

**Ministry of Health of Ukraine
Bohomolets National Medical University
Department of Forensic Medicine and Medical Law**

ERHARD N., BILIAKOV A., MYKHAILYCHENKO B., VOLOBUIEV O.



FORENSIC-MEDICAL LEARNING MANUAL



EDUCATIONAL EDITION

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These materials Forensic-medical learning manual are designed for students which to study practical skills and for their control on practical classes.

Forensic-medical learning manual can be useful for medical professionals, law enforcement agencies, students, scientific and pedagogical staff of medical and legal educational institutions.

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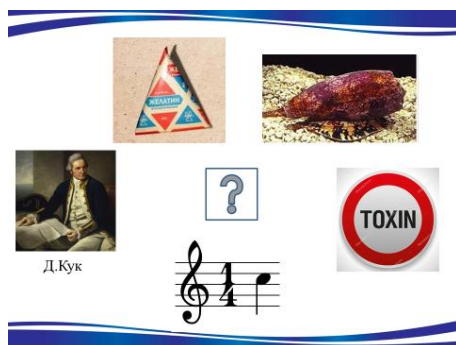
EVALUATION CRITERIA

Goal: take into account the depth of theoretical knowledge of students and the ability to apply them in practice.

At the decision of practical tasks (from 6 to 10 points is estimated):

«10»	«8»	«6»	«5»
The student gives the correct answer to all tasks with justification of the mechanism and nature of the damage, determines the correct algorithm for describing the damage and its subsequent diagnosis, as well as substantiates the forensic diagnosis and correctly draws up a «Medical Certificate of Death»	The student gives the correct answer to all tasks with justification of the mechanism and nature of the injuries, partially determines the correct algorithm for describing the injury and its subsequent diagnosis, can justify the forensic diagnosis, but makes mistakes in the correct design of the «Medical Certificate of Death»	The student gives the correct answer to not all tasks, can not justify the mechanism and nature of the damage, partially determines the correct algorithm for describing the injury and its subsequent diagnosis, partially substantiates the forensic diagnosis, can not properly draw up a «Medical Certificate of Death»	The student does not give the correct answer to any task, and also cannot substantiate the forensic diagnosis and correctly draw up the «Medical certificate of death»

Task 10. Specify the poison according to the puzzle:



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Task 6. Which of the neuro-functional poisons has the following effect, depending on the dosage:

- with a small amount has hypomanic
- euphoric effect;
- with moderate and prolonged use causes psychosis in the form of delirium;
- at significant concentrations causes paralysis of the respiratory center;

Task 7. Which drug has the following effects:

- euphoria, bouts of unmotivated laughter, desire to sing, dance, accelerated inconsistent thinking, disorder of speech;
- euphoria is suddenly and unmotivatedly replaced by confusion;
- feeling of unreality and change of environment and alienation of one's own body (derealization and depersonalization);
- disturbed perception of the nature and intensity of sounds and noises, the size of objects (often increase, lengthen their);
- feeling very thirsty and hungry;
- redness of the face and, especially, the sclera (a characteristic symptom of "red eyes"), the eyes are shining, the pupils are dilated, intolerance of light and a feeling of tingling in the eyes. There is dryness of the tongue and lips, a slight violation of coordination.
- tachycardia, tachypnea, hypertension, lateral nystagmus, hyperreflexia.

Task 8. Which drug has the following effect:

- bright color kaleidoscopic visual hallucinations, derealization and depersonalization phenomena;
- against the background of the preservation of consciousness there is a feeling of doubling the personality, when a person can observe himself from the side;
- vivid hallucinatory experiences remain in the memory for a long time.
- there may be disorders of the body, impaired perception of time and space;
- at deeper intoxication there are autoaggressive and aggressive actions. Developing psychosis (hallucinatory-paranoid)

Task 9. Specify the poison according to the puzzle:



THEME 12
FORENSIC MEDICAL TOXICOLOGY

Task 1. Indicate the causes of death in the case of oral use of locally acting poisons (alkalis, acids, phenols) in the order of frequency of their detection during forensic examinations of corpses:

Task 2. Indicate the morphological manifestations of the effects of carboxyhemoglobine and methemoglobin poisons:

Task 3. Indicate the immediate cause of death of acute and chronic poisoning:

