalities of thermoregulation.
16. Describe the role of five hormones involved in human lactation.
17. In table form, show factors that stimulate and those that inhibit growth hormone secretion.
18. Briefly describe how hypothalamus regulates feeding.

(e) REPRODUCTIVE PHYSIOLOGY

1. Explain the role of Sertoli cells during sperm maturation.
2. Outline the signs of ovulation in humans.
3. Outline the processes of fusion and canalization during development of genitalia in utero.
4. Outline the sequences that occur during pubescence

(f) CARDIOVASCULAR PHYSIOLOGY

1. Describe the Starling forces in oedema formation.
2. Describe how to calculate mean arterial pressure.
3. Describe the physiological basis for measurement of blood pressure using a sphygmomanometer.
4. Describe the hormonal control of cardiac output.
5. Draw a labelled diagram of a standard ECG. Explain the underlying physiological events taking place in the heart muscle producing the ECG recording.
6. Briefly describe the role of thyroid hormones in cardiovascular system.
7. Describe the local factors that control blood flow in skeletal muscles during physical exercise training.
8. Explain mean arterial pressure.
9. Describe cerebral blood pressure autoregulation mechanisms.
10. What determines the rate of blood flow through a blood vessel.
11. Explain the mean arterial pressure of a medical student whose blood pressure is 125/80 mmHg.

(g) NEUROPHYSIOLOGY (HEARING & VISUAL PATHWAYS E.T.C)

1. Describe the functions of the external auditory canal.
2. List the differences that exist between nociception and pain
3. Distinguish between coma and sleep.

(h) MUSCLE PHYSIOLOGY

1. Briefly describe the functions of skeletal muscle tropomyosin.

(i) IMMUNE SYSTEM PHYSIOLOGY

1. Compare and contrast between the classical and alternate pathways of complement activation.

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, 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!