



GOVERNMENT NONPROFIT COMPANY «CENTER OF EDUCATION  
QUALITY OF THE MINISTRY OF HEALTH OF UKRAINE»

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Variant 63

**TEST ITEMS  
FOR THE UNIFIED STATE QUALIFICATION EXAM**

**STAGE 1**

**ENGLISH LANGUAGE PROFICIENCY TEST**

**Specialty  
«PHARMACY, INDUSTRIAL PHARMACY»**

***Specialization  
«PHARMACY»***

## I. Read the text and answer 10 questions to it.

### The blood is driven into a round

Ancient doctors understood that blood was essential for human life, that it moved around the body in some way, and that the heart played an essential role in this, but the process was unclear to them. In ancient China, the Huangdi Neling (The Yellow Emperor's Classic of Medicine) hypothesized that blood became mixed with qi (life force) and spread energy around the body. In Greece, Hippocrates believed that the arteries carried air from the lungs and that the heart had three chambers, or ventricles. The most influential theories were those of the 2nd-century-ce Roman doctor Claudius Galen. He understood that the body had both arteries and veins but thought, incorrectly, that blood was produced in the liver and was then carried through the body by the veins. Crucially, Galen argued that blood was absorbed by body tissues and had to be constantly replenished; he did not believe that it returned to the liver or the heart, or that it circulated around the body. Even so, he did surmise that the right side of the heart nourished the lungs in some way and that blood entered the left side of the heart through tiny pores. This "venal" blood then mixed with air from the lungs and entered the arteries, where it delivered pneuma or "vital spirit" to the body. In 1628, English physician William Harvey published a new theory about the circulation of the blood. Through rigorous experiments over ten years, he had discovered the source and route of blood in the body. His ideas challenged theories that had prevailed for almost 1,500 years.

1. Why, according to Galen, did the body need constant new blood?

- A. It was absorbed and consumed by the tissues
- B. It circulated in a closed loop
- C. It was stored in the heart
- D. It returned to the liver

2. What did ancient Chinese medicine (Huangdi Neijing) suggest about blood?

- A. It is not essential for life
- B. It is produced in the liver
- C. It carries air from the lungs
- D. It mixes with qi (life force) and spreads energy through the body

3. According to Hippocrates, what did arteries carry?

- A. Blood
- B. Bile
- C. Food and nutrients
- D. Air from the lungs

4. Where did Galen believe blood was produced?
- A. In the brain
  - B. In the lungs
  - C. In the heart
  - D. In the liver
5. Did Galen think that blood was constantly consumed by the tissues and needed to be replenished?
- A. True
  - B. Not given
  - C. False
6. Did Hippocrates believe that the heart had four chambers?
- A. True
  - B. Not given
  - C. False
7. Did William Harvey discover blood circulation in the year 1528?
- A. True
  - B. Not given
  - C. False
8. How many chambers did Hippocrates believe the heart had?
- A. Five
  - B. Three
  - C. Four
  - D. Two
9. What did William Harvey discover in 1628?
- A. Blood circulates continuously and the heart works as a pump
  - B. Arteries and veins are not connected
  - C. The heart has three chambers
  - D. Blood is created from air
10. For how long did Galen's theories dominate medicine before Harvey?
- A. 1000 years
  - B. 2000 years
  - C. About 1500 years
  - D. 500 years

## II. Choose the right answer.

11. Instrumental methods of analysis are used for quantification of glucose in solutions. What method is based on measuring the refractive index of light in liquids?

- A. Polarography
- B. Polarimetry
- C. Refractometry
- D. Potentiometry
- E. Liquid chromatography

12. A 45-year-old woman developed an acute inflammatory disease of the upper respiratory tract and eyes during the season of flowering. She presents with hyperemia, edema, and mucous discharge. What type of leukocytosis would be most characteristic in this case?

- A. Monocytosis
- B. Basophilia
- C. Neutrophilia
- D. Eosinophilia
- E. Lymphocytosis

13. The secretory structures of internal secretion ensure the synthesis, accumulation, and excretion of plant metabolic products, such as resins, balsams, essential oils, mucine, latex, etc. Name these structures.

