

**Ministry of Science and Higher Education of the Russian Federation**

**Ministry of Education and Science of the Kyrgyz Republic**

**Interstate Educational Organization of Higher Education  
Kyrgyz-Russian Slavic University named after the first President of  
the Russian Federation B.N. Yeltsin**

**FUND OF ASSESSMENT TOOLS (FAT)  
for the discipline " Propaedeutics of Internal Diseases" "**

**Level of Higher Education: SPECIALIST**

**Field of Study:**

**Code: 31.05.01 – RF, 560001 – KR**

**Name: General Medicine (for international students)**

**Qualification: Physician**

**Total workload: 10 credit units (360 hours)**

**Course, semesters: 3th year, 3, 4 th semester**


**Year of commencement of training: 2024**

**Duration of education: 5 years**

The Fund of Assessment Tools is designed to control students' knowledge in the field of study (specialty) PHYSICIAN in the discipline "Propaedeutics of Internal Diseases "

The Fund of Assessment Tools was reviewed and approved at the meeting of the  
department of  
THERAPY-1 OF PEDIATRICS AND DENTAL SPECIALTIES

Protocol No. 1 dated 27.08.2024

Head of Department  
Therapy-1 of Pediatrics and Dental specialties \_  \_ Suranova G.Zh.

Executors  
Candidate of Medical Sciences, Associate Professor \_  \_ Suranova G.Zh.

1. GENERAL PROFESSIONAL COMPETENCIES (GPC) GPC-7: Able to prescribe treatment and monitor its effectiveness and safety

Stage	Know	Able to	Master	Assessment Tools
Level 1	Etiology, pathogenesis, clinical presentation of major diseases with various nosological forms	Compare different types and methods of treating patients with various nosological forms, develop a treatment plan for diseases	Skills in analyzing different types of treatment for patients with various nosological forms	Block A: Tests on knowledge of etiology and pathogenesis
Level 2	Methods of managing and treating patients in outpatient settings and day hospital conditions	Justify principles of treatment and evaluate its effectiveness	Techniques for searching and comparing different treatment methods for patients with various nosological forms	Block A: Tests on knowledge of etiology and pathogenesis
Level 3	Main directions and issues in managing patients with various diseases	Monitor effectiveness and safety of prescribed treatment at all stages of its implementation		

PC-5: Ready to collect and analyze patient complaints, anamnesis data, results of examination, laboratory, instrumental, pathological and other studies to recognize the condition or establish the fact of presence or absence of disease

Stage	Know	Able to	Master	Types of Assessment Tools
Level 1	Semiotics of diseases and variants of their clinical manifestation; methods of anamnesis collection (disease, life, epidemiological); indications and contraindications for clinical and paraclinical diagnostic methods	Identify and analyze patient complaints; collect anamnesis data; perform physical examination (inspection, palpation, percussion, auscultation)	Skills in objective examination of patients; techniques of anamnesis collection and analysis; interpretation of basic functional diagnostic methods	Block A: Tests on knowledge of etiology and pathogenesis
Level 2	Structure and regulatory requirements for medical documentation; principles of medical record keeping in	Interpret results of laboratory and instrumental investigations; fill in medical records (outpatient card,	Skills in documentation of medical records; prescribing necessary laboratory and instrumental	Block A: Tests on knowledge of etiology and pathogenesis

Stage	Know	Able to	Master	Types of Assessment Tools
	outpatient and inpatient settings	inpatient history) for adults and children	examination methods	
Level 3	Etiopathogenesis, clinical presentation and diagnostic criteria of basic diseases; differential diagnostic features	Correlate clinical data with paraclinical findings; formulate preliminary and clinical diagnoses	Skills in comprehensive examination of patients; conducting necessary diagnostic measures	Block B: Situational tasks on developing a treatment plan
Level 4	Algorithms of diagnostic search; principles of evidence-based medicine in clinical diagnostics	Systematize diagnostic data; determine diagnostic significance of clinical and paraclinical findings	Skills in clinical reasoning; diagnostic algorithm application	Block C: Practice-oriented tasks — simulation scenarios of patient management
Level 5	—	Integrate data from multiple diagnostic sources; verify diagnostic hypotheses	—	Block D: Certification questions on comprehensive patient management
Level 6	—	Determine indications and contraindications for additional diagnostic procedures based on clinical presentation	—	Block D: Certification questions on comprehensive patient management

PC-9: Ready to provide primary health care in sudden acute diseases, exacerbation of chronic diseases

Stage	Know	Able to	Master	Assessment Tools
Level 1	Clinical manifestations of acute and chronic diseases; treatment methodologies and performance of medical manipulations	Correlate symptoms, examination data and indicators of laboratory and instrumental methods into a unified whole and establish correct diagnosis	Skills in identifying signs of acute disease or exacerbation of chronic disease	Block A: Tests on knowledge of acute conditions clinic; oral questions on treatment methodologies

Stage	Know	Able to	Master	Assessment Tools
Level 2	General principles of disease treatment considering their etiology and pathogenesis	Prepare patient, instruments and medications for necessary manipulation	Skills and methods of providing medical care in acute and chronic diseases	Block B: Situational tasks on preparation for medical manipulations; essays on pathogenetic therapy
Level 3	Knowledge of pharmacological groups and their interactions with each other	Evaluate disease syndrome and justify therapy corresponding to disease syndrome		

PC-14: Able to establish diagnosis based on results of biochemical and clinical investigations considering the course of pathology in organs, systems and organism as a whole

Stage	Know	Able to	Master	Types of Assessment Tools
Level 1	Normal values of biochemical parameters of blood, urine and other biological fluids; clinical significance of laboratory deviations; principles of clinical biochemistry	Interpret results of biochemical investigations; interpret results of clinical analyses; correlate laboratory data with clinical presentation	Skills in clinical and laboratory analysis; techniques of laboratory data interpretation	Block A: Tests on knowledge of clinical biochemistry and laboratory diagnostics
Level 2	Pathophysiology of organ and system disorders; patterns of pathological process development; ICD-10 structure and coding principles	Correlate laboratory findings with pathological changes in organs and systems; formulate diagnosis considering organ, system and organism-level pathology	Skills in differential diagnosis; methods of functional state assessment of organs and systems	Block A: Tests on knowledge of clinical biochemistry and laboratory diagnostics
Level 3	Complex diagnostic approaches; integration of clinical and paraclinical data; nosological classification systems	Synthesize clinical and laboratory data for diagnostic conclusions; apply ICD-10 coding for diagnosis formulation	Skills in complex diagnostic analysis; clinical-laboratory correlation	Block B: Situational tasks on diagnostic reasoning

Stage	Know	Able to	Master	Types of Assessment Tools
Level 4	—	Evaluate diagnostic significance of biochemical markers in various pathological conditions	—	Block C: Practice-oriented tasks — simulation scenarios of diagnostic process
Level 5	—	Apply complex laboratory panels for differential diagnosis of systemic diseases	—	Block D: Certification questions on comprehensive diagnostics

### 3. DISCIPLINE LEARNING OUTCOMES (p. 3.1–3.3)

Stage	Know	Able to	Master	Assessment Tools
Level 1	Anatomical-physiological features; causes and genesis of pathological processes; clinical symptoms and syndromes; laboratory and instrumental examination methods; normal indicators; symptomatology of urgent conditions; principles of emergency care	Conduct patient questioning; physical examination (inspection, palpation, auscultation, BP, pulse); identify objective signs of pathological syndrome; compile examination plan	Collect complaints and anamnesis; conduct objective examination; measure height, weight, BMI; compile examination plan	Block A: Tests on knowledge of etiology and pathogenesis
Level 2	—	Interpret results: CBC, urinalysis, sputum, stool, biochemistry, gastric/duodenal contents, pleural effusion, spirometry, ECG; present results as syndromic diagnosis; provide emergency care; conduct resuscitation	Provide emergency care in urgent conditions; conduct resuscitation measures	Block A: Tests on knowledge of etiology and pathogenesis
Level 3	—	—	—	Block B: Situational tasks on

Stage	Know	Able to	Master	Assessment Tools
				developing a treatment plan
			Block C: Practice-oriented assignments — interpretation of investigation results	
			Block D: Certification questions on ECG and spirometry interpretation; practical skills in emergency care	

#### 4. STRUCTURE OF ASSESSMENT TOOLS BLOCKS

Block	Content	Competencies	Semester
Block A	Test tasks on knowledge of etiology, pathogenesis, symptomatology, diagnostic methods, ICD-10, medical documentation, acute conditions clinic; oral questioning on anamnesis collection and examination methodologies	GPC-7 (L1–L2), PC-4 (L1), PC-5 (L1), PC-9 (L1), PC-14 (L1), p. 3.1–3.2 (L1–L2)	3,4
Block B	Situational tasks on developing treatment plan, anamnesis collection, clinical picture analysis, preparation for manipulations, documentation filling; essays on hereditary diseases, differential diagnosis of syndromes, pathogenetic therapy, medical statistics	GPC-7 (L3), PC-4 (L2), PC-5 (L2), PC-9 (L2), PC-14 (L2), p. 3.1–3.2 (L3)	3,4
Block C	Practice-oriented assignments: simulation scenarios for patient management in polyclinic, patient examination with diagnosis establishment, business games on differential diagnosis of syndromes, prescribing therapy considering stage, interpretation of investigation results	GPC-7 (L3), PC-4 (L3), PC-5 (L3), PC-9 (L3), p. 3.1–3.2 (L3)	4
Block D	Certification questions: comprehensive patient management, differential diagnosis, syndromology, pharmacotherapy; analytical tasks on evaluating therapy effectiveness, formulating syndromic diagnosis; practical	GPC-7 (L3), PC-4 (L3), PC-5 (L3), PC-9 (L3), p. 3.1–3.2 (L3)	4 (exam)

Block	Content	Competencies	Semester
	skills in constructing clinical diagnosis, emergency care, ECG and spirometry interpretation		

#### 5. DISTRIBUTION BY SEMESTERS

Semester	Control Type	Used Blocks	Competencies
5 (3.1)	Pass/Fail	Block A, Block B (partially)	GPC-7 (L1–L2), PC-4 (L1–L2), PC-5 (L1–L2), PC-9 (L1–L2), PC-14 (L1–L2), p. 3.1–3.2 (L1–L2)
6 (3.2)	Exam	Block A (final), Block B, Block C, Block D	All competencies of all levels, including Level 3

#### 6. TECHNOLOGICAL MAP OF THE DISCIPLINE 3th Semester (Pass/Fail)

Module	Name	Control	Control Form	Min	Max	Week
Module 1	CC #1: Introduction to Internal Diseases. Propaedeutics. General and detailed examination	Current	Frontal questioning, testing, practical skills (general examination), attendance, R&D	2	4	4
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
Module 2	CC #2: Lung Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills OPPA, attendance, R&D	2	4	7
	Borderline	Oral/written questioning, situational task, practical skills OPPA	6	10		
Module 3	CC #3: Lung Syndromes. Subjective and objective	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	10

Module	Name	Control	Control Form	Min	Max	Week
	investigation methods					
	Borderline	Oral/written questioning, situational task, FEV1 interpretation	6	10		
Module 4	CC #4: CVS Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	14
	Borderline	Oral/written questioning, situational task, ECG interpretation	6	10		
Module 5	CC #5: CVS Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills (BP), attendance, R&D	2	4	16
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
TOTAL for semester			40	70		
Intermediate control (Pass/Fail)			20	30		
Semester rating			60	100		

4th Semester (Exam)

Module	Name	Control	Control Form	Min	Max	Week
Module 1	CC #6: GIT Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills OPPA, attendance, R&D	2	4	5
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
Module 2	CC #7: UGS Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	8
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
Module 3	CC #8: Hematopoietic System Syndromes. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	12
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
Module 4	CC #9: Syndromes in Endocrinology. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	14
	Borderline	Oral/written questioning, situational task, practical skills	6	10		

Module	Name	Control	Control Form	Min	Max	Week
Module 5	CC #10: Syndromes in Rheumatology. Subjective and objective investigation methods	Current	Frontal questioning, testing, practical skills, attendance, R&D	2	4	16
	Borderline	Oral/written questioning, situational task, practical skills	6	10		
TOTAL for semester			40	70		
Intermediate control (Exam)			20	30		
Semester rating			60	100		

## TYPICAL CONTROL TASKS PROPAEDEUTICS OF INTERNAL DISEASES

### CONTROL SECTION #1

Subject and Tasks of Propaedeutics. Investigation Methods of Respiratory Organs. Syndromes in

#### Pulmonology

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Name the main methods of physical examination in propaedeutics of internal diseases.
2. Characterize types of breathing (thoracic, abdominal, mixed) and their diagnostic criteria.
3. List pathological forms of chest and their clinical significance.
4. Describe the technique of comparative percussion of lungs.
5. Name the main respiratory sounds in normal conditions and their characteristics.
6. List the main syndromes in pulmonology.
7. Characterize the bronchial obstruction syndrome.
8. Describe the technique for determining lung borders and Kronig's fields.

