P 13 Clinical microbiology I

To study: Sampling, material transportation (from textbooks, WWW etc.)
From spring term: Microscopy

Task 1: Indications of microbiological examination

For following casuistics, fill in the table.

❶ Allways fill in the case description (left collumn)

❷ Then try to find out your solution. Try to structure your answer followingly:

Microbiological examination: yes/no

- **if yes**, what type of a specimen(s)
- **if no**, what more steps, e. g. direct treatment – what antibiotic, etc.)

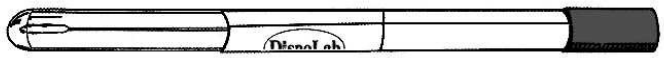
❸ After the three minute limit, write down correction made according to teachers explanation.

	Description of a case	Your solution (🕒 3 minutes)	Correction according to teacher explanation
a			
b			
c			
d			

Task 2: Swabs and vessels

Observe the swabs on your table and fill in their „identity cards".

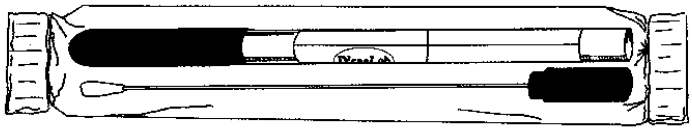
Name: Plain swab



Stick may be made of	plastic, wood or aluminium
Swab is made of	syntetic cotton

Practical use:

Name: Amies swab



Stick is made of	plastic or aluminium
Swab is made of	syntetic cotton
Medium	Amies (Stuart, Cary Blair)

Note: The medium may contain charcoal (then it is black); without charcoal, it would be colourless.

Practical use:

variant with aluminium stick is used for

Name: Fungi-Quick swab

Stick is made of	plastic
Transport medium colour	colourless

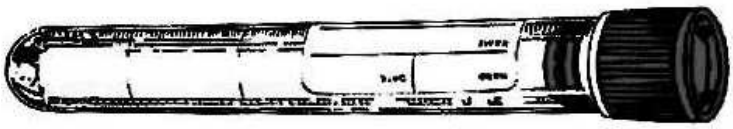
Practical use:

Name: C. A. T. swab

Stick is made of	plastic
Transport medium colour	colourless

Practical use:

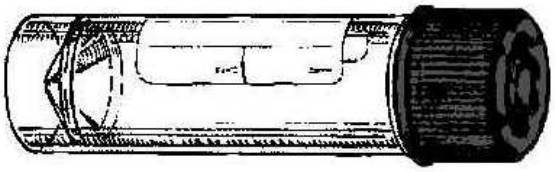
Name: Common test tube



Sterile? (yes or no)	
Description	made of polystyrene, 16 × 100 mm, 10 ml

Practical use:

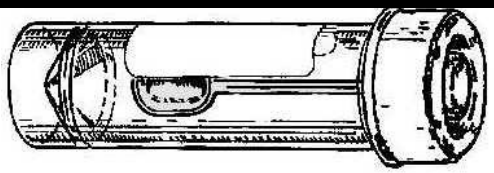
Name: Sputum test tube



Sterile? (yes or no)	
Description	made of polystyrene or polypropylene, 26 × 92 mm, 30 ml

Practical use:

Name: Faeces container



Sterile? (yes or no)	
Description	made of polypropylene, 26 × 82 mm, 30 ml

Practical use:

Name: Sampling vessel for urine

Sterile? (yes or no)	
Description	made of polypropylene, 45 × 70 mm, 120 ml

Practical use:

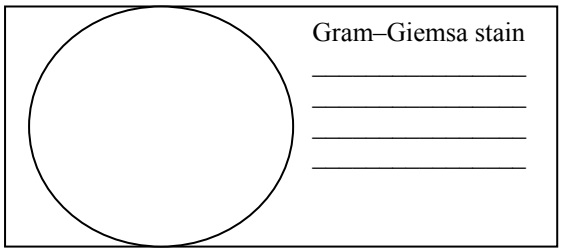
Task 3: Other sampling methods than swabs and vessels

a) Moulage method

Perform the moulage method in pairs. Place a sterile filtration paper to your mate‘s forearm. Using forceps, transport it carefully to a Petri dish with agar. After 10 seconds, remove it and throw it away.

b) Smears

In some cases it is recommended to send directly microscopical smear to the laboratory (actinomycosis, gonorrhoea, but also other genital infections). In gynecologic problems, often two specimens of a vaginal smear is sent to the laboratory. After coming to the laboratory, one is stained using Giemsa staining and the other is stained using Gram staining.
Observe a result of a vaginal smear, and draw your result to the laboratory report. Write down, whether your slide was Gram or Giemsa stained.



