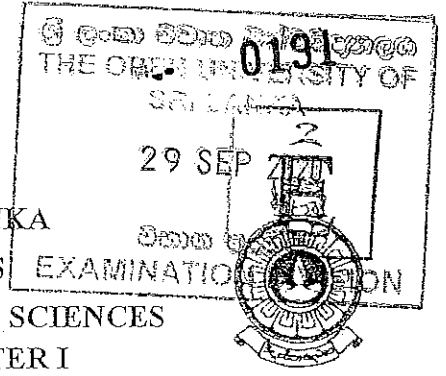


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THE OPEN UNIVERSITY OF SRI LANKA  
FACULTY OF HEALTH SCIENCES  
DEPARTMENT OF MEDICAL LABORATORY SCIENCES  
ACADEMIC YEAR 2019/2020 – SEMESTER I

BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS  
MDU4501 – HAEMATOLOGY II  
FINAL EXAMINATION

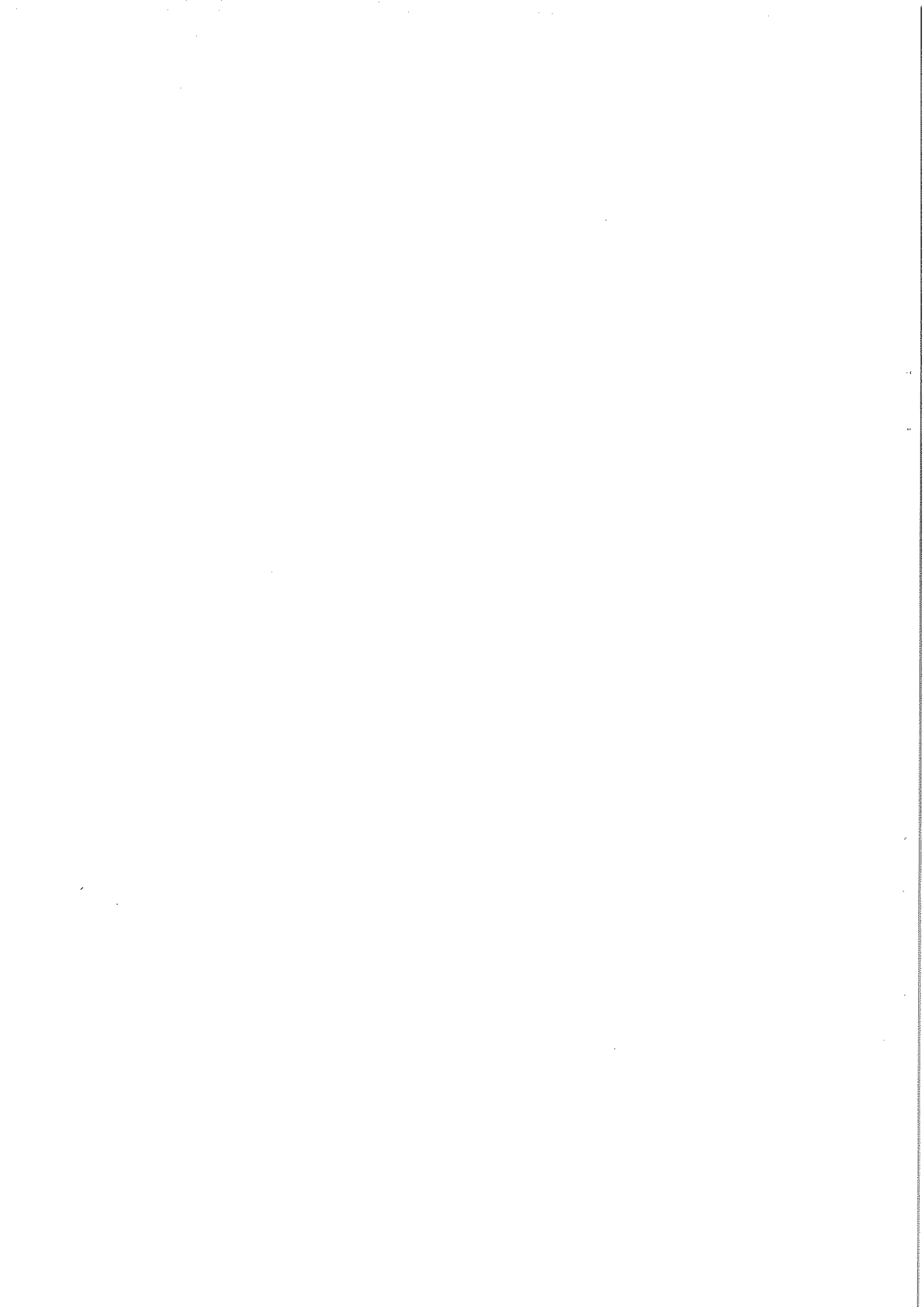
DURATION: THREE HOURS

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DATE: 29<sup>th</sup> SEPTEMBER 2020

