Clinical Medicine & Public Health: second-round sample tasks

The demo test includes 40 tasks, of which 24 are entry-level tasks with one correct answer (a correct answer is 1 point), 12 intermediate-level tasks with several correct answers (a correct answer is 3-4 points), 4 complex tasks with a detailed answer (a correct and detailed answer is 9 points)
In the demo test, correct answers are given in bold.

Choose the correct answer:

Section 1. Basic medical research (Fundamental medicine)

1. Indicate nonopioid centrally acting analgesic:
   A. Morphine
   B. Butorphanol
   C. Buprenorphine
   D. Paracetamol

2. Part of the male urethra:
   A. **Prostate**
   B. Neck
   C. Body
   D. Bulb

3. Hypercapnia affects respiration primarily by stimulating the
   A. Carotid and aortic body receptors
   B. Central (medullary) chemoreceptors
   C. Arterial baroreceptors
   D. Hypoglossal nerve

4. The cell macrophage can transform into in the focus of granulomatous inflammation
   A. Lymphocyte
   B. Fibroblast
   C. Plasmatic
   D. **Epithelioid**

5. The data suggest the presence of simple metabolic acidosis
   A. pH=7.30, $PaCO_2$-28, increased titratable acidity and NH_4^+
   B. pH=7.54, $PaCO_2$-28, increased titratable acidity and NH_4^+
   C. pH=7.30, $PaCO_2$-28, normal titratable acidity and NH_4^+
   D. pH=7.30, $PaCO_2$-28, normal titratable acidity and decreased NH_4^+

Section 2. General and internal medicine (Fundamentals of cardiac & cardiovascular systems, endocrinology, respiratory system, gastroenterology & hepatology, hematology, nephrology, therapeutic dentistry)

6. Choose the most suitable lipid-lowering drug for a patient with elevated LDL levels:
   A. HMG-CoA reductase inhibitors
   B. Fibroic acid derivatives
   C. Cholestyramine

D. Nicotinic acid

7. Chronic hepatitis C is characterized by
   A. Dominance of ALT over AST
   B. **Dominance of AST over ALT**
   C. Isolated increase in ALT
   D. Isolated increase in AST

8. Pancreatitis is characterized by:
   A. Increase in amylase levels
   B. High total cholesterol
   C. Decrease in amylase levels
   D. Increase in total protein

9. Extraintestinal manifestations of Crohn's disease are
   A. Erythema nodosum
   B. Interintestinal fistulas
   C. Pancreatogenic diabetes mellitus
   D. Generalized erosive psoriasis

10. Oral cancer risk factors do NOT include
   A. Bubblegum chewing
   B. Betel chewing
   C. Smoking
   D. Chronic lip-biting

Section 3. Surgery (Fundamentals of general and oral surgery)

11. The branches of the superior mesenteric artery are all but
   A. A.colica media
   B. A.colica dextra
   C. A.colica sinistra
   D. A.ileocolica

12. Primary hernias of the anterior abdominal wall do not include
   A. Spigelian line hernia
   B. Inguinal hernia
   C. Postoperative hernia
   D. Umbilical hernia

13. For antibiotic prophylaxis in surgical interventions, the following antibiotics are usually used:
   A. 1st generation cephalosporins
   B. 3rd generation cephalosporins
   C. Carbopenems
   D. Tetracyclines

14. An enlarged, painless, uninflated gallbladder is a
   A. Courvoisier's symptom
   B. Kerr's symptom

C. Murphy's symptom
D. Rowsing's symptom

15. Non-resorptive suture materials include
A. Collagen
B. **Silk**
C. Catgut-chrome
D. Cellulose

Section 4. Public Health

16. The parameter that shows the percentage of healthy people in the population is called
A. Health Index
B. Incidence
C. Balance of health
D. Point prevalence

17. Prevalence means
A. The total number of cases of a disease in a given population at a specific time
B. The percentage of certain diseases in the population
C. The number of new cases of a disease within a time period
D. The number of socially significant diseases