Task 4: Sampling in specific types of samples

a) Blood cultures

Describe use of three types of vessels for blood culture.

blue	
green	
red	

Fill in, what data should not be missing on a order form in case of blood culture sending (only „material type/examination type“ field)

Explain:

Why absolute sterility is necessary in blood culture samples more than in any other blood specimens (e. g. those sent for biochemical examination)?
How many blood cultures should be taken and why?

Fill in the missing fields in description of process of blood culture examination according to videoclip and teacher explanation.

A blood culture vessel comes to the laboratory. Here it is put into a _____.

The positivity is demonstrated by _____ and _____. When the cultivation is positive, a smear is prepared and the sample is _____ to blood and Endo agar. Also a preliminary _____ test is performed directly from the specimen; as the inoculum is not standardized here, its results are only _____.

b) Urine

According to teacher explanation, tick, what sentences concenrning urine sampling and transportation are true/false.

Urine examination is recommended in non-complicated and necessary in complicated cystitis ❒ true ❒ false
Microbiologists recommend use of cathetrized urine as a routine way of sampling urine for bacteriology ❒ true ❒ false
It is not important, whether prepucium (in men) or labia minora (in women) is in the way of urine stream when sampling urine for bacteriology ❒ true ❒ false
External orifice of urethra should be carefully washed and eventually also disinfected before taking sampling urine for bacteriology ❒ true ❒ false
The vessel, that the patient urinates in, should be sterile ❒ true ❒ false
The test tube used for urine transporation to the laboratory should have yellow cap ❒ true ❒ false
The order form should contain information whether urine is „routinelly taken“, cathetrized, punctated, or whether it is a specimen taken from a permanent catheter ❒ true ❒ false
Urine from permanent catether has the same value for bacteriological diagnostics as cathetrized urine (just for examination) ❒ true ❒ false
Urine specimen should be delivered to the laboratory in 2 hours after sampling, in impossible, it should be kept in refrigeratior ❒ true ❒ false
Urine sample is better than urethral swab in gonorrhoea diagnostics ❒ true ❒ false

c) Faeces samples for different types of pathogens and toxins

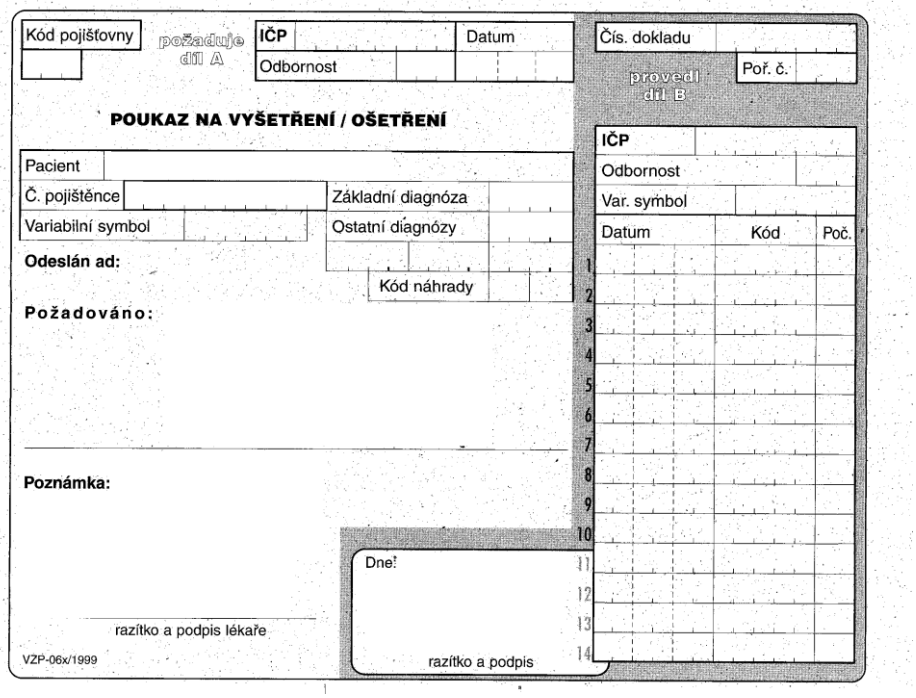
For some purposes, it is possible to send rectal swabs. For some other purposes, it is necessary to send a specimen of stool. Sometimes also at refrigerator temperature.
Fill in the next table.

