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(*University of Choice*)

MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS 2022/2023 ACADEMIC YEAR

THIRD YEAR SECOND SEMESTER MAIN PRACTICAL EXAMINATION

FOR THE DEGREE OF BACHELOR OF MEDICAL LABORATORY SCIENCES & MEDICAL BIOTECHNOLOGY

COURSE CODE: MLC 300

COURSE TITLE: PRACTICUM I

DATE: 11TH APRIL 2023 **TIME: 9.00 – 12.00 NOON**

INSTRUCTIONS TO CANDIDATES

This paper is divided into three sections, **1, 2, 3, 4, 5, 6, 7** and **8** carrying respectively: **Haematology, Blood Transfusion Science, Clinical Chemistry, Microbiology, Medical Parasitology & Entomology, Histology & Cytology** and **Virology/Immunology**. Answer all questions.

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

This Paper Consists of 5 Printed Pages. Please Turn Over

1. HAEMATOLOGY

2. You are provided with blood sample labeled **HM1**, reagents and apparatus.
   i. Make a PBF **(5 marks)**
   ii. Stain with the stain provided and write clearly staining procedure **(10 marks)**
   iii. Examine and report on your finding **(5 marks)**
3. Use spot **HM2** provided to answer the questions below:
   i. Name the spot **(2 marks)**
   ii. State the use of the spot in Haematology Lab **(3 marks)**
4. Use spot **HM3** to answer the questions below:
   i. Name the laboratory test done using the spot **(2 marks)**
   ii. What is the normal range of the test you mentioned in (i) above **(3 marks)**

2. BLOOD TRANSFUSION SCIENCE

1. The sample labeled **BT1** is from a patient who requires urgent blood transfusion. Use the donors cells provided, reagents and apparatus to:
   i. Perform compatibility testing **(10 marks)**
   ii. Write down clearly the procedure **(5 marks)**
2. You are provided with samples labeled **BT2, BT3** and **BT4,** reagents and apparatus.
   i. Group the samples **(6 marks)**
   ii. Write down the procedure clearly **(4 marks)**
3. Use spot **BT 5** to answer the following questions:
   i. Identify the spot **(2 marks)**
   ii. Explain briefly how the spot is used in blood donor Centre **(3 marks)**

3. CLINICAL CHEMISTRY

1. You are provided with a sample labeled **C1,** apparatus and equipment. Use them to analyse the sample and answer the questions below:

i) What is the name of the test you have performed **(1 marks)**
ii) give the normal range of the metabolite in the condition above **(3 marks)**
iii) State **six (6)** signs and symptoms of the condition above **(6marks)**

2. You are provided with the spot labeled '**C2**'. Use it to answer the following questions.

i) Identify the spot **[2 marks]**
ii) State the principle of the spot **(3 marks)**
iii) Mention its use/s in clinical laboratory **[2 marks]**
iv) Explain how to maintain the spot in a clinical chemistry laboratory **(3marks)**

4. You are provided with urine specimen labeled "**C3**' obtained from a 50-year-old man for clinical examination at Kakamega County teaching and Referral Hospital. With reagents and apparatus provided:

i. determine the substance/s contained in sample as far as possible. [**6 marks]**
ii. Tabulate and comment your results [**2 marks]**
iii. Suggest what further test/s can be carried out to confirm your findings [**2 marks**

