60%

A - 13
B - 17
30

THE COPPERBELT UNIVERSITY

SCHOOL OF MEDICINE

End of term test: March 2022
MBS 240

Term 1- Laboratory Sciences

Name: _____

Student ID Number: _____

Program: _____

Time: 1 hr and 15 minutes.

Instructions:

Section A: Multiple choice Questions (20 marks).
Choose one correct answer and circle the letter in front of it.
There are 20 questions
Answer all questions

Section B: Short answers (30 marks).
Write short notes on 3 out of the 5 questions.
10 Marks are allocated to each question.
Write your Student ID number on top of each page of the answer book.

Section A. Multiple choice questions.

1. Which one of the following is TRUE about "Steady state"?
   a) Is the same as chemical equilibrium
   b) Is the same as homeostasis
   c) Is not the same as chemical equilibrium
   d) Conditions are not stable within the system
   e) None of the above

2. In Resting state:
   a) Minor pathology may be missed
   b) Excretory function is investigated
   c) Secretory function is investigated
   d) All of the above
   e) None of the above

3. In chemical pathology, what information is given by a biochemical test that addressed the question "what else is wrong"?
   a) Definite diagnosis of the disease
   b) Complication of the disease
   c) Progression of the disease
   d) Prognosis of the disease
   e) All of the above

4. Which of the following body fluids is NOT usually analysed in chemical pathology?

a) Cerebral spinal fluids

b) Peritoneal fluid

c) Synovial fluid

d) Sweat

e) Pleural fluids

5. What is the total volume of blood of a woman who weighs 55Kg?

a) 3.6L

b) 4.2L

c) 5.0L

d) 2.7L

e) 6.0L

6. Which one of the following lies in the normal range of Haemoglobin A2 in adults?

a) 1%

b) 2%

c) 5%

d) 6%

e) 0.8%

7. Which one of the following anticoagulants is commonly used in haematology?

a) Double oxalate

b) Versene

c) Heparin

d) Sodium fluoride

e) None of the above

None of the above: the correct answer was supposed to be EDTA Ethylene Diamine Tetra Acetic Acid

8. In which symbiotic relationship is there physiological dependency of both symbionts on each other?

a) Parasitism
b) Phoresis
c) Mutualism
d) Commensalism
e) None of the above

9. Which one of the following is NOT an example of tissue damage due to parasitic infection?

a) Necrosis
b) Erosion
c) Neoplasia
d) Fatty degeneration
e) None of the above

Neoplasia, its under tissue change, not damage

10. One of the following is NOT an essential component of Standard Operation Procedure Manual (SOPM):

a) Antimicrobial susceptibility testing
b) Serological testing
c) Inoculation procedures
d) Specimen collection
e) Consistent with laboratory policy

11. The following virus has a complex symmetry

a) Adenovirus
b) Pox virus
c) SARS 2 Coronavirus
d) Retroviruses
e) Influenza virus

12. Viruses are released from the cells by

a) Excretion
b) Budding
c) Ejection
d) Adsorption
e) Hemostasis

This is a process where the virus particle pushes against the cell membrane, creating a bulge. This bulge eventually pinches off, enclosing the virus within a new envelope derived from the host cell membrane. This is common in enveloped viruses like HIV and influenza.

13. Baltimore classified viruses based

a) Sharp of capsid
b) Size of virus
c) Messenger RNA
d) DNA strands
e) RNA Strands

14. During slide preparation for microscopic examinations:

a) Fixation is the treatment of cells with a mild surfactant which dissolves the cell membrane.
b) Auramine-rhodamine is fluorescent dye that stains acid fast organisms.
c) The gram stain is used to detect blood parasites.
d) Potassium hydroxide is used as a contrast stain.
e) India ink is used to differentiate gram positive bacteria from gram negative bacteria.

15. With regards to microscopic methods:

a) Fluorescent microscopy has a higher resolution than an electron microscopy.
b) All microscopes require staining of the specimen before visualisation.
c) Brightfield microscopy creates a 3D image.
d) Darkfield microscopy causes the specimen to appear dark against an illuminated background.
e) The phase contrast microscope relies on the principle of light being dispersed according to specimen density.

16. Which of the following statements on the parts of the microscope is correct?

a) The condenser magnifies the specimen.
b) The ocular lenses on the light microscope typically have a magnification of 100x.
c) The magnification of a microscope is determined by the power of the ocular and objective lenses.
d) The phase contrast uses a mercury lamp as a light source.
e) All of the above.

17. Pili are thin short appendages extruding from the cytoplasmic membrane of certain bacteria. These pili are involved in

a) Movement
b) Attachment
c) Attachment and DNA transfer
d) Movement and attachment

18. Protective mechanisms used by bacteria to survive in the host may be

a) Capsule
b) Various enzymes
c) Adhesion to cells
d) All the above

19. The ability of an infectious agent to cause disease is called

a) Virulence
b) Toxigenicity
c) Pathogenicity
d) Infection

20. Which is the correct way to write the genus and species names of bacteria?

a) *Staphylococcus aureus*
b) *staphylococcus aureus*
c) *Staphylococcus Aureus*
d) *Staphylococcus. aureus*

Section B. Short answer questions.

1. Describe how you would go about setting up a functional medical laboratory in a hospital (in a logical sequence).
2. The normal range of serum iron for an adult man is 12.5-31.3 mcmol/l. What is the meaning of this statement? Define "Normal range". Which factors cause variation in this normal range?
3. Briefly describe group 3 viruses according to Baltimore.
4. Compare and contrast features of prokaryotic and eukaryotic cells.
5. Bacteria can either be pathogenic or commensal. Describe the features that make some bacteria pathogenic.

Question 2

The normal range of Serum iron for an adult man is 12.5 - 31.3 mcmol/L. This statement means that if levels of serum iron are Less than 12.5 or greater than 31.3 they are considered to be abnormal.

Normal range is a set of defined minimum and maximum normal values of a particular analyte in the body fluid.

The following are some of the factors that affect normal range;

Methodology.

The type of method used when collecting body fluids affects the normal range. There is no one type of method, different types of methods affects the body fluid differently.

Physiological factors.

- i.e menstral cycle

9/10

Racial

- nutrional
- Environmental

Sex

Normal ranges of some body fluids are higher in male compared to female.

Age:

Age also affects the normal range of body fluid in that at different stages of age certain body fluids are either high or low.