Test Tasks (Closed Type) — Variant 1

Question 1. During patient examination, barrel-shaped chest, shortened distance between anterior rib sections, and horizontal rib position were revealed. Which syndrome does this characterize?

- A) Lung tissue infiltration syndrome
- B) Lung hyperinflation syndrome
- C) Pleural fluid presence syndrome
- D) Bronchial obstruction syndrome
- E) Lung cavity syndrome

Question 2. During lung percussion over the lesion focus, dull percussion sound is determined.

Which pathological process is most likely?

- A) Pulmonary emphysema
- B) Pneumothorax
- C) Lung tissue infiltration (pneumonia)
- D) Bronchial asthma
- E) Pleural effusion

Question 3. During lung auscultation, fine bubbling rales localized in lower lung sections were revealed. Which syndrome does this characterize?

- A) Bronchial obstruction syndrome
- B) Lung tissue infiltration syndrome
- C) Pleural fluid presence syndrome
- D) Lung failure syndrome
- E) Chronic pulmonary heart syndrome

Question 4. On chest X-ray, increased lung tissue airiness, widening of retrosternal space, and flattening of diaphragmatic domes were revealed. Which syndrome is confirmed?

- A) Bronchial obstruction syndrome
- B) Lung hyperinflation syndrome (emphysema)
- C) Lung tissue infiltration syndrome
- D) Pleural fluid presence syndrome
- E) Lung cavity syndrome

Question 5. Patient presents complaints of paroxysmal cough with difficult-to-expectorate sputum, dyspnea on physical exertion. On auscultation — wheezing on expiration. Which syndrome is characteristic?

- A) Bronchial obstruction syndrome
- B) Lung tissue infiltration syndrome
- C) Lung hyperinflation syndrome
- D) Gas presence in pleural cavity syndrome
- E) Pathological bronchial dilation syndrome

Question 6. On spirometry, FEV1/FVC reduction below 70% and increased residual volume were revealed. Which type of ventilation disorder does this characterize?

- A) Restrictive type
- B) Obstructive type

- C) Mixed type
- D) Diffusion type
- E) Perfusion type

Question 7. During patient examination, chest asymmetry was revealed: right side lags in respiratory movement, percussion sound is dull, breathing is not audible. Which syndrome is most likely?

- A) Pleural fluid presence syndrome
- B) Gas presence in pleural cavity syndrome
- C) Lung tissue infiltration syndrome
- D) Bronchial obstruction syndrome
- E) Lung hyperinflation syndrome

Question 8. During lung auscultation over lower section of right lung, increased bronchophony is determined. Which pathological process does this indicate?

- A) Pneumothorax
- B) Pleural effusion
- C) Lung tissue infiltration (consolidation)
- D) Pulmonary emphysema
- E) Atelectasis

#### BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

##### Situational Task #1 (PC-4, Level 2)

Patient K., 58 years old, presented with complaints of cough with yellowish-green sputum for 5 days, body temperature elevation to 38.5°C, chest pain on right side when coughing and breathing, dyspnea when walking.

##### Objective Examination Data:

- Condition of moderate severity
- Temperature 38.3°C
- Respiratory rate (RR) 24 per minute
- Skin pale
- Over right lower chest section: dull percussion sound, weakened breathing, coarse bubbling rales heard
- Over remaining lung sections: vesicular breathing
- Heart sounds muffled, rhythmic
- Heart rate (HR) 92 bpm
- Blood pressure (BP) 130/80 mmHg

Radiography Data: In right lower lung field — infiltrative shadowing with indistinct contours, intensified lung pattern

Blood Test: Leukocytes  $12.5 \times 10^9/L$ , ESR 28 mm/h

##### Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile patient examination plan with justification of each method. (10 points)

##### Evaluation Criteria:

- Correct identification of lung tissue infiltration syndrome (pneumonia) — 5 points
- Prescription of sputum general analysis, bacterial culture, repeat radiography, spirometry — 5 points
- Justification of method selection considering differential diagnosis of pneumonia, pleurisy, lung cancer — 10 points

##### Situational Task #2 (PC-4, Level 2)

Patient M., 45 years old, smoker for 20 years (1 pack/day), presented with complaints of dyspnea on mild physical exertion, periodic cough with small amount of mucous sputum, feeling of pressure in chest.

##### Objective Examination Data:

- Condition satisfactory
- Hypersthenic body type
- Chest barrel-shaped
- RR 20 per minute

- On examination: horizontal rib position, increased anteroposterior chest size
  - Percussion sound over lungs box-like, lung borders narrowed, mobility of lower lung edges limited
  - On auscultation: weakened breathing, prolonged expiration
- Spirometry Data: FVC reduced to 65% of predicted, FEV1/FVC — 58%, residual volume increased to 140% of predicted

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed? (5 points)
3. Justify differential diagnosis between chronic bronchitis and bronchial asthma. (10 points)

Evaluation Criteria:

- Correct identification of lung hyperinflation syndrome (emphysema) + bronchial obstruction syndrome — 5 points
- Prescription of radiography, external respiratory function investigation with bronchodilator test, blood analysis — 5 points
- Correct justification of differential diagnosis (cough character, obstruction reversibility, anamnesis) — 10 points

## CONTROL SECTION #2

Investigation Methods of Cardiovascular System. Syndromes in Cardiology

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Characterize properties of arterial pulse.
2. Describe the technique for determining borders of relative and absolute cardiac dullness.
3. List the main heart sounds and mechanism of their occurrence.
4. Name pathological heart sounds (III, IV sounds, mitral valve opening sound).
5. Characterize heart murmurs: systolic and diastolic.
6. List the main syndromes in cardiology.
7. Describe clinical and ECG criteria of left ventricular hypertrophy.
8. Name cardiac rhythm disorders and their ECG manifestations.

Test Tasks (Closed Type) — Variant 1

Question 1. During patient examination, pulse acceleration to 100 bpm, body temperature elevation to 38°C, and skin pallor were revealed. Which syndrome does this characterize?

- A) Arterial hypotension syndrome
- B) Fever syndrome
- C) Dehydration syndrome
- D) Hypoxia syndrome
- E) Intoxication syndrome

Question 2. During heart auscultation over apex — muffled I sound, over aorta — accentuated II sound. Which pathological condition does this indicate?

- A) Mitral insufficiency
- B) Mitral stenosis
- C) Aortic insufficiency
- D) Aortic stenosis
- E) Tricuspid valve insufficiency

Question 3. On ECG, increased R wave amplitude in leads V5-V6 more than 25 mm, leftward shift of transition zone revealed. Which pathology is confirmed?

- A) Right ventricular hypertrophy
- B) Left ventricular hypertrophy
- C) Biventricular hypertrophy
- D) Left atrial dilatation
- E) Right atrial dilatation

Question 4. During heart auscultation over apex, prolonged systolic murmur heard, conducting to axillary region. Which heart defect is most likely?

- A) Mitral stenosis
- B) Mitral insufficiency
- C) Aortic stenosis
- D) Aortic insufficiency

- E) Tricuspid valve insufficiency

Question 5. Patient presents complaints of periodic heart pains occurring on physical exertion, radiating to left arm, relieved by nitroglycerin. Which syndrome is characteristic?

- A) Acute heart failure syndrome
- B) Chronic coronary insufficiency syndrome (angina)
- C) Myocardial infarction syndrome
- D) Arterial hypertension syndrome
- E) Atrial fibrillation syndrome

Question 6. On BP measurement, 180/110 mmHg revealed, pulse 76 bpm, regular. Which syndrome does this characterize?

- A) Arterial hypotension syndrome
- B) Arterial hypertension syndrome
- C) Heart failure syndrome
- D) Acute coronary insufficiency syndrome
- E) Bradycardia syndrome

Question 7. On ECG: absence of P waves, presence of wavy f oscillations at frequency 450-600 per minute, unequal RR intervals. Which rhythm disorder is diagnosed?

- A) Sinus tachycardia
- B) Extrasystole
- C) Atrial fibrillation
- D) Atrial flutter
- E) Paroxysmal tachycardia

Question 8. During heart auscultation over base, diastolic murmur heard, conducting toward apex. Pulse character — high systolic, low diastolic ("cannonball"). Which heart defect is characteristic?

- A) Mitral stenosis
- B) Mitral insufficiency
- C) Aortic stenosis
- D) Aortic insufficiency
- E) Pulmonary artery stenosis

#### BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

##### Situational Task #1 (PC-4, Level 2)

Patient K., 45 years old, presented with complaints of heart pains occurring on physical exertion, radiating to left arm, accompanied by dyspnea.

##### Objective Examination Data:

- Skin pale, acrocyanosis
- BP 140/90 mmHg, pulse 88 bpm, regular
- On heart auscultation: sounds muffled, II sound accentuated over aorta
- On percussion: heart borders expanded leftward by 1 cm

##### Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile patient examination plan with justification of each method. (10 points)

##### Evaluation Criteria:

- Correct identification of angina syndrome (chronic coronary insufficiency syndrome) — 5 points
- Prescription of ECG (with stress tests), EchoCG, blood tests (general, biochemistry with lipid profile, enzymes), radiography — 5 points
- Justification of method selection considering differential diagnosis of IHD, cardiomyopathy, heart defects — 10 points

##### Situational Task #2 (PC-4, Level 2)

Patient S., 62 years old, presented with complaints of dyspnea at rest, lower extremity edema by evening, nocturnal suffocation attacks forcing assumption of vertical position. Heart pains do not bother.

##### Objective Examination Data:

- Condition of moderate severity
- Forced position — semi-sitting
- Skin pale, acrocyanosis, lower extremity edema pastose

- RR 26 per minute
- HR 110 bpm, irregular rhythm, pulse deficit 15 bpm
- BP 140/95 mmHg
- Neck veins distended
- Percussion: heart borders expanded leftward by 2 cm
- Auscultation: sounds weakened, "quail" rhythm, systolic murmur over apex
- In lungs: fine bubbling rales in lower sections

Questions:

1. Which syndromes are characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed? (5 points)
3. Justify differential diagnosis between heart failure syndrome and acute lung failure syndrome. (10 points)

Evaluation Criteria:

- Correct identification of chronic heart failure syndrome, atrial fibrillation syndrome, arterial hypertension syndrome — 5 points
- Prescription of ECG, EchoCG, radiography, blood test (natriuretic peptides), catheterization — 5 points
- Correct justification of differential diagnosis (clinical picture, presence of edema, auscultation data, radiography) — 10 points

### CONTROL SECTION #3

Syndromes in Cardiology (Continued)

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Characterize acute coronary insufficiency syndrome (myocardial infarction).
2. Describe heart failure syndrome: clinical manifestations and classification.
3. List clinical and ECG criteria of right ventricular hypertrophy.
4. Characterize conduction disorders: atrioventricular block, bundle branch block.
5. Describe heart defects: mitral valve insufficiency, mitral orifice stenosis.
6. Name laboratory diagnostic methods for heart diseases (enzymes, lipid profile).
7. Characterize echocardiography technique and its diagnostic value.