18. The process of people leaving one country to reside in another is called
A. Emigration
B. Immigration
C. Seasonal migration
D. Urbanization

19. Difficulties in activities of daily leaving (for example, eating) are called
A. Activity limitations
B. Impairments
C. Social handicap
D. Injuries

20. Which value is considered as average:
A. Mean
B. Quantile
C. Significance
D. Probability

Section 5. Health promotion

21. Monitoring, treatment and rehabilitation of patients with chronic diseases are components of
A. Primary prevention
B. Secondary prevention
C. Tertiary prevention
D. Quaternary prevention

22. Changes in the number of healthy individuals in a population are a criterion of

A. Primary prevention
B. Secondary prevention
C. Tertiary prevention
D. Quaternary prevention

23. Which factor belongs to primary risk factors
A. Smoking
B. Atherosclerosis
C. Diabetes
D. Rheumatoid arthritis

24. Population-wide strategy is aimed at
A. Preventive and health improvement measures at industrial enterprises
B. Identifying specific risks for the development and progression of diseases for each patient
C. Identifying adverse lifestyle and environmental factors that increase the risk of diseases among the population
D. Immunization of children

Choose all correct answers:

Section 1. Basic medical research (Fundamental medicine)

25. Central organs of the immune system are
A. **Thymus**
B. Spleen
C. Red bone marrow
D. Tonsils

26. The autonomic nervous system regulates
A. Visceral organ function
B. The vascular tone
C. Trophic innervation of tissues
D. The skeletal muscle tone

Section 2. General and internal medicine (Fundamentals of cardiac & cardiovascular systems, endocrinology, respiratory system, gastroenterology & hepatology, hematology, nephrology, therapeutic dentistry)

27. Iron deficiency anemia is characterized by
A. Ferritin reduction
B. Increase in the total iron binding capacity (TIBC)
C. Acute onset
D. Decrease of total iron binding capacity (TIBC)

28. The indication for parenteral administration of iron preparations is
A. Malabsorption syndrome
B. Resection of the small intestine
C. Resection of the colon
D. Recurrent pregnancy

Section 3. Surgery (Fundamentals of general and oral surgery)

29. Pain in the lower right quadrant of the abdomen may be a symptom of
    A. Acute appendicitis
    B. Inflammation of Meckel's diverticulum
    C. Ectopic pregnancy
    D. Portal vein thrombosis

30. Basic principles of periodontal surgery are
    A. Gentle treatment of root cement, periosteum, and soft tissues
    B. Gentle handling of bone tissue
    C. Adequate blood supply to the flaps
    D. The presence of rough scars

Section 4. Public Health

31. Dynamic as a part of demography studies
    A. Immigration
    B. Mortality
    C. Hospitalization
    D. Morbidity

32. The method of studying morbidity based on data from the population seeking medical care (registration method) has the following drawbacks:
    A. **Incomplete account of chronic diseases**
    B. **Incomplete account due to the low level of population seeking medical care**
    C. High cost
    D. Impossibility of account of acute diseases

33. The correlation coefficient of - 0.17 represents
    A. Strong relationship
    B. Weak relationship
    C. **Negative (reverse) relationship**
    D. Positive (direct) relationship

Section 5. Health promotion

34. Components of primary prevention are
    A. Counseling and promoting a healthy lifestyle
    B. Social-hygienic monitoring
    C. Measures for the rehabilitation of patients with chronic diseases
    D. Medical checkups of people with a high risk of disease

35. At what levels of relative risk does the studied factor indicate a reduced risk of disease?
    A. RR=4
    B. RR=1
    C. RR=0.5
    D. RR=0.1

36. Secondary risk factors include
   A. **Diabetes mellitus**
   B. **Hypertension**
   C. Sedentary lifestyle
   D. Eating habits

Section 1. Basic medical research (Fundamental medicine)

37. Patient V. has been prescribed Carvedilol for the treatment of arterial hypertension. The patient suffered from bronchospasm.