TIME: 09.30 AM – 12.30 PM

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**Part B: Structured Essay Questions (40 marks)**

1)

1.1 Mention three (03) technical errors resulting in ABO discrepancies. (3 marks)

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1.2 List two (02) main components of red cell compatibility test. (2 marks)

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1.3 Briefly discuss the preparation, storage and contents of FFP. (5 marks)

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**(Total 10 marks)**

INDEX NO: .....

2) A 36 years of old women undergone laboratory investigations and some of the investigation results are given below.

Hb – 93 g/L                      PCV – 28.1 %                      RBC Count –  $3.84 \times 10^{12}$  /L

Serum Iron – 57 mg/dl (Ref: 70-200 mg/dl)

Serum Ferritin – 27 ng/ml (Ref: 20-200 ng/ml)

TIBC – 465 mg/dl (Ref: 250-430 mg/dl)

2.1 Calculate MCV, MCH and MCHC. (1.5 marks)

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2.2 What morphological features would you expect to see of red cells in the red cells of the blood picture? (2 marks)

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INDEX NO: .....

2.3 What is transferrin saturation? (1.5 marks)

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2.4 Calculate transferrin saturation of this patient and explain how it affects the proper functioning of bone marrow of this patient. (3 marks)

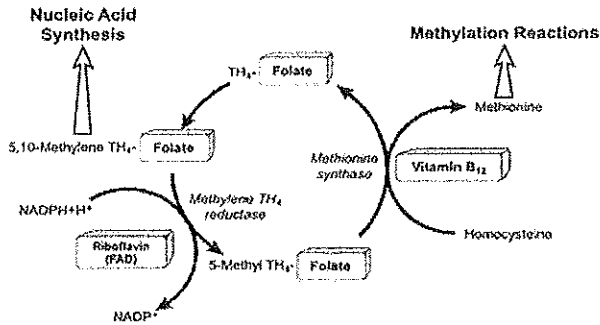
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2.5 Describe the abnormalities that may further occur in peripheral blood of this patient according to the finding of transferrin saturation. (2 marks)

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**(Total 10 marks)**

3) The role of folate in nucleic acid synthesis is shown below.



3.1 Explain the role of homocystine in the above process. (1.5 marks)

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3.2 What happens to plasma homocystine level in vitamin B12 deficiency? Give reasons for your answer. (2 marks)

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3.3 Name three (03) first line laboratory investigations that could use to screen for vitamin B12 deficiency. (1.5 marks)

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INDEX NO: .....

3.4 Name three (03) laboratory investigations that could use to diagnose vitamin B12 deficiency. (1.5 marks)

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3.5 State the expected findings of the laboratory investigations you mentioned in 3.4. (1.5 marks)

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3.6 Briefly explain the role of intrinsic factor (IF) with vitamin B12 metabolism. (2 marks)

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**(Total 10 marks)**

4.

4.1 List the expected FBC and blood picture findings in

- i. Beta thalassaemia trait (2 marks)
- ii. Sickle cell trait (2 marks)

Beta thalassaemia	Sickle cell trait
FBC	FBC
Blood picture	Blood picture

4.2 Briefly explain the principle behind Alkali denaturation test. (3 marks)

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4.3 How do you differentiate beta thalassaemia trait from iron deficiency anaemia in the laboratory? (3 marks)

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**(Total 10 marks)**

**Part C: Essay Questions (30 marks)**

- 1) Discuss ABO blood group system including the theoretical aspect of ABO grouping in tube technique. (15 marks)
- 2) Explain the pathological basis of the following.
  - a) Appearance of normoblasts in peripheral blood picture in hemolytic anemia. (6 marks)
  - b) Presence of megaloblasts in bone marrow. (4.5 marks)
  - c) Detection of low hemoglobin levels in patients associated with hereditary membranopathies. (4.5 marks)

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