Stool sent for	Type of specimen	Stool sent for	Type of specimen
bacteriology		virology – virus isolation	
mycology		parasitology	
virology – antigen detection		detection of toxin of *Clostridium difficile*	

Task 5: The order form

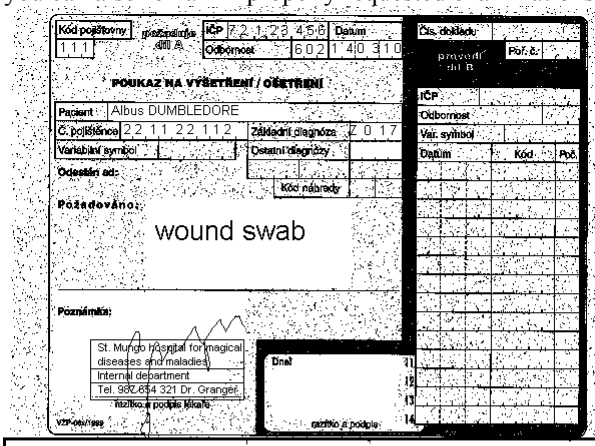
a) Order form filling in

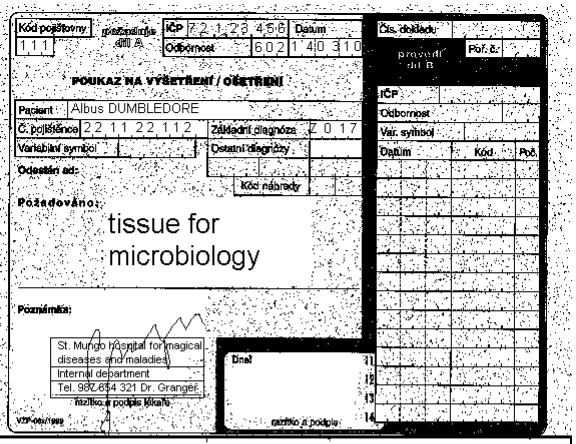
Fill in the following order form with a patient name and data and requested examination related with the disease that is written on a card that was given to you by a teacher

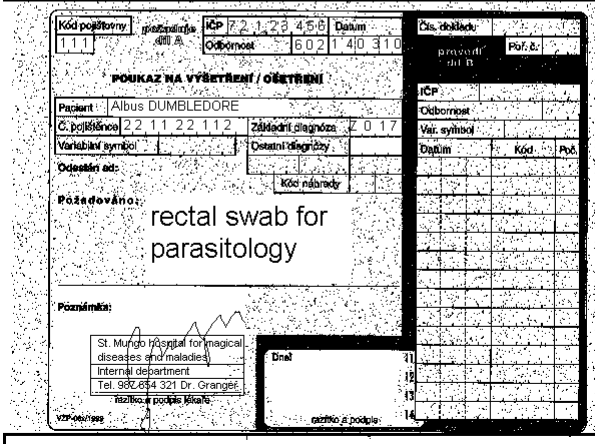


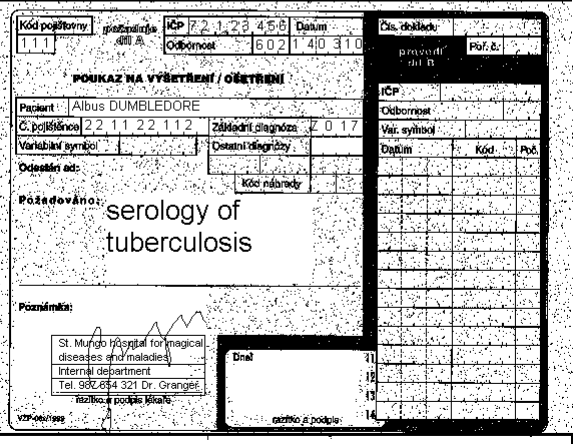
b) Order form common mistakes

To each of following ofder form, write down what is wrong. Some mistakes are mistakes of the order form, but you can also remark inproperly requested examinations.









Check-up questions:

1. What microbiological examination is recommended in a patient with one month durating dry cough with no finding at physical examination?

2. Try to define the importance of a well-filled in order form

a) for legal reasons

b) for economical reasons

c) for medical reasons

3. Explain the importance of microbiological examination for targeted antibiotic treatment.

4. Name at least two examples where, despite recommendations for targeted treatment, an empiric therapy is improved.