- A. Osmophores
- B. Laticifers
- C. Hydathodes
- D. Epidermal emergences
- E. Nectaries

14. Some drugs, in particular cytostatic drugs, can have a mutagenic effect due to them changing the structure of the nitrogenous bases of DNA. What

process ensures the correction of such damage in the cell?

- A. Processing
- B. Transcription
- C. Replication
- D. Translation
- E. Repair

15. A patient with severe mixed anxiety-depressive disorder presents with elevated intraocular pressure. What drug would be contraindicated in this case due to the risk of developing angle-closure glaucoma?

- A. Sertraline
- B. Amitriptyline
- C. Escitalopram
- D. Risperidone
- E. Fluoxetine

16. The patient's initial examination revealed obesity, caused by impaired neurohormonal regulation of eating and fat metabolism. Polyphagia of peripheral origin results from impaired production of a certain hormone in the adipose tissue. Name this hormone.

- A. Ghrelin
- B. Resistin
- C. Adiponectin
- D. Leptin
- E. Insulin

17. A nasal mucus sample was collected for a rapid influenza diagnostic test from a patient with fever, intoxication, and clinical signs of a respiratory infection. The rapid test revealed influenza A virus antigens in the collected material. What antiviral drug should be recommended for the treatment in this case?

- A. Oseltamivir
- B. Acyclovir
- C. Fluconazole
- D. Amoxicillin
- E. Paracetamol

18. How can particle size be determined using sedimentation analysis?

- A. Measuring the time it takes for particles to settle down to a certain height
- B. Measuring the osmotic pressure of a solution
- C. Measuring the freezing point of a solution
- D. Ultraviolet spectroscopy
- E. Measuring the fluorescence of particles in a solution

19. A patient with chronic liver damage receives a hepatoprotector containing S-adenosylmethionine. What is the key role of this compound in biotransformation reactions?

- A. Glutamate dehydrogenase inhibitor
- B. Methyl group donor in conjugation reactions
- C. Ammonia acceptor in the ornithine cycle
- D. Allosteric regulator of the ornithine cycle
- E. Coenzyme in amino acid catabolism

20. An analytical pharmacist is performing quantitative complexometric titration of calcium compounds. What indicator should be used in such quantification, as required under the regulations of the State Pharmacopoeia of Ukraine?

- A. Methyl orange
- B. Phenolphthalein
- C. Calconcarboxylic acid
- D. Ferroin
- E. Eosin

21. What pair of compounds can be distinguished from each other using the silver mirror reaction?

- A. 1,3-Butadiene and 1,2-butadiene
- B. Propane and propene
- C. Ethanol and ethylene glycol
- D. n-Butane and isobutane
- E. Propanal and propanone

22. What type of titrimetry is bromatometry?

- A. Redox titration
- B. Precipitation titration
- C. Complexometry
- D. —
- E. Acid-base titration

23. During field practice, students harvested a plant with a short, thick rhizome and branched roots. Its stem is erect and covered in velvety down. Its leaves are alternate, petiolate, and colored grayish-green due to the dense down consisting of stellate and branched hairs. Its flowers are pale pink, they form intermittent racemose inflorescences in the axils of stem leaves. Its fruit is a flattened round schizocarp with short down. Name this plant.

- A. *Hypericum perforatum*
- B. *Chelidonium majus*
- C. *Althaea officinalis*
- D. *Mentha piperita*
- E. *Ledum palustre*

24. What is the name of the single elongated crystals with pointed ends that can be detected during the microscopy of the herbal raw material harvested from a

monocotyledonous plant?

- A. Cystoliths
- B. Styloids
- C. Crystalline sand
- D. Druses
- E. Globoids

25. When purifying solutions and increasing their stability, the processes occurring at the phase interface must be taken into account. What can be observed in liquid systems due to the effect of surfactants?

- A. Restoration of the solvent polarity
- B. Increased boiling point
- C. Increased interaction energy between particles
- D. Increased diffusion layer thickness
- E. Reduced surface tension

26. A woman came to a pharmacy with a puncture wound in her foot. The wound was sustained the day before. The woman received no medical aid. The pharmacist recommends that the visitor urgently consult a doctor because of the risk of developing an anaerobic infection that necessitates mandatory specific prophylaxis. What disease can develop in this case in the absence of such prophylaxis?