Test Tasks (Closed Type) — Variant 1

Question 1. Patient presents complaints of paroxysmal dyspnea occurring at night, forcing patient to wake up and assume sitting position. Which syndrome is characteristic?

- A) Angina syndrome
- B) Cardiac asthma syndrome
- C) Myocardial infarction syndrome
- D) Lung failure syndrome
- E) Pleurisy syndrome

Question 2. On ECG, ST segment elevation above isoline in leads V1-V4, appearance of Q waves in these leads revealed. Which syndrome is confirmed?

- A) Effort angina syndrome
- B) Acute coronary insufficiency syndrome (myocardial infarction)
- C) Chronic coronary insufficiency syndrome
- D) Pericarditis syndrome
- E) Pulmonary heart syndrome

Question 3. During heart auscultation over apex, prolonged diastolic murmur with presystolic accentuation heard. Which heart defect is characteristic?

- A) Mitral stenosis
- B) Mitral insufficiency
- C) Aortic stenosis
- D) Aortic insufficiency
- E) Tricuspid valve insufficiency

Question 4. On ECG: PQ interval prolongation more than 0.20 s, periodic loss of QRS complex after P wave. Which conduction disorder is diagnosed?

- A) Sinus bradycardia
- B) AV block I degree with transition to II degree

- C) AV block III degree
- D) Right bundle branch block
- E) Left bundle branch block

Question 5. On examination revealed: cyanosis, jugular vein distension, lower extremity edema, liver enlargement. BP normal or reduced. Which syndrome is characteristic?

- A) Arterial hypertension syndrome
- B) Right ventricular failure syndrome
- C) Left ventricular failure syndrome
- D) Acute coronary insufficiency syndrome
- E) Atrial fibrillation syndrome

**BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes**

Situational Task #1 (PC-4, Level 2)

Patient V., 55 years old, presented with complaints of intensive compressive pains behind sternum, occurring at rest, radiating to left arm, jaw, not relieved by nitroglycerin, accompanied by fear of death, cold sweat, dyspnea. Attack duration — 40 minutes.

Objective Examination Data:

- Condition severe
- Skin pale, cold clammy sweat
- BP 90/60 mmHg, pulse 110 bpm, weak filling
- Heart sounds muffled, IV sound heard
- In lungs: fine bubbling rales in lower sections

ECG Data: ST segment elevation in leads II, III, aVF, mirror ST depression in leads I, aVL

Blood Test: AST 1.8 mmol/L, ALT 0.8 mmol/L, CK 450 U/L, CK-MB 65 U/L, troponin I positive

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis clarification and assessment of lesion volume? (5 points)
3. Compile differential diagnosis between myocardial infarction and acute pancreatitis, unstable angina. (10 points)

Evaluation Criteria:

- Correct identification of acute coronary insufficiency syndrome (acute inferior wall myocardial infarction) — 5 points
- Prescription of repeat ECG, echocardiography, coronary angiography, blood analysis (complete biochemical profile, coagulogram) — 5 points
- Correct justification of differential diagnosis (pain character, ECG dynamics, enzymes, clinical picture) — 10 points

### **CONTROL SECTION #5**

Investigation Methods of Gastrointestinal Tract. Syndromes in Gastroenterology. Hepatic Syndromes

**BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes**

Oral Questions (selectively 3-4 questions):

1. Characterize the technique of deep sliding palpation according to Obraztsov-Strazhesko.
2. Describe liver percussion technique according to Kurlov.
3. List the main syndromes in gastroenterology.
4. Characterize gastrointestinal bleeding syndrome.
5. Describe laboratory investigation methods of liver function.
6. Name hepatic syndromes and their diagnostic value.
7. Characterize portal hypertension syndrome.

Test Tasks (Closed Type) — Variant 1

Question 1. Patient presents complaints of dull aching pains in epigastric region, occurring 1.5-2 hours after meals, relieved by food intake. Which syndrome is characteristic?

- A) Gastric hypersecretion syndrome (peptic ulcer)
- B) Gastric hyposecretion syndrome
- C) Gastric evacuation disorder syndrome
- D) Maldigestion syndrome

- E) Intestinal dyspepsia syndrome

Question 2. On examination revealed: yellowish discoloration of skin and sclera, skin itching, dark urine, acholic stool. Which syndrome is characteristic?

- A) Hemolytic jaundice syndrome
- B) Parenchymal jaundice syndrome
- C) Mechanical (subhepatic) jaundice syndrome
- D) Cytolysis syndrome
- E) Portal hypertension syndrome

Question 3. On abdominal palpation in right hypochondrium, enlarged liver with smooth surface, rounded edge, painful on pressure determined. Which syndrome does this characterize?

- A) Portal hypertension syndrome
- B) Cytolysis syndrome (acute hepatitis)
- C) Mechanical jaundice syndrome
- D) Hepatic failure syndrome
- E) Hepatolienal syndrome

Question 4. Patient presents complaints of black tarry stool (melena), weakness, dizziness. On examination — skin pallor, tachycardia, BP reduced. Which syndrome is characteristic?

- A) Gastric hypersecretion syndrome
- B) Gastrointestinal bleeding syndrome
- C) Gastric evacuation disorder syndrome
- D) Maldigestion syndrome
- E) Intestinal dyspepsia syndrome

Question 5. On liver percussion according to Kurlov, sizes determined: 10-9-8 cm (right edge — 10 cm, left edge — 9 cm, midclavicular line — 8 cm). What is the assessment?

- A) Normal
- B) Liver enlargement (hepatomegaly)
- C) Liver reduction
- D) Normal for asthenic type
- E) Requires clarification by ultrasound

#### BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

##### Situational Task #1 (PC-4, Level 2)

Patient N., 42 years old, presented with complaints of dull pains in epigastrium, occurring 2 hours after meals, nocturnal pains, relieved by "soda" and food. For last 3 days — pain intensification, appearance of black tarry stool.

##### Objective Examination Data:

- Condition of moderate severity
- Skin pale, dry
- Tongue coated with white plaque
- BP 100/70 mmHg, pulse 98 bpm
- Abdomen soft, painful in epigastrium left of midline
- Tapping symptom negative
- Liver 2 cm below costal margin, painless
- Spleen not palpable

Blood Test: Hb 85 g/L, RBC  $3.2 \times 10^{12}/L$ , leukocytes  $8.5 \times 10^9/L$ , ESR 18 mm/h

Stool Analysis: Positive occult blood test

##### Questions:

1. Which syndromes are characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile examination plan with justification of each method and differential diagnosis. (10 points)

##### Evaluation Criteria:

- Correct identification of gastric hypersecretion syndrome (peptic ulcer), gastrointestinal bleeding syndrome, anemic syndrome — 5 points
- Prescription of EGD with biopsy, gastric juice analysis, urea breath test, abdominal ultrasound, repeat stool occult blood test — 5 points
- Justification of differential diagnosis with gastric cancer, chronic gastritis, functional dyspepsia — 10 points

## CONTROL SECTION #6

Investigation Methods of Urinary System. Syndromes in Nephrology

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Characterize kidney palpation technique.
2. Describe the technique for determining percussion symptom along XII rib.
3. List the main syndromes in nephrology.
4. Characterize edema syndrome and nephrotic syndrome.
5. Describe urine collection technique according to Nechyporenko and Zimnitsky test.
6. Name diagnostic value of Rehberg tests and concentration tests.
7. Characterize acute and chronic renal failure syndromes.

Test Tasks (Closed Type) — Variant 1

Question 1. Patient presents complaints of facial edema in mornings, predominantly on eyelids, diuresis reduction to 500 ml/day, BP elevation. On examination — skin pallor, edema soft, pastose. Which syndrome is characteristic?

- A) Heart failure syndrome
- B) Edema syndrome (nephrotic)
- C) Portal hypertension syndrome
- D) Lymphostasis syndrome
- E) Hypothyroidism syndrome

Question 2. In general urinalysis: protein 4.5 g/L, leukocytes 2-3 per hpf, erythrocytes 1-2 per hpf, cylinders — hyaline 5-7 per hpf. Which syndrome does this characterize?

- A) Urinary syndrome (nephritic)
- B) Nephrotic syndrome
- C) Pyelonephritis syndrome
- D) Urolithiasis syndrome
- E) Normal

Question 3. On palpation in lumbar region, painfulness determined, intensifying on percussion along XII rib on right. Which organ is affected?

- A) Liver
- B) Pancreas
- C) Right kidney
- D) Large intestine
- E) Duodenum

Question 4. In urine analysis according to Nechyporenko: leukocytes 2000 per 1 ml, bacteria in large quantity. Which disease is most likely?

- A) Glomerulonephritis
- B) Pyelonephritis
- C) Urolithiasis
- D) Renal amyloidosis
- E) Nephrotic syndrome

Question 5. Patient presents complaints of paroxysmal pains in lumbar region, radiating to groin, accompanied by nausea, vomiting, frequent urination. In urine — macrohematuria. Which syndrome is characteristic?

- A) Acute renal failure syndrome
- B) Renal colic syndrome
- C) Chronic renal failure syndrome
- D) Pyelonephritis syndrome
- E) Nephrotic syndrome

BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

Situational Task #1 (PC-4, Level 2)

Patient R., 28 years old, presented with complaints of facial and lower extremity edema, diuresis reduction, BP elevation to 160/100 mmHg, appearance of "haze" before eyes.

Objective Examination Data:

- Condition of moderate severity

- Skin pale, edema on eyelids, face, shins
  - BP 165/105 mmHg, pulse 86 bpm
  - Tapping symptom weakly positive bilaterally
  - Percussion: borders of relative cardiac dullness expanded leftward by 1 cm
- Urinalysis: Color straw-yellow, density 1022, protein 6.8 g/L, leukocytes 1-2 per hpf, erythrocytes 3-5 per hpf, cylinders — hyaline 8-10 per hpf
- Blood Test: Hb 140 g/L, total protein 48 g/L, albumin 28 g/L, cholesterol 8.2 mmol/L

Questions:

1. Which syndromes are characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile examination plan with justification of each method and differential diagnosis between nephritic syndrome and nephrotic syndrome of other genesis. (10 points)

Evaluation Criteria:

- Correct identification of nephrotic syndrome, edema syndrome, renal arterial hypertension syndrome — 5 points
- Prescription of kidney ultrasound, blood biochemistry (creatinine, urea), coagulogram, immunological investigations, nephrologist consultation — 5 points
- Justification of differential diagnosis — 10 points

### CONTROL SECTION #7

Investigation Methods of Hematopoietic Organs. Syndromes in Hematology

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Characterize general blood test in normal conditions and in anemias.
2. Describe bone marrow puncture and trephine biopsy technique.
3. List syndromes in iron deficiency anemia.
4. Characterize syndromes in B12-deficiency anemia.
5. Describe hemolytic syndrome and its laboratory criteria.
6. Name types of bleeding (petechial-spotted, hematoma, vasculitic-purpuric).

Test Tasks (Closed Type) — Variant 1

Question 1. Female patient presents complaints of weakness, dizziness, tinnitus, tongue stumpling, "cotton foot" gait. On examination — skin pallor with yellowish tint, glossitis. In blood test: Hb 75 g/L, RBC  $2.8 \times 10^{12}/L$ , MCV 110 fl, MCH 38 pg. Which syndrome is characteristic?

- A) Iron deficiency anemia
- B) B12-deficiency anemia
- C) Hemolytic anemia
- D) Aplastic anemia
- E) Anemia of chronic disease

Question 2. In general blood test: Hb 95 g/L, RBC  $4.2 \times 10^{12}/L$ , MCV 72 fl, MCH 24 pg, color index 0.78. Which type of anemia is diagnosed?

