CANDIDATE NUMBER.....

AFRICA UNIVERSITY
A United Methodist-Related Institution

"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

DEPARTMENT OF HEALTH SCIENCES

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS DEGREE

SLS403: CHEMICAL PATHOLOGY

END OF SECOND SEMESTER FINAL EXAMINATIONS

APRIL/MAY 2019

LECTURER: MR G. MALUNGA

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
2. Answer **all** questions in sections A on the question paper.
3. Answer **all** questions in section B on separate answer sheets provided.
4. Answer any **3** questions in section C on separate answer sheets provided
5. The mark allocation for each question is indicated at the end of the question
6. Credit will be given for logical, systematic and neat presentations in sections B and C

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SECTION A : MULTIPLE CHOICE [40MARKS]

- **Answer all questions by encircling the correct response T for TRUE or F for FALSE for each statement in all the questions**
- **Each correct response is allocated half mark**

1. Plasma levels of calcium are influenced by the following

T F a) Renal disease
T F b) Vitamin D
T F c) Calcitonin
T F d) Malabsorption

2. The following acute phase plasma proteins are likely to be increased a few days following injury

T F a) Fibrinogen
T F b) Transferrin
T F c) C-Reactive protein
T F d) Alpha-1 antitrypsin

3. Hypophosphataemia may be caused by

T F a) Vomiting
T F b) Diarrhoea
T F c) Poor diet
T F d) Vitamin D deficiency

4. Regarding the role of parathyroid hormone, it

T F a) Stimulates renal reabsorption of calcium
T F b) Inhibits renal reabsorption of phosphate
T F c) Stimulates bone resorption
T F d) Stimulates synthesis of calcitriol

5. The following ketone bodies are found in excess in the blood of a person suffering from phenylketonuria

T F a) Acetone
T F b) Tyrosine
T F c) Phenylalanine
T F d) Phenylpyruvate

6. Glycosylated haemoglobin

T F a) Is produced by enzymatic glycosylation of haemoglobin
T F b) Level in blood is inversely proportional to average plasma glucose
T F c) Measurement is not reliable in haemolytic anaemia
T F d) Is mainly used in the diagnosis of diabetes

7. Which of the following formulae shows the correct calculation for indirectly measuring LDL-C

T F a) LDL-C = HDL-C + (Triglyceride/5)
T F b) LDL-C = Total Cholesterol – (HDL-C) – (HDL-C) – (Triglyceride/5)
T F c) LDL-C = Total Cholesterol + HDL-C + (Triglyceride/5)
T F d) LDL-C = HDL-C – (Triglyceride/5)

8. An ideal tumor marker should be

T F a) a substance that is released directly into the bloodstream
T F b) easily cleared from the body
T F c) tumor specific
T F d) readily detectable in body fluids

9. Inborn errors of metabolism

T F a) include a wide range of unrelated disorders
T F b) are always sex-linked
T F c) usually affect multiple organ systems
T F d may progress rapidly with life-threatening deterioration over hours

10. The commonest causes of hypercalcaemia are

T F a) milk alkali syndrome
T F b) malignancy
T F c) primary hyperparathyroidism
T F d) pregnancy

11. Changes in plasma protein concentrations can be due to:

T F a) Liver failure
T F b) Renal disease
T F c) Changes in rate of synthesis
T F d) Changes in volume of distribution

12. The following substances are elevated in a patient with phenylketonuria

T F a) leucine
T F b) homocysteine
T F c) lactate
T F d) phenylalanine

13. The following are negative acute phase reactants

T F a) haptoglobin
T F b) transferrin
T F c) albumin
T F d) alpha1 antitrypsin

14. The following cause fasting hypoglycaemia

T	F	a) Insulin overdose in diabetic patients
T	F	b) Glycogen storage diseases
T	F	c) Perinatal stress
T	F	d) Hypothermia

15. In-born errors of carbohydrate metabolism include

T	F	a) Fructose intolerance
T	F	b) Tay-Sachs disease
T	F	c) Gaucher's disease
T	F	d) Branched chain ketoaciduria

16. Diseases and disorders associated with geriatrics include the following

T	F	a) Atherosclerosis
T	F	b) Cancer
T	F	c) Diabetes mellitus
T	F	d) Hyperthyroidism

17. The following tests are part of the laboratory investigation of male infertility

T	F	(a) TSH
T	F	(b) FSH
T	F	(c) Testestorone
T	F	(d) BhCG

18. The following tests can be used in the diagnosis of thyroid disorders

T	F	(a) TRH stimulation test
T	F	(b) TSH
T	F	(c) T3
T	F	(d) fT3

19. The given cancer markers are used for the diagnosis of the given cancers

			Cancer marker	**Cancer**
T	F	a)	CEA	Hepatoma
T	F	b)	CA-125	Cervical
T	F	c)	PSA	Prostate
T	F	d)	AFP	Prostate

20. Hyperthyroidism is caused by

T	F	a) Graves' disease
T	F	b) Thyroiditis
T	F	c) Iodine – containing drugs
T	F	d) Pituitary disease

SECTION B: [20 MARKS]

Answer all questions on separate answer sheets provided

1. State any 5 secondary causes of hyperlipidemia. [5]
2. State the main biochemical differences between metabolic acidosis and respiratory acidosis. [5]
3. State the main laboratory findings associated with nephrotic syndrome.[5]
4. State the tests which can be done in a bone profile investigation. [5]

SECTION C : [75 marks]

Answer any 3 questions from this section on separate answer sheets provided

1. Give an analysis of the complications of diabetes. [25]
2. Give an overview of the laboratory investigation of dyslipidaemia. [25]
3. Explain the role of kidneys in acid-base balance in the body. [25]
4. Give an analysis of the metabolic diseases of the bone. [25]
5. Explain how B12 deficiency leads to megaloblastic anaemia.[25]