Questions (the number of points for the correct answer is given in parentheses):

1. Specify the mechanism of the action of the drug (3 points).
2. What are the most common side effects of Carvedilol? (3 points)
3. What cardioselective β-blockers do you know? (3 points)

Answers:

1. Nonselective blockade of α, β - adrenergic receptors
2. Common side effects include dizziness, tiredness, joint pain, low blood pressure, nausea, shortness of breath, bronchospasm, bradycardia
3. Metoprolol, bisoprolol, atenolol, betaxolol, nebivolol

Section 2. General and internal medicine (Fundamentals of cardiac & cardiovascular systems, endocrinology, respiratory system, gastroenterology & hepatology, hematology, nephrology, therapeutic dentistry)

38. A 20-year-old patient presented with complaints of weakness, reduced physical and mental performance, discomfort in the muscles, and occasional pain in the small and large joints during movement.

Anamnesis of the disease: The patient reported that she had been unwell for two weeks. The initial symptoms emerged following a period of work-related stress and have progressively worsened since then. She attempted to alleviate the symptoms by taking multivitamins, but saw no improvement. Consequently, she decided to seek medical assistance.

Patient's Life History:

The patient is a woman, who is single. She resides in an apartment and works in an office with an irregular work schedule, describing her job as demanding and stressful. She does not smoke, abstains from alcohol consumption, and denies any substance use. The patient takes multivitamins periodically.

Around two months ago, she underwent a comprehensive medical examination, which included assessments by a general practitioner, gynecologist, neurologist, and otorhinolaryngologist. Additionally, she had fluorography, general blood and urine tests, as well as biochemical blood tests as part of the examination. No abnormalities or pathologies were detected during these assessments.

The patient is actively engaged in physical activities and follows a regular exercise routine. There is no family history of hereditary diseases, and she has not experienced any chronic illnesses in the past. She has never had any contagious diseases, and her vaccination status is up-to-date in accordance with the age-appropriate vaccination schedule.

Examination: The patient's condition is relatively satisfactory. Asthenic physique. Height is 178 cm, and weight is 62 kg. The skin is of a normal physiological color. Mucous membranes are of a normal color. The joints are normal. Respiratory and blood circulatory systems are without pathology. The abdomen is of normal size, soft on palpation, and painless in all parts. The liver and spleen are not enlarged. There is no dysuria.

Laboratory examination:
The general blood test showed an increase in ESR up to 30 mm / h;
HBsAg, HCVAb, HIV 1 and 2 antibodies and HIV 1 and 2 antigen (HIV Ag/AbCombo) – negative.
Biochemical blood test:
ALT – 20 upper limit of the norm (ULN); AST-15 ULN;
total and direct bilirubin levels are normal;
ALP-1.5 ULN; GGT - 2 ULN; INR-1.30 (norm 0.8-1.2);
total protein-88 g / l (the norm up to 83), albumin-30 g/l (norm 35-52), the levels of alpha 1 and 2, beta globulins are normal;
the level of gamma globulin is 22 g/l (ULN is 15.2);
M-gradient is not detected on electrophoresis when studying the level of immunoglobulins;
There was a slight increase in IgA, IgM levels and an increase in IgG levels up to 2 ULN.

Questions (the number of points for the correct answer is given in parentheses):

1. Give the preliminary diagnosis and explain your reasoning (3 points).
2. Make a plan for an additional examination of the patient. Explain your reasoning (3 points).
3. What therapy would you prescribe to this patient (regime, diet, medication) (3 points).

Answers:

1. The patient is diagnosed with acute autoimmune hepatitis.

The diagnosis of hepatitis is based on the revealed cytolysis syndrome: a sharp increase in ALT and AST levels over ULN in combination with a moderate increase in ALP and GGT. The absence of markers of hepatotropic infections in the blood, a history of alcohol abuse, hepatotoxic drugs, the absence of a family history of liver diseases in combination with severe hypergammaglobulinemia and polyclonal gammopathy with a predominant increase in IgG levels in the absence of physical and laboratory signs of cirrhosis of the liver indicate an autoimmune nature of hepatitis. A 10-fold increase in ALT and AST compared to the norm makes it possible to classify hepatitis as acute.