- A) Normochromic
- B) Hyperchromic
- C) Hypochromic (iron deficiency)
- D) Macrocytic
- E) Normocytic

Question 3. Patient presents complaints of appearance of skin bruises without visible cause, gum bleeding, nosebleeds. On examination — multiple petechiae on skin and mucous membranes. Which bleeding type is characteristic?

- A) Hematoma type
- B) Petechial-spotted type (thrombocytopenic)
- C) Vasculitic-purpuric type
- D) Mixed type
- E) Coagulation type

Question 4. In blood test: Hb 80 g/L, reticulocytes 8%, total bilirubin 45  $\mu\text{mol}/L$  (direct — 8  $\mu\text{mol}/L$ ), haptoglobin reduced. Which syndrome is characteristic?

- A) Iron deficiency
- B) Hemolytic

- C) Megaloblastic
- D) Aplastic
- E) Sideroblastic

**BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION)** Time: 60 minutes

Situational Task #1 (PC-4, Level 2)

Patient K., 35 years old, presented with complaints of weakness, dizziness, tinnitus, reduced work capacity, craving for chalk and raw pasta, brittle nails, hair loss.

Objective Examination Data:

- Condition satisfactory
- Skin pale, dry
- Nails brittle with longitudinal striations
- Tongue atrophied, "lacquered"
- BP 110/70 mmHg, pulse 88 bpm

Blood Test: Hb 85 g/L, RBC  $3.8 \times 10^{12}/L$ , MCV 76 fl, MCH 24 pg, color index 0.75, platelets  $180 \times 10^9/L$ , leukocytes  $6.2 \times 10^9/L$

Blood Test for Iron: Serum iron 6  $\mu\text{mol}/L$  (normal 12-30), ferritin 8  $\mu\text{g}/L$  (normal 20-250)

Questions:

1. Which syndromes are characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed to identify anemia cause? (5 points)
3. Compile examination plan with justification of each method and differential diagnosis between iron deficiency anemia and anemia of chronic disease. (10 points)

Evaluation Criteria:

- Correct identification of hypochromic anemia, sideropenic syndrome, circulatory-hypoxic syndrome — 5 points
- Prescription of blood iron investigation (serum iron, ferritin, TIBC), EGD, abdominal ultrasound, stool occult blood test — 5 points
- Justification of differential diagnosis (iron indicators, deficiency causes, distinction from anemia of chronic disease) — 10 points

### **CONTROL SECTION #8**

Module 7: Urogenital System Syndromes. Subjective and Objective Investigation Methods

**BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE)** Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Name main methods of physical examination of urogenital system organs.
2. Characterize kidney palpation and percussion technique and determination of their sizes.
3. List pathological changes in urine investigation in normal conditions and pathology.
4. Describe the technique for determining percussion symptom (Pasternatsky's).
5. Name main syndromes in nephrology and urology.
6. Characterize nephrotic syndrome (components, development mechanisms).
7. Describe dysuria syndrome (types, causes, diagnosis).
8. List instrumental investigation methods of UGS (ultrasound, X-ray, endoscopy).

Test Tasks (Closed Type) — Variant 1

Question 1. On patient examination, facial puffiness, periorbital pastosity in mornings revealed.

Which syndrome does this characterize?

- A) Chronic renal failure syndrome
- B) Nephrotic syndrome
- C) Acute pyelonephritis syndrome
- D) Dysuria syndrome
- E) Arterial hypertension syndrome

Question 2. On percussion over kidney area, positive percussion symptom determined on right.

Which pathological process is most likely?

- A) Chronic glomerulonephritis
- B) Acute pyelonephritis
- C) Urolithiasis
- D) Renal colic
- E) Renal amyloidosis

Question 3. In urinalysis revealed: protein — 4.8 g/L, erythrocytes — 2-3 per hpf, leukocytes — 1-2 per hpf, hyaline cylinders. Which syndrome does this characterize?

- A) Nephritic syndrome
- B) Nephrotic syndrome
- C) Acute renal failure syndrome
- D) Dysuria syndrome
- E) Chronic renal failure syndrome

Question 4. Patient presents complaints of frequent painful urination by drops, feeling of incomplete bladder emptying. Which syndrome is characteristic?

- A) Nephrotic syndrome
- B) Dysuria syndrome (strangury type)
- C) Anuria
- D) Polyuria
- E) Renal colic syndrome

Question 5. On kidney ultrasound, size increase, deformation of cup-pelvis system, hydronephrosis revealed. Which syndrome is confirmed?

- A) Infectious-inflammatory lesion syndrome
- B) Urinary outflow disorder syndrome (obstructive)
- C) Portal hypertension syndrome
- D) Hypertensive disease syndrome
- E) Chronic anemia syndrome

Question 6. In blood biochemistry: creatinine — 380  $\mu\text{mol/L}$ , urea — 22 mmol/L, GFR — 25 ml/min. Which stage of chronic renal failure?

- A) Compensation stage
- B) Decompensation stage
- C) Terminal renal failure stage
- D) Recovery stage
- E) Latent stage

Question 7. On patient examination — skin pallor, itching, skin dryness, urine odor from mouth. Which syndrome is most likely?

- A) Acute pyelonephritis
- B) Chronic renal failure (uremic syndrome)
- C) Nephrotic syndrome
- D) Urolithiasis
- E) Glomerulonephritis

Question 8. On bladder catheterization, 15 ml urine obtained, on lavage — fluid output significantly exceeds introduced amount. Which syndrome does this indicate?

- A) Anuria
- B) Oliguria
- C) Urinary retention with bladder overdistension
- D) Polyuria
- E) Urinary incontinence

#### BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

##### Situational Task #1 (PC-4, Level 2)

Patient K., 32 years old, presented with complaints of eyelid and leg edema in mornings, which intensify by evening; urine amount reduction (about 600 ml/day); urine darkening; general weakness, headaches, arterial pressure elevation to 160/100 mmHg.

##### Objective Examination Data:

- Condition of moderate severity
- Face puffy, pale
- Edema soft, pastose on lower extremities to knees
- BP — 165/105 mmHg
- Heart sounds muffled, HR — 88 bpm
- On kidney percussion — percussion symptom negative
- Periorbital pastosity

Urinalysis: Protein — 4.2 g/L, erythrocytes — 2-3 per hpf, leukocytes — 3-4 per hpf, hyaline and granular cylinders

Blood Test: Total protein — 58 g/L, albumin — 28 g/L, cholesterol — 8.2 mmol/L, triglycerides — 3.5 mmol/L, creatinine — 125  $\mu$ mol/L

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile patient examination plan with justification of each method. (10 points)

Evaluation Criteria:

- Correct identification of nephrotic syndrome with indication of components (massive proteinuria, hypoproteinemia, hyperlipidemia, edema) — 5 points
- Prescription of daily proteinuria, kidney biopsy, kidney ultrasound, coagulogram, C3, C4 complement determination — 5 points
- Justification of method selection considering differential diagnosis (chronic glomerulonephritis, amyloidosis, SLE-nephritis, diabetic nephropathy) — 10 points

### CONTROL SECTION #9

Module 8: Hematopoietic System Syndromes. Subjective and Objective Investigation Methods

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Name main investigation methods of hematopoietic system (general blood test, myelogram, biopsy).
2. Characterize normal leukocyte formula and its changes in pathology.
3. List main syndromes in hematology (anemic, hemorrhagic, leukemic).
4. Describe bone marrow puncture technique and indications for its performance.
5. Name clinical signs of anemic syndrome of various severity degrees.
6. Characterize hemorrhagic syndrome (causes, mechanisms, manifestations).
7. Describe leukemic syndrome (hyper- and hypoleukocytosis, blastosis).
8. List instrumental investigation methods (spleen ultrasound, lymph nodes, CT).

Test Tasks (Closed Type) — Variant 1

Question 1. On patient examination, skin and mucous membrane pallor, "spoon-shaped" nails, glossitis revealed. Which syndrome does this characterize?

- A) Hemorrhagic syndrome
- B) Iron deficiency anemia (anemic syndrome)
- C) B12-deficiency anemia
- D) Hemolytic anemia
- E) Aplastic anemia

Question 2. In blood test: Hb — 65 g/L, RBC —  $2.8 \times 10^{12}/L$ , color index — 0.7, platelets —  $450 \times 10^9/L$ . Which type of anemia is most likely?

- A) Megaloblastic anemia
- B) Iron deficiency anemia
- C) Hemolytic anemia
- D) Aplastic anemia
- E) Posthemorrhagic anemia

Question 3. On examination — multiple petechiae, ecchymoses, nosebleeds. In blood test: platelets —  $15 \times 10^9/L$ . Which syndrome does this characterize?

- A) Anemic syndrome
- B) Hemorrhagic syndrome (thrombocytopenic type)
- C) Leukemic syndrome
- D) Lymphoproliferative syndrome
- E) Hypercoagulation syndrome

Situational Task #1 (PC-4, Level 2)

Patient presents complaints of fever, severe weakness, gum bleeding, appearance of skin bruises without trauma, nosebleeds. Notes weight loss of 6 kg per month, night sweats.

Objective Examination Data:

- Condition severe

- Skin pale with multiple petechiae, ecchymoses
  - Lymph nodes enlarged in all groups, dense, painless
  - Liver +3 cm, spleen +4 cm
  - Heart sounds weakened, HR — 110 bpm
  - BP — 90/60 mmHg
- Blood Test: Hb — 85 g/L, leukocytes —  $85 \times 10^9/L$ , blasts — 40%

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Justify differential diagnosis between acute myeloid and acute lymphoblastic leukemia. (10 points)

Evaluation Criteria:

- Correct identification of leukemic syndrome with hemorrhagic and anemic syndromes (acute leukemia) — 5 points
- Prescription of myelogram with cytochemistry (myeloperoxidase), immunophenotyping (CD13, CD33, CD117, CD3, CD19), cytogenetics (karyotype, FISH), molecular diagnostics (NPM1, FLT3), coagulogram — 5 points
- Correct justification of differential diagnosis (cytochemistry: myeloperoxidase positive in AML, negative in ALL; immunophenotype: myeloid markers CD13/CD33 vs lymphoid CD3/CD19/CD20; cytogenetics: t(8;21), inv(16) in AML vs t(12;21), hyperploidy in ALL) — 10 points

Situational Task #2 (PC-4, Level 2)

Patient M., 58 years old, presented with complaints of pains in right lumbar region, radiating to groin and penis; frequent painful urination with blood admixture at end of act; body temperature elevation to  $38.8^\circ\text{C}$  with chills; general weakness.

Objective Examination Data:

- Condition of moderate severity
- Temperature  $38.5^\circ\text{C}$
- Skin moist
- Right lumbar region painful on percussion (positive percussion symptom)
- On abdominal palpation — painfulness in right kidney projection area without abdominal wall muscle tension
- Diuresis reduced (700 ml/day)

Urinalysis: Leukocytes — 40-50 per hpf, erythrocytes — 15-20 per hpf, bacteria — in large quantity, protein — 0.66 g/L

Blood Test: Leukocytes —  $14.2 \times 10^9/L$ , ESR — 35 mm/h, leftward shift in formula

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed? (5 points)
3. Justify differential diagnosis between acute pyelonephritis, urolithiasis and kidney neoplasm. (10 points)

Evaluation Criteria:

- Correct identification of infectious-inflammatory kidney lesion syndrome (acute pyelonephritis) — 5 points
- Prescription of urine bacterial culture with antibioticogram, kidney ultrasound, intravenous urography, general blood test with leukocyte formula — 5 points
- Correct justification of differential diagnosis (pain character, fever, leukocyturia, absence of hematuria at beginning of urination, instrumental method data) — 10 points

## CONTROL SECTION #10

Module 9: Syndromes in Endocrinology. Subjective and Objective Investigation Methods

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Name main investigation methods of endocrine system (hormonal, immunochemical, instrumental).
2. Characterize thyroid gland palpation technique and determination of its sizes.