4. MICROBIOLOGY

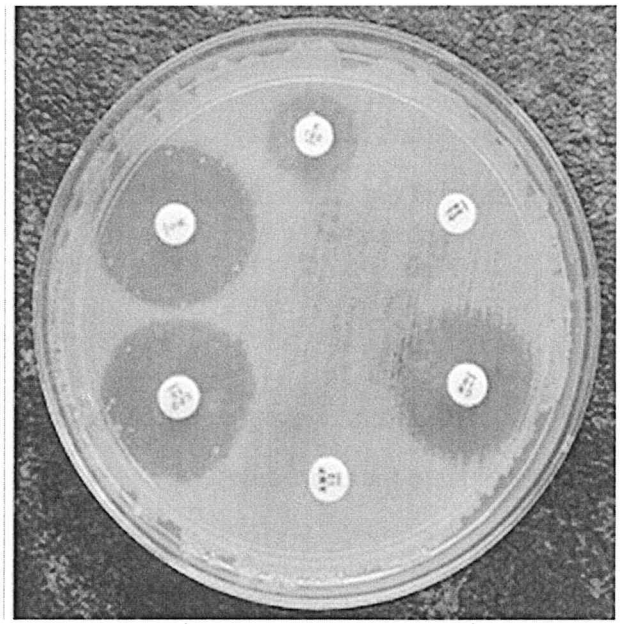
1. **M1** is an overnight culture growth.

(i) Outline the steps involved in the medium preparation **(5 marks)**

(ii) Indicate the growth/morphological characteristics **(2 marks)**

(iii) Perform the necessary biochemical test(s) using the reagents provided and indicate the principle of each of the test & results **(8 marks)**

2. Study **Spot M2** & use it to answer the following questions.



KEY:

1. AM- AMPICILLIN
2. P- PENICILLIN
3. VA- VANCOMYCIN
4. N- NEOMYCIN
5. K- KANAMYCIN
6. CB- CARBENICILLIN

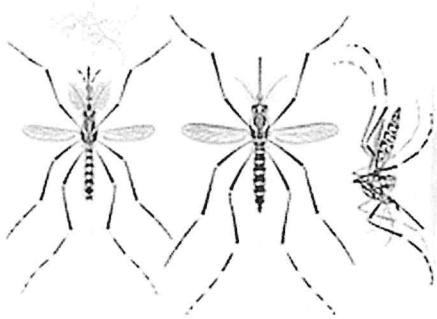
(i) Name the spot, its significance & procedure for its preparation **(8 marks)**

(ii) Read & tabulate your results **(3 marks)**

(iii) State 4 ways of the mode of action of antimicrobial agents **(4 marks)**

5. MEDICAL PARASITOLOGY AND MEDICAL ENTOMOLOGY

1.



i. Identify the above organism and name the stages of the relevant parasite found within it in the course of the life cycle **(3 marks)**

ii. What is the medical significance of the parasite in question **(12 marks)**

2. You are provided with a sample labeled **ME1**, reagents and apparatus. Process the sample, outline your procedure and results **(15 marks)**

6. HISTOLOGY/CYTOLOGY

1. The sample marked **Hist-1** is a calcified uterine tissue that is undergoing decalcification.

i. Determine if the tissue is completely decalcified and state the procedure you have used **(10mks)**

ii. State any other two methods used to assess decalcification end point **(5mks)**

2. Use spots **Hist-2, Hist3, Hist4, and Hist 5** to answer the questions that follows;

a. Name and state the use of spot Hist-2 **(4mks)**

b. Describe how spot Hist-3 is used in routine histological practice **(5mks)**

c. Describe the importance of spot Hist-4 in Papanicolaou staining procedure **(3mks)**

d. Describe the chemical composition of 1litre of spot Hist-5 **(3mks)**

7. VIROLOGY/IMMUNOLOGY

1. You are provided with EDTA sample marked **"V1".** Using the apparatus and reagents provided prepare a PBF, stain with the stains provided and:-

   a) Write down the staining procedure.

   b) Observe, draw and label the identified cells of the immune system.

   NB: Leave the accomplished task on the bench for marking purposes **(15 marks).**

2. Spot **"V2"** is a pictorial representation of the HIV Virus.

   (a) Name the parts labeled **A-G (7 marks)**

   (b) State the family to which spot "V1" belongs to **(2 Marks).**

   (c) What condition is associated with the virus above **(1 mark).**

3. Use spot **V3** provided to answer the questions below

   (a) Identify the spot **(1 mark).**

   (b) State the use of the spot **(1 marks)**

   (c) Explain the principle underlying the spot **(3 marks).**