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

NSLS100: LABORATORY PRINCIPLES

END OF FIRST SEMESTER SUPPLEMENTARY EXAMINATIONS

JUNE 2019

LECTURER: MR G. MALUNGA

DURATION: 3 HOURS

INSTRUCTIONS

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

CANDIDATE NUMBER.....

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. Screening tests

T F a) are an important part of preventative health care
T F b) must be more sensitive than diagnostic tests
T F c) must always be confirmed with diagnostic tests
T F d) are used to detect subclinical diseases

2.

Fig 1

The symbol shown in Fig 1 can be found on containers of the following substances

T F a) Phenol
T F b) Sodium hypochlorite
T F c) Sodium hydroxide
T F d) Hydrochloric acid

3. First aid is meant to

T F a) treat the victim
T F b) save life
T F c) promote recovery
T F d) diagnose the victim

4. According to Standard 5 (Testing) of the code of ethics, all Medical laboratory scientists shall

T F a) not fabricate patient results
T F b) ensure the accuracy of patient results
T F c) follow institutional protocol for specimen collection
T F d) implement ISO15189 standards

CANDIDATE NUMBER.....

5. A chemical spill response center must have the following
   - T F a) goggles
   - T F b) rubber apron
   - T F c) vacutainer needles
   - T F d) alcohol swabs

6. The following is true about laboratory disinfectants
   - T F a) 1% NaClO can be used to disinfect a chemistry analyzer
   - T F b) 0.1% NaClO can be used to disinfect a urine sample spillage
   - T F c) 70% alcohol can be used to disinfect skin
   - T F d) 70% alcohol can be prepared from a 50% alcohol solution.

7. Management of HIV Post Exposure Prophylaxis in a health care worker involves
   - T F a) offering first aid to the health care worker
   - T F b) counselling the patient who supplied the blood sample
   - T F c) initiating the exposed healthcare worker on ARVs
   - T F d) testing the exposed health care worker for Hepatitis B.

8. The following are common blood sample preservatives
   - T F a) EDTA
   - T F b) Heparin
   - T F c) Oxalate
   - T F d) Boric acid

9. Medical microbiology specimens
   - T F a) must never be refrigerated
   - T F b) can be collected by the patient on his/her own.
   - T F c) for parasitology must always be preserved with 10% formalin
   - T F d) can still be collected even after commencing the patient on antibiotic treatment

10. Which performance characteristic must be considered when purchasing an equipment
   - T F a) Accuracy
   - T F b) Precision
   - T F c) Sensitivity
   - T F d) Specificity

11. The following documents are crucial for a chemistry analyzer
   - T F a) Daily maintenance chart
   - T F b) Service records
   - T F c) Levey-Jennings Chart
   - T F d) Temperature Chart

12. The iris diaphragm on a microscope

T F a) controls contrast
T F b) controls light aperture
T F c) is also called a field diaphragm
T F d) scatters light from the bulb

13. Micropipettes can be decontaminated by
T F a) UV radiation
T F b) 10% Formaldehyde
T F c) Ethylene oxide
T F d)1% Sodium hypochlorite

14. During centrifugation of a sample, separation of particles is affected by
T F a) particle shape
T F b) volume of sample
T F c) differences between density of particles and the liquid
T F d) type of centrifuge

15. A spectrophotometer
T F a) measures transmittance of light through coloured substances
T F b) uses wavelength of light within the visible range only
T F c) is similar to a flame photometer
T F d) must never be used without blanking

16. The following is true about balances
T F a) Never place a hot object on a balance pan
T F b) Balances can be used to calibrate volumetric equipment
T F c) A top loading pan must not be used in a clinical laboratory
T F d) Tarring must always be used on a balance

17. The following variables affect quality of results in a clinical laboratory

T F a) reporting of results
T F b) quantity of specimen
T F c) interpretation of results

T F d) education background of the laboratory scientist

18. The following must be always available on a workbench

T F a) SOPs
T F b) Equipment owner's manual
T F c) Clinician contact numbers
T F d) Personnel files

CANDIDATE NUMBER.....

19. The following are examples of laboratory records

T F a) Laboratory worksheets

T F b) Equipment service reports
T F c) Personnel evaluation reports
T F d) Delivery Notes

20. Good laboratory practice involves

T F a) Stock management
T F b) Proficiency testing
T F c) Continuous professional development
T F d) Customer surveys

SECTION B: [20 MARKS]

Answer all questions on separate answer sheets provided

1. Why are ethics critical in the medical laboratory field? [5]

2. The following table shows blood glucose levels of a diabetic patient measured on consecutive days during one week.

Table 1: Blood glucose levels of a diabetic patient

Day	[Glucose]mmol/l
1	15.6
2	14.7
3	14.9
4	13.4
5	14.7
6	15.6
7	16.3

(a). Calculate the mean Glucose concentration for the patient during the one week period. [2]

(b). Calculate the standard deviation. [3]

3. State any 5 consequences of a poor laboratory equipment maintenance program. [5]

4. What is the value of documentation in a clinical laboratory? [5]

SECTION C : [75 marks]

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

1. Discuss the finger prick procedure. [25]
2. Describe the packaging of a highly infectious sample which is about to be referred to a central medical laboratory for processing. [25]
3. If you were a laboratory manager of an international medical laboratory, explain how you would acquire a good hematology analyzer and maintain it in good working condition. [25]
4. Discuss quality assurance in a clinical laboratory. [25]
5. Explain the role of a clinical laboratory in the medical field. [25]