THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Applied & Health Sciences

DEPARTMENT OF MEDICAL SCIENCES

BACHELOR OF TECHNOLOGY IN MEDICAL LABORATORY SCIENCES

AML 4240: MEDICAL PHYSIOLOGY

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **TWO** sections **A** & **B**
Answer **ALL** questions in this paper
Section **A** is multiple choice questions
Circle the correct response and avoid guesswork half a mark will be deducted for any wrong response
Section **B** has essay questions. Attempt **ALL** questions in this section in the answer booklet provided
This paper consists of **FOUR** printed pages

SECTION A (ANSWER ALL QUESTIONS – 1 MARK EACH)

1. Volume of distribution of any substance can be injected into the body provided:
   a) The substance is a dye
   b) Metabolism can be accurately measured
   c) The concentration in the body fluids can be excreted
   d) The amount can be removed by excretion

2. Plasma volume can be measured using:
   a) Dyes

b) Serum albumin
c) Isotopes
d) Sucrose

3. During excitation
a) Nerve cells have high threshold
b) Nerve cells have no thresholds
c) Nerve cells have low thresholds
d) None of the above

4. Name ions involved in excitation and conduction
a) Cl^-
b) K^+
c) Na^{2+}
d) Mg^{2+}

5. The metabolic rate is measured by:
a) Oxygen filled spirometer and aCO_2 – absorbing system
b) Oxygen filled spirometer only
c) All of the above

6. Lactose and sucrose are ingested along with:
a) Maltose
b) Glycogen
c) Glucose
d) Fructose

7. Absorption of amino acids is rapid in the:
a) Duodenum
b) Stomach
c) Liver
d) Ilium

8. Iron is absorbed in the:
a) Stomach
b) Duodenum
c) Colon
d) Ileum

9. In adults, red blood cells are formed in the:
a) Spleen
b) Liver
c) Bone marrow
d) Lungs

10. The following are cellular components of blood EXCEPT?
a) Plasma
b) Serum
c) Red blood cells

d) Platelets

11. Movement of cells in phagocytoses involves
    a) Actin
    b) Microtubes
    c) Cell membrane
    d) Microfilaments

12. Macrophages become activated by lymphokines from:
    a) T- lymphocytes
    b) B- lymphocyte
    c) All of the above
    d) None of the above

13. Most lymphocytes are formed in:
    a) Spleen
    b) Thymen
    c) Lymph nodes
    d) None of the above

14. The vertical ejection begins.
    a) When the aortic values opens
    b) When the aortic pulmonary valves opens
    c) When the pulmonary valves opens
    d) None of the above

15. The metabolic change that cause/produce vasodilator include:
    a) Decrease in oxygen tension
    b) Increase in oxygen tension
    c) Osmolanty
    d) pH

16. Oxygenation of blood occurs in the:
    a) Pulmonary capillary bed
    b) Pulmonary artery
    c) Pulmonary veins
    d) None of the above

17. During an exercise.
    a) The amount of oxygen entering the blood in the lungs is increased
    b) Pulmonary blood flow per minutes is reduced
    c) The amount of oxygen entering the blood in the lungs is reduced
    d) Pulmonary blood flow per minutes is increased

18. The size of the kidney in various species is determined by:
    a) The size of the nephron they contain

b) The efferent arteriole
c) The capsule
d) The number of nephrones they contain

SECTION 2 (60 MARKS)

19. (a) List **FIVE** components of blood. **(5 marks)**

(b) Describe arterial and capillary circulation **(15 marks)**

20. (a) Describe factors affecting the metabolic rate. **(10 marks)**

(b) Explain the physiology of the nerve cells **(10 marks)**