3. List main syndromes in endocrinology (thyrotoxicosis, hypothyroidism, hyper- and hypocorticism).
4. Describe adrenal function investigation methods (cortisol, ACTH, dexamethasone test).
5. Name clinical signs of thyrotoxicosis and their pathogenesis.
6. Characterize diabetes mellitus (types, diagnostic criteria, complications).
7. Describe hyperprolactinemic syndrome (causes, manifestations, diagnosis).
8. List endocrine organ visualization methods (ultrasound, CT, MRI, scintigraphy).

Test Tasks (Closed Type) — Variant 1

Question 1. On patient examination, exophthalmos, hand tremor, moist skin, tachycardia revealed.

Which syndrome does this characterize?

- A) Hypothyroidism
- B) Thyrotoxicosis (hyperthyroidism)
- C) Hypercorticism (Cushing's disease)
- D) Acromegaly
- E) Hypoparathyroidism

Question 2. In blood test: Free T4 — 28 pmol/L (normal 11-22), TSH — 0.05 mIU/L (normal 0.4-

4.0). Which diagnosis is most likely?

- A) Primary hypothyroidism
- B) Primary hyperthyroidism (thyrotoxicosis)
- C) Secondary hypothyroidism
- D) Hashimoto's thyroiditis in compensation stage
- E) Euthyroid syndrome

Question 3. On examination — "moon" face, hirsutism, striae on abdominal skin, hypertension, osteoporosis. Which syndrome does this characterize?

- A) Hyperthyroidism
- B) Hypercorticism (Itsenko-Cushing syndrome)
- C) Acromegaly
- D) Hyperprolactinemia
- E) Pheochromocytoma

Question 4. Patient presents complaints of thirst, polyuria (5 L/day), dry mouth, weight loss. Fasting blood glucose — 12.4 mmol/L. Which syndrome is characteristic?

- A) Impaired glucose tolerance syndrome
- B) Diabetes mellitus
- C) Diabetes insipidus
- D) Hyperthyroidism
- E) Hypercorticism

Question 5. On thyroid ultrasound, size increase, heterogeneous echostructure, hypoechoic foci revealed. Antibodies to TPO and thyroglobulin elevated. Which diagnosis is confirmed?

- A) Diffuse toxic goiter
- B) Autoimmune Hashimoto's thyroiditis
- C) Subacute de Quervain's thyroiditis
- D) Thyroid cancer
- E) Cystic-fibrotic changes

Question 6. In oral glucose tolerance test: fasting glucose — 6.8 mmol/L, after 2 hours — 10.2 mmol/L. HbA1c — 7.8%. Which condition?

- A) Normal
- B) Impaired glucose tolerance
- C) Type 2 diabetes mellitus
- D) Type 1 diabetes mellitus
- E) Gestational diabetes mellitus

Question 7. On examination — skull circumference increase, jaw enlargement, hand and foot enlargement, prognathism, tongue enlargement. Growth hormone — 45 ng/ml (normal <5). Which syndrome?

- A) Hyperthyroidism
- B) Acromegaly
- C) Hypercorticism
- D) Hyperprolactinemia

- E) Hypoparathyroidism
- Question 8. In 32-year-old woman — galactorrhea, amenorrhea, infertility. Prolactin — 180 ng/ml (normal 4-23). On pituitary MRI — microadenoma. Which syndrome?
- A) Hyperthyroidism
  - B) Hyperprolactinemic syndrome
  - C) Itsenko-Cushing syndrome
  - D) Hypopituitarism
  - E) Polycystic ovary syndrome

**BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes**

**Situational Task #1 (PC-4, Level 2)**

Patient G., 35 years old, presented with complaints of irritability, hand tremor, increased sweating, palpitations, dyspnea on physical exertion, weight loss of 8 kg in 2 months with good appetite.

**Objective Examination Data:**

- Condition satisfactory
- Skin moist, warm to touch
- Exophthalmus grade 1
- Finger tremor with outstretched hands
- Thyroid gland enlarged grade II, soft, painless, vascular murmur over it not heard
- Heart sounds clear, HR — 112 bpm, sinus rhythm
- BP — 140/70 mmHg

Blood Test: Free T4 — 48 pmol/L (normal 11-22), Free T3 — 12 pmol/L (normal 3.1-6.8), TSH — 0.01 mIU/L (normal 0.4-4.0), antibodies to TPO — negative, antibodies to TSH-receptor — positive

**Questions:**

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile examination plan with justification of differential diagnosis between diffuse toxic goiter and de Quervain's thyroiditis. (10 points)

**Evaluation Criteria:**

- Correct identification of thyrotoxic syndrome (thyrotoxicosis) with indication of cause (diffuse toxic goiter — Graves' disease) — 5 points
- Prescription of thyroid ultrasound with blood flow determination (Doppler), technetium scintigraphy, ECG, EchoCG, blood analysis (general, biochemistry, ALT, AST), ophthalmological examination — 5 points
- Justification of differential diagnosis (acute onset and pain in de Quervain's thyroiditis vs gradual onset in DTG; antibodies to TSH-receptor specific for DTG; reduced radioactive iodine uptake in thyroiditis vs increased in DTG; ESR elevated in thyroiditis) — 10 points

**Situational Task #2 (PC-4, Level 2)**

Patient D., 52 years old, admitted with complaints of constant thirst (drinks up to 4-5 L water per day), polyuria (diuresis up to 4-5 L/day, nocturnal urges 4-5 times), dry mouth, weakness, headaches. Noticed weight loss of 10 kg in 2 months with good appetite, skin itching.

**Objective Examination Data:**

- Condition satisfactory
- Height 172 cm, weight 68 kg (was 78 kg)
- Skin dry, turgor reduced
- Tongue dry, coated with white plaque
- Acetone odor from mouth
- Heart sounds clear, BP — 130/85 mmHg
- Pulse — 88 bpm
- Fruity urine odor

Tests: Fasting blood glucose — 14.2 mmol/L, blood glucose 2 hours after meal — 18.6 mmol/L, glycosylated hemoglobin (HbA1c) — 10.2%, urine glucose — 56 mmol/L (++++), urine ketone bodies — (+)

**Questions:**

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed? (5 points)
3. Justify differential diagnosis between type 1 and type 2 diabetes mellitus. (10 points)

Evaluation Criteria:

- Correct identification of diabetes mellitus syndrome (hyperglycemic syndrome) with indication of decompensation (ketonuria) — 5 points
- Prescription of C-peptide, insulin, antibodies to GAD (glutamate decarboxylase), antibodies to IA-2, antibodies to insulin, total cholesterol, LDL, HDL, triglycerides, creatinine, urea, microalbuminuria, abdominal ultrasound, ECG — 5 points
- Correct justification of differential diagnosis (age >40 years and obesity predispose to type 2 DM, but ketonuria — sign of type 1 DM; C-peptide reduced in type 1 DM, normal or elevated in type 2 DM; antibodies to GAD positive in type 1 DM; presence of insulin resistance indicates type 2 DM) — 10 points

**CONTROL SECTION #10**

Module 10: Syndromes in Rheumatology. Subjective and Objective Investigation Methods

BLOCK A: REPRODUCTIVE LEVEL (KNOWLEDGE) Time: 30 minutes

Oral Questions (selectively 3-4 questions):

1. Name main investigation methods of joints (inspection, palpation, determination of range of motion).
2. Characterize differences between inflammatory and degenerative arthritis.
3. List main syndromes in rheumatology (arthritic, systemic vasculitic, fibromyalgic).
4. Describe technique for determining laboratory inflammation markers (ESR, CRP) and specific autoantibodies (RF, ACPA, ANA).
5. Name diagnostic criteria for rheumatoid arthritis (ACR/EULAR 2010).
6. Characterize systemic lupus erythematosus (criteria, organ involvement, treatment).
7. Describe visualization methods in rheumatic diseases (X-ray, ultrasound, MRI).
8. List indications for joint puncture and synovial fluid.

Test Tasks (Closed Type) — Variant 1

Question 1. On patient examination, symmetrical swelling of PIP joints II-III fingers of both hands, morning stiffness >2 hours revealed. Which syndrome does this characterize?

- A) Osteoarthritis
- B) Rheumatoid arthritis (arthritic syndrome)
- C) Gouty arthritis
- D) Reactive arthritis
- E) Psoriatic arthritis

Question 2. In blood test: ESR — 45 mm/h, CRP — 32 mg/L, rheumatoid factor — 85 IU/ml, ACPA — 56 U/ml. Which diagnosis is most likely?

- A) Systemic lupus erythematosus
- B) Rheumatoid arthritis (seropositive)
- C) Ankylosing spondylitis
- D) Osteoarthritis
- E) Gout

Question 3. On examination — skin hyperemia in cheek and nose bridge area ("lupus butterfly"), small joint arthritis, pericarditis. ANA — 1:640. Which syndrome?

- A) Rheumatoid arthritis
- B) Systemic lupus erythematosus (systemic vasculitic syndrome)
- C) Scleroderma
- D) Dermatomyositis
- E) Sjögren's syndrome

Question 4. Patient presents complaints of acute pain in first metatarsophalangeal joint, redness, swelling. In blood test: uric acid — 580  $\mu$ mol/L. Which syndrome is characteristic?

- A) Rheumatoid arthritis
- B) Gouty arthritis (crystalline arthritis)
- C) Reactive arthritis
- D) Infectious arthritis
- E) Traumatic arthritis

Question 5. On hand X-ray, joint space narrowing, marginal joint erosions, bone osteoporosis revealed. Which diagnosis is confirmed?

- A) Osteoarthritis

- B) Rheumatoid arthritis
- C) Gout (tophi)
- D) Psoriatic arthritis
- E) Hemophilic arthritis

Question 6. In synovial fluid investigation: viscosity reduced, leukocytes —  $18 \times 10^9/L$ , neutrophils — 75%, positive reaction for uric acid (needle-shaped crystals). Which arthritis?

- A) Rheumatoid
- B) Gouty
- C) Reactive
- D) Infectious
- E) Traumatic

Question 7. On examination — asymmetric arthritis of distal interphalangeal joints, psoriatic plaques on skin, dactylitis ("sausage-shaped" fingers). Which syndrome?

- A) Rheumatoid arthritis
- B) Psoriatic arthritis
- C) Reactive arthritis
- D) Gout
- E) Osteoarthritis

Question 8. In 28-year-old patient — low back pain of nocturnal character, morning stiffness >30 min, "bamboo spine" sign on sacroiliac joint X-ray. HLA-B27 positive. Which diagnosis?

- A) Rheumatoid arthritis
- B) Ankylosing spondylitis (Bechterew's disease)
- C) Osteochondrosis
- D) Gout
- E) Reactive arthritis

#### BLOCK B: RECONSTRUCTIVE LEVEL (APPLICATION) Time: 60 minutes

##### Situational Task #1 (PC-4, Level 2)

Patient E., 42 years old, presented with complaints of pains and swelling in small joints of hands (proximal interphalangeal) and feet, morning joint stiffness lasting more than 2 hours, weakness, body temperature elevation to  $37.2-37.5^\circ C$  in evening. Symptoms gradually increasing for 3 months.

Objective Examination Data:

- Condition satisfactory
- Skin over joints hyperemic, hot to touch
- Swelling symmetrical in PIP joints II-IV fingers of both hands, metatarsophalangeal joints
- Pain on palpation and passive movements
- Joint deformities absent
- Lymph nodes not enlarged

Blood Test: ESR — 42 mm/h, C-reactive protein — 28 mg/L, rheumatoid factor (RF) — 68 IU/ml (normal <14), anti-CCP — 45 U/ml (normal <25)

X-ray: Moderate osteoporosis of hand bones, joint space narrowing in PIP joints

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed for diagnosis verification? (5 points)
3. Compile examination plan with justification of differential diagnosis between rheumatoid arthritis and systemic lupus erythematosus. (10 points)

Evaluation Criteria:

- Correct identification of inflammatory arthritic syndrome (rheumatoid arthritis, early stage) — 5 points
- Prescription of joint ultrasound (synovitis, erosions detection), hand MRI, ANA, anti-dsDNA, C3, C4 complement, general urinalysis (to exclude lupus-nephritis), rheumatologist consultation — 5 points
- Justification of differential diagnosis (symmetric arthritis, absence of skin manifestations, high RF and ACPA titers specific for RA; in SLE — characteristic rash, serositis, internal organ involvement, hypocomplementemia, high ANA and anti-dsDNA titers) — 10 points

##### Situational Task #2 (PC-4, Level 2)

Patient Zh., 24 years old, admitted with complaints of skin rash on face in "butterfly" shape (on cheeks and nose bridge), intensifying in sun; pains in small joints of hands and feet; body temperature elevation to 38°C in evening; weight loss of 6 kg in 2 months; headaches.