Arsenic: _____
Sulema: _____
Thallium: _____

Task 4. Specify the cytotoxic poison according to the following information:

- in ancient Egypt (VIII century BC) was used as a type of death penalty;
- carbohydrates counteract its effects;
- tried to use as a combat poison during the First World War;
- used as a means of mass extermination during World War II;
- used to assassinate a famous Ukrainian figure;

Task 5. The mushrooms shown in the photo are:

- A) all poisonous;
- Б) poisonous № 1;
- В) poisonous №1 and 2;
- Г) poisonous № 1 and 3;
- Д) poisonous № 2 and 3;



1



2



3

THEME 1
ORGANIZATIONAL AND PROCEDURAL PRINCIPLES OF FORENSIC MEDICAL EXAMINATION. CORPSE INSPECTION AT THE SITE. FORENSIC THANATOLOGY. FORENSIC MEDICAL EXAMINATION OF THE CORPSE (DEMONSTRATION). COMPILATION OF THE EDUCATIONAL CONCLUSION OF THE EXPERT

1.1. Organizational and procedural principles of forensic examination.

Task 1. Fill in the table main features of the development of each period of formation of forensic medicine:

Period	Features
Pre-Petrine period	
Petrovsky period	
Educational experimental period	
Soviet period	
Modern period	

Task 2 Fill in the table the contribution of prominent scientists in the development of forensic medicine:

Eminent scientists	Contribution
P.S. Minakov	
S.O. Gromov	
M.S. Bokarius	
M.I. Rayskiy	
M.O. Obolonskiy	
M.V. Popov	
Y..S. Sapozhnikov	
I.O. Kontsevich	
A.F. Rubizhanskiy	
A.M. Fadeeva	

Task 3. Give definition:

- Forensic medicine –
- Forensic examination –
- Expert – ...
- Forensic expert – ...

Task 4. Fill In the table the objects and subjects of forensic medicine:

Objects	Subjects

Task 5. Continue the sentence:

The basis for the appointment of forensic examination is

Forensic examination is carried out in cases

An expert doctor may be called to the scene according to

Task 6. Indicate which regulatory framework regulates the activities of forensic experts:

1. _____
2. _____
3. _____

Task 7. Identify the main tasks of forensic examination and formulate a goal for each task:

1. _____
2. _____
3. _____

Task 8. Describe the rights and responsibilities of a forensic expert in the comparison table:

Right	Duties

Task 9. Fill in the table a definition for each type of forensic examination and give examples:

Type of expertise	Definition	Examples
Primary		
Additionally		
Repeated		
Commission		
Complex		

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liquid bile; mucosa of its velvety appearance. In the stomach cavity, the contents are absent, without a special odor. The gastric mucosa is gray-pink, without ulcers, mucosal congestion is not expressed. Pancreas dark pink, lobular, increased blood supply. In the intestine the usual contents; its mucous membrane is pale pink, without hemorrhages and ulcers, folds are moderately pronounced. Kidneys measuring 11×8×5 cm each. The fat capsule is almost undeveloped, fibrous is easily removed. The surface of the kidneys is generally smooth. Kidney tissue in section of pink-brown color with dark red pyramids. The boundary between the layers is well defined. The pelvis of the kidneys and ureters are free, their mucous membrane is pale bluish. Adrenal glands are leaf-shaped, their layers differ in sections. The bladder is empty, its mucous membrane is pale yellow. The internal genitals are developed according to age, without focal seals. Soft scalp on the inside of a pale pink color throughout. The bones of the skull are intact, 0.4-0.6 cm thick. The dura mater is intact, with the bones of the skull vault is not fused. Liquid blood in the upper longitudinal sinus and in the sinuses of the skull base. Soft meninges moist, transparent; under it the accumulation of a small amount of colorless transparent liquid. Soft-blooded vessels of uneven blood supply; the vessels of the base of the brain are filled with blood. The gyri of the brain are flat, the furrows between them are somewhat narrowed. The brain tissue is flabby, in the section of uneven, mostly increased blood supply, sticking to the blade of the knife. The substance of the brain does not smell much. In the ventricles of the brain a moderate amount of colorless clear fluid. The tissue of the cerebellum, Varoli's bridge and medulla oblongata is flaccid. The bones of the base of the skull are intact.

