



HØGSKOLEN I SØR-TRØNDELAG

AVDELING FOR MAT- OG MEDISINSK TEKNOLOGI BIOINGENIØRUTDANNINGEN

Kandidatnr:					
Eksamensdato:	13. March. 2006				
Varighet:	09.00 – 14.00				
Fagnummer:	LO 220 H				
Fagnavn:	Medisinsk laboratorieteknologi Modul 3				
Klasse(r):	3. BIO	BIO 2003H			
Studiepoeng:	12				
Faglærer(e):	Anne Lise Hjertø/ Shahnaz Rahimipoor m.fl.				
Hjelpemidler:	None				
Oppgavesettet består av:	2 parts; part I: Immunohematology and part II: Hematology ; 4 pages + 1 attachment				
Vedlegget består av:	Antigen-chart ID-Dia Panel				
Lykke til!					

NB! 2 problems in Immunohematology weight 50%
2 problems in Hematology weight 50%

PART I - IMMUNOHEMATOLOGY

Problem 1

- a) Give an overview of blood group antigens and antibodies in 7 different blood group systems.
Explain, in short, how the production of these antibodies is initiated.
- b) Describe the principle for the direct anti-human globulin test (DAT) and the indirect anti-human globulin test (IAT).
When do you use either of the two techniques in performing analyses in immunohematological work?
Give examples and explain on what grounds you have made your choices.
- c) Transfusion reactions caused by ABO- incompatibility between blood donor and recipient often have a different course than transfusion reactions caused by incompatibility in other blood group systems.
Explain the reason.

Problem 2

Marianne, 35 years old, is in her third pregnancy.
When she visited her physician for control in her 8.month of pregnancy, the physician detected an abnormal heart sound of the fetus. The physician decided that the baby is to be delivered by section (Caesarean) the next day.

- a) A blood sample is drawn from Marianne and the following analyses are performed:
- ABO-typing
 - Rh-typing
 - Antibody detection and identification
 - 2 units of SAGMAN-blood (red blood cells)
- SAGMAN-blood (red blood cells) and plasma for a possible exchange transfusion as treatment for the newborn child.

The following results are obtained:

ABO-typing:

	Anti-A	Anti-B	A ₁ -cells	B-cells
Bloodtype A, Control	+	-	-	+
Bloodtype B, Control	-	+	+	-
Patient's sample	-	-	+	+

- None visible agglutination
+ Visible agglutination

Rh-fenotyping :

	Anti-C	Anti-D	Anti- c	Anti-E	Anti-e
R1R2, Control	+	+	+	+	+
rr, Control	-	-	+	-	+
Patient's sample	+	+	-	-	+

- None visible agglutination
+ Visible agglutination

Assess these results and determine the patient's ABO-type and the Rh- genotype.

- b) The laboratory investigation detected an irregular antibody in Marianne's plasma.
This antibody was identified as anti-c (in Norwegian: anti- lille c)

We want you to explain by using the attached antigen-chart (ID DiaPanel), how this result is achieved.

- c) Marianne needs 2 units of SAGMAN-blood transfused after the section.

Which laboratory analyses/tests need to be performed before the transfusion can take place? State the grounds for your answer.

- d) The physician in charge of treatment decides that the newborn child has to undergo an exchange transfusion immediately (within 2 hours).

For the red blood cells, which ABO-type and Rh-genotype have to be chosen in this case?

For the plasma; which ABO-type must be chosen?

Would you perform a cross match?

State the grounds for your answers.

Question 3

a)

When counting red blood cells on Pentra 120 and Advia 120 two different principles are used; Electronic impedance and optical scatter.

Explain how these principles are utilized on Pentra 120 and Advia 120 to count the red blood cells. Also explain the curve and cytogram shown in fig. 1 and 2.

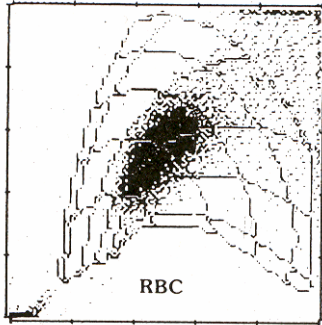


Fig.1: Advia 120



Fig. 2: Pentra 120

b)

Reticulocytes are immature red blood cells, and can normally be found in low numbers in peripheral blood.

Reticulocytes can be counted manually or by the Advia 120.

Explain these two counting principles.

Explain the clinical relevance of the reticulocyte count.

c)

Define the term anemia.

Two main classification methods are used for the classification of anemia.

Explain the main principles of these two classification methods.

How are the following anemias classified according to these two methods:

- a) Iron deficiency anemia?
- b) Vitamine B12 deficiency?
- c) Hemolytic anemia?

Explain why these anemias are classified as they are.

Question 4

a)

Explain how different preanalytical conditions during transport, storage and centrifugation of the samples can influence on the results of PT and APTT.

b)

Several different hemostasis tests are clot-based. *Explain how the clot-formation is registered with the manual method, on the KC instruments and on the Thrombolyzer.*

c)

Thrombocytes contribute to stop bleeding accompanying damage to small blood vessels.

Describe step by step what happens to the thrombocytes when the blood encounters a vessel wall where the endothelium is damaged.

P91

VEDLEGG til OPPGAVE 2

stört werden. s = stark/strong/fort
w = schwach/weak/faible

nt = nicht getestet
not tested
pas teste

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