Objective Examination Data:

- Condition of moderate severity
- On facial skin — hyperemia in cheek and nose bridge area ("lupus butterfly"), on trunk skin — small hemorrhagic rash
- Swelling of PIP and metatarsophalangeal joints
- Pericardial friction rub on heart auscultation
- Lymph nodes enlarged submandibular, cervical

Tests: CBC — leukopenia  $3.2 \times 10^9/L$ , thrombocytopenia  $95 \times 10^9/L$ , ESR — 55 mm/h; urinalysis — protein 1.2 g/L, erythrocytes 15-20 per hpf; ANA — 1:640 (high titer), anti-dsDNA — positive, C3, C4 complement — reduced

Questions:

1. Which syndrome is characteristic for this patient? (5 points)
2. Which additional investigation methods should be prescribed? (5 points)
3. Justify differential diagnosis between systemic lupus erythematosus and rheumatoid arthritis. (10 points)

Evaluation Criteria:

- Correct identification of systemic vasculitic syndrome (systemic lupus erythematosus) with multi-organ involvement (skin, joints, heart, kidneys, hematopoiesis) — 5 points
- Prescription of skin biopsy (immunohistochemistry), kidney biopsy (with proteinuria), EchoCG (pericarditis, vegetations assessment), CT/MRI of brain (to exclude lupus cerebritis), repeat complement determination, 24-hour proteinuria — 5 points
- Correct justification of differential diagnosis (in SLE — systemic manifestations, skin involvement, serositis, nephritis, hematological disorders, high ANA and anti-dsDNA, hypocomplementemia; in RA — predominantly arthritis, absence of visceral manifestations, high RF and ACPA, normal ANA) — 10 points

#### BLOCK D: CERTIFICATION LEVEL (COMPREHENSIVE ASSESSMENT)

Time: 120 minutes

TICKET #1: CVS Syndromes

1. Heart failure syndrome (subjective and objective signs, investigation methods). (30 points)
2. Practical skill: percussion and auscultation of heart. Determination of heart borders, detection of pathological murmurs. (40 points)
3. Analytical task: ECG interpretation in acute myocardial infarction (determination of location, stage). (30 points)

TICKET #2

1. Myocardial ischemia syndrome (effort and rest angina, subjective and objective signs, investigation methods, differential diagnosis). (30 points)
2. Practical skill: blood pressure determination by Korotkov method, pulse palpation on peripheral arteries, determination of its properties. (40 points)
3. Analytical task: ECG interpretation in arrhythmias (atrial fibrillation, extrasystole, blocks). (30 points)

TICKET #3

1. Bronchial obstruction syndrome (subjective and objective signs, investigation methods, differential diagnosis of bronchial asthma and COPD). (30 points)
2. Practical skill: percussion and auscultation of lungs. Determination of respiratory sounds, detection of pathological rales. (40 points)
3. Analytical task: Spirometry interpretation (determination of ventilation disorder type, degree of bronchial obstruction). (30 points)

TICKET #4

1. Lung tissue infiltration syndrome (subjective and objective signs, investigation methods, differential diagnosis of pneumonia and lung cancer). (30 points)

2. Practical skill: determination of lung borders and Kronig's fields by percussion method, determination of lower lung edge mobility. (40 points)
3. Analytical task: Chest X-ray interpretation (detection of infiltrate, pleural effusion, emphysema, lung cavity). (30 points)

#### TICKET #5

1. General and detailed patient examination (subjective and objective investigation methods, anamnesis collection, physical examination). (30 points)
2. Practical skill: general patient examination, determination of pulse and respiratory rate, blood pressure measurement, body mass index determination. (40 points)
3. Analytical task: CBC and urinalysis interpretation (detection of pathological changes, formulation of syndromic diagnosis). (30 points)

#### TICKET #6

1. Lung hyperinflation syndrome (emphysema) (subjective and objective signs, investigation methods, differential diagnosis with pneumothorax). (30 points)
2. Practical skill: chest examination, determination of chest form, breathing type, respiratory rate, auxiliary muscle involvement. (40 points)
3. Analytical task: Clinical-radiological data interpretation in pneumonia (detection of characteristic changes, differential diagnosis). (30 points)

#### TICKET #7

1. Pleural fluid presence syndrome (subjective and objective signs, investigation methods, differential diagnosis of transudate and exudate). (30 points)
2. Practical skill: lymph node palpation, liver, spleen, determination of lower extremity edema. (40 points)
3. Analytical task: Pleural cavity puncture results and pleural fluid analysis interpretation (cytological, biochemical, bacteriological). (30 points)

#### TICKET #8

1. Arterial hypertension syndrome (subjective and objective signs, investigation methods, cardiovascular risk stratification). (30 points)
2. Practical skill: determination of relative and absolute cardiac dullness borders, detection of heart displacement in lung and pleura pathology. (40 points)
3. Analytical task: Ambulatory blood pressure monitoring interpretation (detection of daily profile, "white coat" hypertension, nocturnal BP drop). (30 points)

#### TICKET #9

1. Lung cavity syndrome (cavern, abscess, cyst) (subjective and objective signs, investigation methods, differential diagnosis). (30 points)
2. Practical skill: emergency care in bronchial asthma attack, acute coronary syndrome, cardiac rhythm disorder. (40 points)
3. Analytical task: Echocardiography interpretation (determination of heart chamber sizes, wall thickness, ejection fraction, valvular defects). (30 points)

#### TICKET #10

1. Lung failure syndrome (subjective and objective signs, investigation methods, differential diagnosis of respiratory and heart failure). (30 points)
2. Practical skill: medical record completion (filling sections: complaints, life anamnesis, disease anamnesis, objective status, preliminary diagnosis). (40 points)
3. Analytical task: Comprehensive interpretation of clinical-laboratory and instrumental data (formulation of syndromic and nosological diagnosis, examination and treatment plan). (30 points)

## ANALYTICAL TASKS OF INCREASED COMPLEXITY

Time: 90 minutes per task

### TASK #1 (Propaedeutics — Comprehensive Diagnosis)

Patient K., 62 years old, admitted with complaints of weakness, increased fatigue, dizziness, tinnitus, intermittent claudication when walking more than 500 m.

Anamnesis: Smokes for 35 years (1.5 packs/day), BP occasionally elevated but not treated. Myocardial infarction 3 years ago (treatment irregular).

Investigation Data:

- BP 165/95 mmHg on right arm, 140/85 mmHg on left arm, pulse 72 bpm, regular
- Inspection: skin pallor, lip cyanosis, "spider veins" on cheeks, nicotine pigmentation of fingers
- Heart auscultation: sounds muffled, II sound accentuated over aorta, systolic murmur 2/6 over carotid arteries
- Lung auscultation: vesicular breathing, weakened in lower sections on right
- Palpation: pulse on a. dorsalis pedis weak on left, not determined on a. tibialis posterior on left
- CBC: Hb 118 g/L (low), leukocytes  $7.2 \times 10^9/L$ , platelets  $340 \times 10^9/L$ , ESR 28 mm/h
- Urinalysis: protein 0.3 g/L, glucose 0.1 g/L
- Biochemistry: total cholesterol 7.2 mmol/L, LDL 4.8 mmol/L, HDL 0.8 mmol/L, triglycerides 2.8 mmol/L, glucose 6.4 mmol/L, creatinine 142  $\mu\text{mol/L}$ , urea 8.5 mmol/L, CRP 12 mg/L
- ECG: sinus rhythm, HR 72, LV hypertrophy signs, ECG axis deviation leftward, focal changes in anteroseptal area (post-infarction scar)

Questions:

1. Formulate syndromic diagnosis with justification (identify at least 3 syndromes). (15 points)
2. Determine which physical investigation method is most informative for verification of obliterating atherosclerosis of lower extremity vessels syndrome. (10 points)
3. Determine in which section of investigation methods blood lipid spectrum assessment belongs and what are target LDL levels for this patient. (15 points)
4. Compile additional examination plan with justification of each method (at least 5 methods). (20 points)
5. Develop approximate pathogenetic therapy plan considering comorbidity. (30 points)
6. Determine dispensary observation tactics and secondary prevention. (10 points)

Maximum score: 100

### TASK #2 (Propaedeutics — Differential Diagnosis)

Patient M., 48 years old, presented with complaints of periodic pains in epigastric region, nausea, meteorism, unstable stool (alternating constipation and diarrhea), appetite and weight loss of 8 kg in 4 months. Notes increased fatigue, sleepiness, tearfulness, cold intolerance.

Investigation Data:

- BP 110/70 mmHg, pulse 58 bpm, temperature 36.4°C
- Inspection: skin and mucous membrane pallor with yellowish tint, skin dryness, "lacquered tongue" (papillae atrophy), soft edema on shins
- Abdominal palpation: soft, moderate painfulness in epigastrium, liver not enlarged, tapping symptom negative
- Heart auscultation: bradycardia, sounds muffled, systolic murmur at apex
- Lung percussion: lung sound, borders normal
- CBC: Hb 92 g/L, RBC  $3.4 \times 10^{12}/L$ , color index 0.82, leukocytes  $4.8 \times 10^9/L$ , platelets  $180 \times 10^9/L$ , ESR 45 mm/h
- Urinalysis: specific gravity 1012, protein 0.15 g/L, without erythrocytes and leukocytes
- Biochemistry: total protein 58 g/L, albumin 32 g/L, total bilirubin 18  $\mu\text{mol/L}$ , ALT 22 U/L, AST 28 U/L, serum iron 8  $\mu\text{mol/L}$  (normal 12-30), ferritin 12  $\mu\text{g/L}$  (normal 20-120), glucose 4.8 mmol/L, creatinine 88  $\mu\text{mol/L}$ , TSH 28 mIU/L (normal 0.4-4.0), free T4 6.2 pmol/L (normal 11-22)

Questions:

1. Formulate syndromic diagnosis with justification (identify primary and secondary syndromes). (15 points)

2. Determine which laboratory investigation method is decisive for verification of leading syndrome. (10 points)
  3. Determine in which section of investigation methods serum iron and ferritin determination belongs, and characterize their diagnostic value. (15 points)
  4. Compile additional examination plan to clarify anemia and hypothyroidism etiology (justify each method). (20 points)
  5. Develop approximate comprehensive pathogenetic and etiological therapy plan. (30 points)
  6. Determine dispensary observation tactics and treatment effectiveness control. (10 points)
- Maximum score: 100

### TASK #3 (Lung Syndromes — Bronchial Obstruction)

Patient G., 55 years old, admitted with complaints of constant cough with small amount of mucous sputum for 5 years, progressive dyspnea on physical exertion (initially when climbing to 4th floor, now when walking 100 m on flat road), feeling of chest tightness. Claims it's "smoker's cough". Smokes for 30 years (1 pack/day), had pneumonia in childhood.