- A. Botulism
- B. Erysipelas
- C. Staphylococcal wound infection
- D. Tetanus
- E. Post-traumatic wound infection

27. To treat alcoholism in a patient, the doctor uses the mechanism that suppresses ethanol addiction by amplifying the toxic effect of alcohol. What ethanol oxidation product is neurotoxic?

- A. Pyruvate
- B. Acetaldehyde
- C. Lactate
- D. Ammonia
- E. Carbon dioxide

28. An elderly patient with insomnia has been prescribed a medicine containing melatonin. This hormone is synthesized from a certain amino acid in the human body. Name this amino acid.

- A. Tyrosine
- B. Proline
- C. Tryptophan
- D. Valine
- E. Lysine

29. One of the starting substrates in the tricarboxylic acid cycle is oxaloacetate. It is produced in the process of transamination of a certain amino acid. Name this amino acid.

- A. Phenylalanine
- B. Glycine
- C. Aspartate
- D. Serine
- E. Alanine

30. What type of tautomerism is characteristic of purine?



- A. Lactam-lactim tautomerism
- B. Keto-enol tautomerism
- C. Aci-nitro tautomerism
- D. Tautomerism of azoles
- E. Amine-imine tautomerism

31. An alkali was added into the analyte solution. When heated, the solution released a gas that changed the color of a moist litmus paper from red to blue.

What ions are present in the solution, as revealed by this result?

- A.  $Bi^{3+}$
- B.  $Cl^{-}$
- C.  $NH_4^{+}$
- D.  $CO_3^{2-}$
- E.  $Pb^{2+}$

32. A doctor has prescribed zopiclone to a patient complaining of insomnia. This drug has a hypnotic effect, because it interacts with certain receptors. Name these receptors.

- A. Serotonin and opioid receptors
- B.  $\alpha$ - and  $\beta$ -adrenergic receptors
- C.  $H_1$  and  $H_2$  histamine receptors
- D. Muscarinic and nicotinic acetylcholine receptors
- E. Benzodiazepine and GABA receptors

33. What aromatic amine among those listed below exhibits the strongest basic properties?

- A. 4-Nitroaniline
- B. 4-Methoxyaniline
- C. Aniline
- D. 3-Bromoaniline
- E. 2-Chloroaniline

34. What reaction is used for identification of compounds that contain a purine heterocycle in their structure?

- A. Silver mirror reaction
- B. Biuret reaction
- C. Murexide reaction
- D. Xanthoproteic reaction
- E. Isonitrile reaction

35. A 45-year-old patient has been prescribed the neuroleptic haloperidol for the treatment of a condition accompanied by hallucinations. What main pharmacological effect of halope-

ridol is used to treat this condition?

- A. Analgesic
- B. Antipsychotic
- C. Hypotensive
- D. Anticonvulsant
- E. Anxiolytic

36. What indicator is used in argentometric determination of chloride ions in Mohr's method?

- A. Methyl red
- B. Fluorescein
- C. Diphenylcarbazone
- D. Potassium chromate
- E. Eosin

37. High-molecular substances can be isolated from the solution using electrolytes. Name this process.

- A. Salting out
- B. Coagulation
- C. Sedimentation
- D. Swelling
- E. Aggregation

38. A pharmacy has received a medicinal product that contains different types of hemagglutinin and influenza virus neuraminidases. What is the purpose of this product?

- A. Influenza treatment
- B. Active immunization against influenza
- C. Rapid influenza diagnostic test
- D. Passive immunization against influenza
- E. Nonspecific enhancement of local resistance

39. To control the microbiological purity of ibuprofen oral suspension, samples of the drug were cultured on an accumulation medium and then subcultured on mannitol salt agar to determine whether the suspension was contaminated

with a pathogenic microorganism. Specify this microorganism.