2. Taking into account the previous examinations, it is necessary to perform an ultrasound of the abdominal organs to exclude focal pathology of the liver, diseases of the bile ducts and gallbladder, portal hypertension and lymphadenopathy of the abdominal cavity. The patient has a clinical and biochemical picture of acute hepatitis. To completely exclude the viral nature of hepatitis, the performed tests are not enough. To exclude acute hepatitis C, the presence of HCV RNA in the blood should be determined; to exclude acute hepatitis A and E - antiHAV IgM, antiHEV IgM; to exclude infectious mononucleosis - EBV DNA, antibodies to the early EBV antigen. There is no need to exclude acute hepatitis B, since the patient has been vaccinated against HBV. The level of immunity should be assessed by a quantitative anti-HBs test. To confirm the diagnosis of autoimmune hepatitis, it is necessary to determine a-nuclear antibodies (ANA), smooth muscle antibodies (SMA), and antibodies to liver and kidney microsomes type 1 (anti-LKM-1), liver nocturnal cytosolic protein (anti-LC-1), soluble hepatic antigen (anti-SLA) and hepatic-pancreatic antigen (anti-LP). It is also necessary to perform screening tests

for Wilson's disease, specifically measuring serum ceruloplasmin levels, as well as for hemochromatosis, by assessing ferritin levels.
3. No special health regime is required. The diet should be rich in protein (a high-protein diet) Recommended medications include glucocorticosteroids (prednisolone, methylprednisolone, budesonide) and immunosuppressants (azathioprine, 6-mercaptopurine, cyclophosphamide)

Section 3. Surgery (Fundamentals of general and oral surgery)

39. A 40-year-old female patient presented to the emergency department with a 2-month history of a painful bulge in the umbilical region. The pain worsened in the morning when she tried to lift her child, and was associated with weakness, sweating, and vomiting. The pain and nausea were still present at the time of presentation. The patient's past medical history includes a laparoscopic resection of the right ovary for cysts, 2 pregnancies, and 2 deliveries. She is not taking any medications. The patient's height is 172 cm and her weight is 84 kg, with a body mass index (BMI) of 28.3 kg/m2. On physical examination, the abdomen is soft and obese. There is a tender, 3-cm umbilical hernia in the area of the laparoscopy scar. The cough impulse is absent. Peristalsis is present.

Questions (the number of points for the correct answer is given in parentheses):

1. Give the preliminary diagnosis and explain your reasoning (3 points).
2. What are the patient's risk factors? (3 points)
3. What is the treatment plan? (3 points)

Answers:

1. Based on the patient's medical history and physical examination findings (painful bulge, absent cough impulse, location in the area of the postoperative scar), the patient is diagnosed with an incarcerated trocar hernia.
2. The risk factors for developing an incarcerated hernia include previous laparoscopic surgery, the presence of a hernia, obesity, and physical exertion (weight lifting).
3. The patient has an incarcerated trocar hernia with acute intestinal obstruction, which is a medical emergency and requires urgent surgical intervention.

Section 4. Public Health

40. The aim of the study was to assess the self-reported quality of life (QOL) and its social determinants in citizens of city K, in order to develop social programs for health protection.

Questions (the number of points for the correct answer is given in parentheses):

1. Define the objectives of research (3 points)
2. Make a brief plan and program for statistical research (object of study, place of research, type of research by time, type of research by volume, subject of observation, registration characteristics according to a classification) (6 points)

Answers:

1. Research objectives:
    a. To study the social environment in city K.
    b. To analyze the self-assessment of the quality of life by city K. population.
    c. To develop social programs for health protection.

2. Elements of the plan and the program:

a. Object of study: adult citizens of city K.
b. Place of research: city K.
c. Type of research by time: a cross-sectional study conducted only once.
d. Type of research by volume: selective.
e. Subject of observation: adult population of city K.
f. Registration characteristics: gender (nominal), age (continuous), living conditions (nominal), social class (ordinal), self-assessed quality of life (continuous)