#### Investigation Data:

- BP 140/85 mmHg, pulse 88 bpm, RR 22 per minute, SpO<sub>2</sub> 91% on air
- Inspection: barrel-shaped chest, horizontal rib position, nasolabial triangle cyanosis, use of accessory muscles during breathing
- Palpation: subcutaneous emphysema of neck (Vidal's crepitus)
- Percussion: box-like sound over all lung fields, lung borders narrowed, limited mobility of lower edges
- Auscultation: weakened vesicular breathing, prolonged expiration, scattered dry rales on expiration
- CBC: Hb 152 g/L (erythrocytosis), leukocytes  $7.8 \times 10^9/L$ , ESR 12 mm/h
- Urinalysis: no pathology
- Spirometry: FVC 68% of predicted, FEV<sub>1</sub> 48% of predicted, FEV<sub>1</sub>/FVC 52%, residual volume 145% of predicted, Tiffeneau index 0.62. Bronchodilator test: FEV<sub>1</sub> improvement by 6%
- Chest X-ray: lung field hyperlucency, flattening of diaphragmatic domes, widening of retrosternal space, spindle-shaped heart

#### Questions:

1. Formulate syndromic diagnosis with justification (identify main and accompanying syndromes). (15 points)
2. Determine which functional investigation method is gold standard for verification and severity stratification of this syndrome. (10 points)
3. Determine in which section of investigation methods spirometry belongs, and characterize obstruction and emphysema indicators. (15 points)
4. Compile additional examination plan to exclude accompanying pathology and assess exacerbation risk (justify each method). (20 points)
5. Develop approximate pathogenetic therapy plan considering disease stage (GOLD). (30 points)
6. Determine dispensary observation tactics, including rehabilitation and exacerbation prevention. (10 points)

Maximum score: 100

**PRACTICAL SKILLS FOR CERTIFICATION** Note: This section contains list of specific practical skills assessed within Block D (certification level) and intermediate certification. Skills are assessed separately or as part of comprehensive ticket.

No.	Skill	Competency	Block	Time (min)
1	Complaints and anamnesis collection	PC-4	D	15
2	General examination with condition assessment	PC-4	D	10
3	BP, pulse, RR, temperature measurement	PC-4	D	5
4	Lymph node palpation	PC-4	D	5
5	Thyroid gland palpation	PC-4	D	5
6	Lung and heart percussion	PC-5	D	10
7	Lung auscultation (rales, crepitation detection)	PC-5	D	10
8	Heart auscultation (murmurs, tone anomalies detection)	PC-5	D	10
9	Liver palpation and percussion	PC-5	D	10
10	Spleen palpation and percussion	PC-5	D	10
11	Abdominal palpation (peritoneal irritation symptoms)	PC-5	D	10
12	Edema determination	PC-5	D	5
13	ECG interpretation (rhythm, conduction, hypertrophy, ischemia)	PC-4	D	15
14	Spirometry interpretation	PC-4	D	10
15	CBC interpretation	PC-4	D	10
16	Blood biochemistry interpretation	PC-4	D	10
17	Diet therapy prescription	GPC-7	D	10
18	Pharmacotherapy prescription considering contraindications	GPC-7	D	15
19	Emergency care in collapse, anaphylaxis	PC-9	D	15

Practical skills evaluation criteria: • Technique execution — 40% • Results interpretation — 30% • Asepsis and antisepsis compliance — 15% • Patient communication (ethics, tact) — 15%

**ASSESSMENT METHODOLOGICAL MATERIALS**  
**100-point grading scale 5th Semester (Pass/Fail)**

Activity Type	Pass Minimum	Pass Maximum	% of Final Grade
Current control (5 modules × 2-4 points)	10	20	20%
Borderline control (5 modules × 6-10 points)	30	50	50%
Total for semester	40	70	70%
Intermediate control (Pass/Fail)	20	30	30%
Semester rating for discipline	60	100	100%

**6th Semester (Exam)**

Activity Type	Pass Minimum	Pass Maximum	% of Final Grade
Current control (5 modules × 2-4 points)	10	20	20%
Borderline control (5 modules × 6-10 points)	30	50	50%
Total for semester	40	70	70%
Intermediate control (Exam)	20	30	30%
Semester rating for discipline	60	100	100%

### Assessment criteria by mastery levels

Level	Characteristic	Points	Grade	Assessment Tools Types
Reproductive	Reproduction of facts, definitions, algorithms without errors	60-69	Satisfactory (E)	Block A: Tests on etiology and pathogenesis knowledge
Reconstructive	Application of knowledge in standard situations, solving typical tasks	70-84	Good (C, D)	Block B: Situational tasks on treatment plan development
Practice-oriented	Solving professional tasks, practical skills mastery	85-94	Excellent (B)	Block C: Practice-oriented assignments — simulation scenarios for patient management in polyclinic
Creative	Complex analysis of non-standard situations, making justified decisions	95-100	Excellent (A)	Block D: Certification questions on comprehensive patient management; analytical tasks on therapy effectiveness evaluation

Practical skills assessment criteria (detailing) Comprehensive patient examination (maximum 40 points):

Criterion	Excellent (36-40)	Good (28-35)	Satisfactory (20-27)	Unsatisfactory (0-19)
Anamnesis collection technique	Complete, structured anamnesis without omissions, correct questions	Complete anamnesis, minor inaccuracies in formulations	Main anamnesis sections collected, requires leading questions	Incomplete anamnesis, incorrect questions
Physical examination technique	Ideal technique, sequence compliance	Minor technique violations	Makes technique errors, requires correction	Gross technique errors
Data interpretation	Correct, with pathology identification	Correct, minor inaccuracies	Partially correct, details missed	Erroneous interpretation
Documentation completion	Literate, according to standard	Minor documentation violations	Requires corrections	Does not meet standard

#### Retake and Appeal Procedure

1. Borderline control retake: Within 2 weeks after main date at specially allocated time. Maximum score at retake — 80% of maximum.
2. Pass/Fail retake: Within established retake periods. Grade not higher than "satisfactory".
3. Exam retake: According to examination session schedule.

Main Literature

1. Makaev, S.T. Propaedeutics of Internal Diseases / S.T. Makaev, L.N. Bagnenko. — M.: GEOTAR-Media, 2022. — 480 p.
2. Strutynsky, A.V. Propaedeutics of Internal Diseases / A.V. Strutynsky, S.N. Mosiev. — M.: MEDpress-inform, 2023. — 544 p.
3. Paltsev, M.A. Propaedeutics of Clinical Disciplines / M.A. Paltsev, Yu.I. Skripkin. — M.: Academy, 2021. — 464 p.
4. National Guide to Propaedeutics of Internal Diseases / ed. by V.V. Fomin. — M.: GEOTAR-Media, 2023. — 720 p.

Appendix 3. Additional Literature

1. Harrison's Principles of Internal Medicine (translation or original).
2. Clinical Guidelines (treatment protocols) of Ministry of Health of RF and KR.
3. ICD-10 (revision).
4. Journals "Therapeutic Archive", "Clinical Medicine", "Russian Medical Journal".

### APPENDIX 1. Medical History (Practical work on patient supervision)

General Provisions Medical history is mandatory practical work of each student within "Propaedeutics of Internal Diseases" discipline. Student independently supervises patient in hospital or outpatient setting, conducts anamnesis collection, objective examination, formulates diagnosis and treatment plan under teacher supervision.

Parameter	Description
Goal	Assess skills of anamnesis collection, objective examination, diagnosis formulation and treatment planning
Condition	Supervision of real patient for 3-5 days (hospital) or 2-3 visits (outpatient)
Time	Individual (within educational practice)
Submission deadline	No later than 2 weeks before pass/fail or exam

#### 2. Student Work Execution Algorithm Stage 1. Preparation (1 day)

Action	What student relies on	Teacher control
Receiving referral from department	Practice schedule, patient list	Signature in issuance journal
Familiarization with patient medical documentation	Medical history, outpatient card, investigation results	Check of department head permission
Theoretical material study on disease profile	Textbooks, clinical guidelines, protocols	Oral questioning at meeting

#### Stage 2. Data Collection (1-2 days)

Action	What student relies on	Teacher control
Complaints and anamnesis collection	Questioning algorithm (Appendix 1.1), anamnesis structure	Observation/video recording, completeness check
General examination	GE technique (Appendix 1.2), norms and pathology	Presence at examination, technique correction
Organ and system physical examination	Percussion, auscultation, palpation schemes	Check of correct symptom detection

Action	What student relies on	Teacher control
Laboratory and instrumental data analysis	Normative values, interpretation methods	Control of correct interpretation

Stage 3. Documentation Completion (1-2 days)

Action	What student relies on	Teacher control
Title page and header completion	Ministry of Health order on medical history form	Check of requisites
Medical history sections writing	Completion sample (Appendix 1.3)	Check of structure and terminology
Preliminary diagnosis formulation	ICD-10, syndromic approach	Check of clinical picture correspondence
Examination plan compilation	Assistance standards, algorithms	Evaluation of appointment justification
Treatment plan compilation	Clinical guidelines, pharmacology	Check of contraindications consideration
Observation diaries maintenance	Dynamics maintenance rules	Daily control

Stage 4. Defense

Action	What student relies on	Teacher control
Brief report preparation	Structure: complaints → diagnosis → treatment → dynamics	—
Oral defense	Question checklist (Appendix 1.4)	Evaluation by criteria (Appendix 1.5)

<b>№</b>	<b>Medical History Section</b>	<b>Points</b>	<b>Evaluation Basis</b>
1	Title page, header	5	Correct completion: full name, birth date, admission date, department, history number, code
2	Complaints	10	Completeness (subjective + objective), chronology (when started, dynamics), significant negatives
3	Life anamnesis	10	Systematicity: allergic, epidemiological, hereditary, occupational, living conditions, harmful habits (quantity, duration)
4	Disease anamnesis	15	Logic of presentation: cause/preceding, onset (sudden/gradual), dynamics, help seeking, treatment (what taken, effect)
5	Objective examination	20	Completeness: general condition (consciousness, position, state), skin/mucous, lymph nodes, respiratory organs, CVS (pulse, BP, sounds, murmurs), GIT, urinary, nervous system. Terminology correctness
6	Instrumental and laboratory data	10	Interpretation correctness, connection with clinical picture, comparison with norm
7	Preliminary diagnosis	15	ICD-10 formulation (main + accompanying), syndromic decoding (main syndrome + additional), justification (why this diagnosis)
8	Differential diagnosis	10	Logic (what compared), comparative analysis, exclusion justification
9	Examination plan	10	Justification (diagnosis confirmation, accompanying exclusion), contraindications consideration, economy
10	Treatment plan	10	Standards correspondence: etiotropic, pathogenetic, symptomatic therapy; accompanying pathology and contraindications consideration
11	Observation diaries (minimum 3)	5	Condition dynamics, diagnosis and treatment correction, date and signature

TOTAL: 100 points

Level	Points	Work Characteristic	Teacher Action
Unsatisfactory	<60	Gross errors in diagnosis or treatment, incomplete supervision, plagiarism	Return for revision. New supervision or correction with consultation
Satisfactory (E)	60-69	Main sections completed, but terminology inaccuracies, incomplete differential diagnosis, formal treatment planning	Accept with indication of shortcomings. Recommendations for independent work
Good (C-D)	70-84	Complete structure, correct diagnosis, justified treatment, but insufficient analysis depth, template formulations	Accept. Recommendations for clinical thinking development
Excellent (B)	85-94	Completeness, correctness, literacy + critical literature analysis, consideration of patient individual characteristics, plan correction at condition change	Accept. Encouragement (recommendation for publication, exhibition)
Excellent (A)	95-100	All B criteria + original observations, independent complex case analysis, therapy improvement suggestions based on modern data	Accept. Recommendation for scientific work, conference

**Checking Procedure** (step-by-step for teacher) Step 1. Work Acceptance (5 min)

Action	Control Question	If "no"
Check presence of all sections	All 11 sections completed?	Return for revision
Check signatures	Department head signature present? Supervisor signature?	Send for signatures
Check supervision duration	At least 3 days in diaries?	Requirement for revision

### Step 2. Superficial Check (10 min)

What to check	Tool	Rejection Criterion
Originality	Anti-plagiarism/experience	Copying from another student — return
Completion	GOST/Ministry of Health order	Gross violations — remark
Terminology	Medical dictionary	Colloquial formulations — score reduction

### Step 3. Deep Check (20-30 min)

Section	What to pay attention to	Typical errors
Complaints	Chronology, negatives	Absence of dates, sequence confusion
Life anamnesis	Harmful habits (quantitatively)	"Smokes" instead of "1 pack/day, 20 years"
Objective examination	Completeness, description logic	System skip, absence of BP/pulse measurements
Diagnosis	Syndromic decoding	Only nosology without syndromes
Treatment plan	Specific doses, schemes	"Prescribe antibiotics" instead of "Amoxicillin 1.0 × 3 times/day, 7 days"
Diaries	Dynamics, correction	Same entries all days, absence of treatment reaction

### Step 4. Oral Defense (15-20 min)

Block	Teacher Questions	What is evaluated
Knowledge check	"Justify antibiotic choice"	Understanding, not memorization
Clinical thinking check	"What would you change in treatment with penicillin allergy?"	Flexibility, alternatives
Mastery check	Show on simulator the murmur you described	Description-reality correspondence

Step 5.