- A. *Bacillus spp.*
- B. *Penicillium spp.*
- C. *Pseudomonas aeruginosa*
- D. *Escherichia coli*
- E. *Staphylococcus aureus*

40. Urinalysis of a patient with diabetes mellitus reveals glucosuria. What is the renal threshold for glucose reabsorption?

- A. 1 mmol/L
- B. 10 mmol/L
- C. 20 mmol/L
- D. 5 mmol/L
- E. 15 mmol/L

41. What drug used for chronic bronchitis improves antibiotic penetration into the lung tissue and stimulates surfactant synthesis, when administered in combination with antibiotics?

- A. Glaucine
- B. Levocetirizine
- C. Ambroxol hydrochloride
- D. Acetylcysteine
- E. Diphenhydramine hydrochloride

42. A 45-year-old patient came to her family doctor with complaints of heartburn, epigastric pain that occurs 1-2 hours after eating, and sour belching. Fibrogastrosocopy reveals signs of inflammation in the gastric pylorus. The patient's urease test is positive. What is the primary cause of the damage to the gastric mucosa in this case?

- A. Increased hydrochloric acid levels
- B. Reduced regeneration of the gastric mucosa
- C. *Helicobacter pylori* toxins
- D. Increased gastrin synthesis
- E. *Escherichia coli* toxins

43. What antibacterial fluorinated drug is contraindicated for children and adolescents because of risks of impaired cartilage development?

- A. Ceftriaxone
- B. Nifuroxazide
- C. Ciprofloxacin
- D. Fluconazole
- E. Doxycycline

44. What feature of a leaf is characteristic of *Poaceae*?

- A. Ochrea
- B. Leaf sheath
- C. Leaf blade
- D. Petiole
- E. Stipules

45. A 61-year-old patient has been hospitalized to the intensive care unit. Objectively, the patient is unconscious, his skin is pale with a yellowish tint, his breathing is shallow, ammonia breath is observed. Blood pressure — 90/60 mm Hg, pulse — 110/min. Laboratory tests: creatinine — acutely increased, urea — high,  $K^+$  — 7.1 mmol/L, glucose — 5.1 mmol/L, ketone bodies — absent. What diagnosis can be characterized by the described symptoms and laboratory findings?

- A. Uremic coma
- B. Hepatic coma
- C. Hypoglycemic coma
- D. Diabetic ketoacidotic coma
- E. Apoplexy coma

46. What anticoagulant has a direct effect on the blood coagulation system, increasing the inhibitory effect of antithrombin III on factor Xa that is necessary for the conversion of prothrombin into thrombin?

- A. Alteplase
- B. Clopidogrel
- C. —
- D. Warfarin
- E. Enoxaparin sodium

47. What is the structural formula for 3-chloropropene?

- A.  $ClCH_2 - CH = CH - CH_3$
- B.  $ClCH = CH - CH_3$
- C.  $CH_2 = CCl - CH_3$
- D.  $CH_2 = CH - CH = CHCl$
- E.  $ClCH_2 - CH = CH_2$

48. A certain woody plant has trunk covered in white, smooth bark with horizontally elongated lenticels. Its shoots are reddish-brown, drooping, with glandular verrucous lenticels. Its leaves are alternate, simple, and petiolate. Young leaves are sticky due to their resinous verrucous peltate glands. Its flowers form elongated catkin-like thyrses at the ends of

the shoots. Name this plant.

- A. *Quercus robur*
- B. *Aesculus hippocastanum*
- C. *Juglans regia*
- D. *Tilia cordata*
- E. *Betula verrucosa*

49. What histamine  $H_2$  blocker can be used to treat peptic ulcer disease of the stomach with increased secretory function?

- A. Atropine sulfate
- B. Metoclopramide hydrochloride
- C. Famotidine
- D. Drotaverine hydrochloride
- E. Omeprazole

50. A patient diagnosed with arterial hypertension has been prescribed lisinopril. What is the mechanism of action of this drug?

- A. Inhibition of angiotensin-converting enzyme
- B. Blockade of  $\beta$ -adrenergic receptors
- C. Stimulation of  $\beta$ -adrenergic receptors
- D. Stimulation of  $\alpha_2$ -adrenergic receptors
- E. Blockade of calcium channels in vascular smooth muscle