Grade Level	Cause	Solution
<60 points	Gross errors in diagnosis/treatment	Consultation, study of clinical guidelines, repeat supervision of another patient
<60 points	Incomplete supervision (<3 days)	Revision with a new patient
<60 points	Plagiarism	Return without grade, new patient topic assigned
60–69 points	Formal approach	Indication of shortcomings, recommendations for independent work, pass with remark

Connection with Competencies and Rating

Competency	Medical History Sections	Points
PC-4	Complaints, anamnesis, objective examination, investigation interpretation	45
PC-5	Diagnosis, syndromic decoding, differential diagnosis	25
PC-9	Treatment plan, dynamics	15
PC-14	Completion, diaries	15
GPC-5	Differential diagnosis, justification	—
GPC-7	Treatment plan, effectiveness control	—

Semester	Contribution to Rating	Note
5th semester	Up to 20 points	Medical history on pulmonology or cardiology
6th semester	Up to 20 points	Medical history on gastroenterology, nephrology or other section

### Anamnesis Collection Algorithm (for student)

1. Introduce yourself, explain conversation purpose, obtain consent
2. Complaints (patient's free narrative) • Clarify: when started, what preceded, dynamics, • what relieves/aggravates, pre-admission treatment
3. Life anamnesis (systematically): Living conditions, occupation, harmful habits (quantitatively!), • transferred diseases, operations, injuries, • heredity (blood relatives), allergy
4. Disease anamnesis (in detail by complaints)
5. Summary: main syndrome + additional

### Appendix 1.2. Objective Examination Scheme (for student)

System	What to examine	How to describe
General condition	Consciousness, position, state	"Consciousness clear, position active, condition satisfactory"
Skin/mucous	Color, moisture, turgor, rash	"Skin pale pink, moist, turgor preserved"
Lymph nodes	Cervical, supraclavicular, axillary, inguinal	"Lymph nodes not enlarged, painless"
Respiratory organs	Chest form, respiratory movement involvement, percussion, auscultation	In detail: percussion sound, breathing, rales
Cardiovascular	Pulse (rate, rhythm, filling, tension), BP, heart percussion, auscultation	"Pulse 72 bpm, rhythmic, filling satisfactory, BP 120/80 mmHg"
GIT	Tongue, abdomen (form, breathing involvement), palpation, liver and spleen percussion	"Abdomen soft, painless on palpation, liver 1 cm below costal arch"
Urinary	Kidney palpation, percussion, symptom, diuresis	"Percussion symptom negative, diuresis not disturbed"
Nervous system	Consciousness, reflexes, sensitivity	"Tendon reflexes D=S, pathological not detected"

**Appendix 1.3. Sample Preliminary Diagnosis Completion**

Main disease: • Nosology: Acute myocardial infarction (ICD-10 code: I21.9) • Syndromic decoding: – Myocardial ischemia syndrome (pain behind sternum, radiation, nitroglycerin) – Myocardial necrosis syndrome (ST elevation, troponin) – Hemodynamic insufficiency syndrome (BP 90/60, cold sweat)

Accompanying diseases: • Arterial hypertension stage II, grade 3, risk 4 (code I11.9)

Complications: None / Ventricular extrasystole

**Appendix 1.4. Oral Defense Question Checklist**

Topic	Questions
Anamnesis	"What question would you ask to distinguish angina from infarction?"
Objective examination	"Show how you determined heart borders. What does leftward expansion mean?"
Diagnosis	"Why did you exclude aortic dissection aneurysm?"
Investigation	"What investigation would you prescribe first and why?"
Treatment	"Mechanism of acetylsalicylic acid action in this case?"
Dynamics	"What changes do you expect in 3 days with effective treatment?"

**Appendix 1.5. Medical History Evaluation Form**

FACULTY \_\_\_\_\_ COURSE \_\_\_\_\_ GROUP \_\_\_\_\_

Student \_\_\_\_\_

Patient: Full Name \_\_\_\_\_ Age \_\_\_\_\_ Department \_\_\_\_\_

Admission date \_\_\_\_\_ Discharge date \_\_\_\_\_ Supervision \_\_\_ days

MAIN DIAGNOSIS: \_\_\_\_\_

ACCOMPANYING: \_\_\_\_\_

Section	Max Points	Evaluation (points)
1. Title page, header	5	
2. Complaints	10	
3. Life anamnesis	10	
4. Disease anamnesis	15	
5. Objective examination	20	
6. Investigation data	10	
7. Preliminary diagnosis	15	
8. Differential diagnosis	10	
9. Examination plan	10	
10. Treatment plan	10	
11. Observation diaries (≥3)	5	
<b>TOTAL</b>	<b>100</b>	

Oral defense: completed  Defense grade: \_\_\_\_\_ points

FINAL GRADE: \_\_\_\_\_ points = \_\_\_\_\_ (letter)

Remarks: \_\_\_\_\_

Teacher: \_\_\_\_\_ Date: \_\_\_\_\_

## APPENDIX 2.

### STUDENT INDEPENDENT WORK CONTROL MEANS (SIW)

SIW Topics Section 1 1.3 Pathological chest forms 1.4 Fever, types. Their significance in diseases

Section 2 2.3 History of percussion development. Role of Auenbrugger, method implementation by Corvisart 2.4 Biophysical basics of auscultation. Auscultation techniques and means

Section 3 3.5 Diagnostic value of laboratory methods (CBC, sputum, pleural effusion) 3.6 Diagnostic value of instrumental methods (X-ray, bronchoscopy, spirometry) 3.7 Histological and cytological methods. Pleura and lung biopsy

Section 4 4.5 Heart ultrasound (EchoCG) 4.6 Treadmill test, bicycle ergometry 4.7 X-ray and radioisotope heart investigation methods 4.8 Laboratory methods. Blood enzymes 4.9 Ambulatory BP and ECG monitoring 4.10 Ankle-brachial index 4.11 Lipid spectrum 4.16 Conduction disorders (blocks) 4.17 Excitability disorders (arrhythmias) 4.18 Automaticity disorders

Section 5 5.7 Arterial pulse and its changes 5.8 ECG changes in pericardial lesion 5.9 Endocardial lesion in infectious endocarditis 5.10 Endocardial lesion in atherosclerosis 5.11 Endocardial lesion in rheumatism 5.12 ECG in myocardial infarction

Section 6 6.3 Duodenal contents investigation 6.4 Diarrhea and constipation 6.9 Jaundice. Diagnostic methods 6.10 Ascites and fluid investigation 6.11 Zakharyin-Ged zones

Section 7 7.5 Urinary sediment investigation 7.6 Edema in kidney diseases 7.7 Protein, lipids in kidney pathology

Section 8 8.5 Hematopoiesis scheme 8.6 CBC changes 8.7 Hematological syndrome diagnostic methods

Section 9 9.6 Acute adrenal insufficiency 9.7 Metabolism in diabetes mellitus

Section 10 10.6 Mineral-bone disorders in CKD 10.7 Joint X-ray 10.8 Emergency conditions (urticaria, Lyell's syndrome)

#### 2. Essay Requirements

Parameter	Requirement
Volume	10-15 pages (Times New Roman 14 font, 1.5 spacing, 2 cm margins)
Structure	Title page, contents, introduction, main part (2-3 chapters), conclusion, literature list (minimum 10 sources, including 3 foreign)
Topic	By course sections (see SIW topic list above)
Deadlines	Several essays per semester: 5th semester — sections 1-5 topics; 6th semester — sections 6-10 topics
Submission form	Written text + electronic version + oral defense

Essay Evaluation Criteria (100-point scale)

Criterion	Maximum points	Detailing
Relevance and goal setting	10	Topic choice justification, clarity of goal and objectives
Content and depth of coverage	30	Topic coverage completeness, material understanding, presentation logic
Scientific nature and critical analysis	20	Use of primary sources, comparison of different viewpoints, absence of bare retelling
Practical significance	15	Connection with clinical practice, application in diagnosis/treatment
Completion and style	15	Standards compliance (GOST/STO), literacy, reference completion
Essay defense	10	Oral presentation, answers to questions

#### Grade Conversion Scale

Points	Grade	Mastery Level
95-100	Excellent (A)	Creative — independent analysis, original conclusions
85-94	Excellent (B)	Practice-oriented — ability to apply knowledge
70-84	Good (C-D)	Reconstructive — quality material rethinking
60-69	Satisfactory (E)	Reproductive — literate presentation without deep analysis
<60	Unsatisfactory	Does not meet requirements

ESSAY CHECKING PROCEDURE Stage 1. Teacher Preliminary Check (7 days)

Teacher Action	What is checked
Plagiarism check	Text originality (not less than 70%)
Completion check	Requirements compliance, literature list completion
Content check	Topic correspondence, structure presence, coverage depth

Review Form: ESSAY REVIEW

Student: \_\_\_\_\_ Group: \_\_\_\_\_ Topic: \_\_\_\_\_

Positive aspects:  Topic fully covered  Modern sources used  Critical analysis present  
 Practical significance justified  Literate completion  Other: \_\_\_\_\_

Remarks:  Incomplete topic coverage (indicate sections: \_\_\_\_\_)   
 Insufficient sources (has \_\_, minimum 10 required)  Absence of critical literature analysis   
 Errors in reference and literature list completion  Plagiarism (originality \_\_%)  Other:

Revision recommendations: \_\_\_\_\_

Preliminary grade: \_\_\_\_\_ points

Date: \_\_\_\_\_ Teacher signature: \_\_\_\_\_

Stage 2. Essay Defense (10-15 minutes)

Element	Time	Evaluated Competencies
Presentation (oral report, 5-7 min)	7 min	PC-4, PC-14 (information structuring)
Answers to teacher questions	5 min	GPC-5 (understanding depth)
Answers to student questions	3 min	PC-5 (argumentation ability)

Defense Question Examples:

Essay Topic	Control Questions
History of percussion development (section 1)	What physical laws underlie percussion? Compare Auenbrugger's and Corvisart's technique
Diagnostic value of EchoCG (section 4)	What parameters determine LV hypertrophy? What is EchoCG advantage over ECG?
H. pylori investigation (section 6)	Compare invasive and non-invasive diagnostic methods. When is each prescribed?

Essay Topic	Control Questions
Natriuretic peptides (section 5)	BNP elevation mechanism in HF. Differential diagnosis of acute and chronic HF by peptide levels

### Stage 3. Revision Procedure

Situation	Action Procedure
"Unsatisfactory" grade	Revision within 1 week with repeat defense. Maximum grade after revision — 69 points
Plagiarism >30%	Essay returned without grade. New topic writing
Topic compliance non-	Reformatting or topic change in agreed timeframes

### Connection with Rating

Semester	Contribution to Rating	Note
5th semester	Up to 10 points (in R&D/SIW section)	Sections 1-5 topics
6th semester	Up to 10 points (in R&D/SIW section)	Sections 6-10 topics