Data of forensic histological examination: «Apostematous nephritis, foci of caseous necrosis in lung tissue, paravascular, stromagenic, small focal replacement atherosclerosis with ischemic myocardial dystrophy, sclerosis, spasm, anemia of myocardial arteries. Brain tissue edema, ischemic neuronal dystrophy. Soft hemispheric fibrosis, serous small focal leptomenigitis. Chronic persistent hepatitis, focal fatty hepatosis. Chronic pancreatitis».

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Task 10. Fill in the table the functions of each of the subdivisions of the Bureau of Forensic Medicine and give examples:

Subdivisions	Functions	Examples
Department of forensic medical examination of dead bodies (Thanatological department)		
Department of victims, accused and other persons		
Department of commission examinations		
Forensic medical criminal branch		
Forensic histological branch		
Forensic toxicological branch		
Forensic immunological branch		
Forensic cytological branch		
Department of experts on duty		
DNA branch		

Task 11. Fill in the table what the expert is criminally liable for and indicate the relevant articles of the Criminal Code of Ukraine (CC of Ukraine)

Responsibility	Article of the CC of Ukraine

Task 12. Give an explanation of each component of the «Conclusion of Expert»:

1. Introductory part _____
2. The descriptive part _____
3. Final part _____

Task 13. Fill in the table indicate the purpose of the basic medical documentation, which is filled out by a forensic expert:

Medical documentation	Appointment
Site inspection report	
Medical death certificate	
Referral for forensic histological examination	
Referral for forensic toxicology	
Referral for forensic immunological examination	
Referral for forensic cytological examination	
Referral for forensic investigation	
Expert opinion	

Task 14. Highlight the issues addressed by forensic examination:

1. _____
2. _____
3. _____
4. _____
5. _____

Task 15. Fill in the table the role of the forensic expert in the work of the judiciary and health care:

Justice	Health care

Control tests:

1. The carrying out of forensic medical investigation is base on:

1. Rules
2. Demanding of relatives
3. Codes of Ukraine
4. Instruction of main doctor of hospital
5. Order of hospital

2. Doctor of any specialty can be involved for carrying out of forensic medical examination

- Yes
- No

3. Doctor of any specialty who involved for carrying out of forensic medical examination is named as:

1. Doctor-expert
2. Medico-legal expert
3. Expert
4. Consultant
5. Doctor in law

4. During forensic medical examination medico-legal expert have to:

1. To be on call of the person making inquiry, the investigator, and court.
2. To have a consultation from court

were found during the external examination of the corpse. **Internal research:** At opening of an abdominal cavity the foreign smell is not felt. The subcutaneous fat layer in the chest reaches 0.2 cm, in the abdomen 0.5 cm. The omentum in the form of a thin film in places covers the loops of the intestine, partially fused with the peritoneum and loops of the intestine. The location of the abdominal organs is normal, the stomach and loops of the intestines are swollen. The peritoneum is smooth, without hemorrhages and overlays, there is no free fluid in its cavity. The diaphragm is intact, the costal cartilages are dissected with effort. The sternum is intact. The anterior mediastinum is filled with adipose tissue, without hemorrhage. Lungs after opening of a thorax fill pleural cavities. There are no adhesions and free fluid in the pleural cavities. The core is whole, its cavity contains about 5 ml of clear colorless liquid. Liquid dark blood with loose dark red clots is secreted from the cavities of the heart and large vessels. The heart is sac-shaped, measuring 15×12×8 cm. The epicardium contains a small amount of adipose tissue. There are no hemorrhages on the surface of the heart. The width of the atrioventricular foramen on the right is 12 cm, on the left 10 cm. The cavities of the heart are dilated. In the cavities of the heart are mixed loose blood clots with mostly in the right departments. The muscle of the heart is flattened, in sections of uneven blood supply, reddish-brown, with multiple layers of connective tissue, evenly distributed in the thickness of the myocardium. The thickness of the muscle of the left ventricle is 1.4 cm, the right 0.4 cm. Bicuspid and tricuspid, the valves of large vessels are smooth, mobile, well cover the corresponding openings. The inner lining of the heart is smooth, whitish-pink, without hemorrhage. The width of the aorta in the section above the valve is 8 cm. The inner membrane of the aorta is yellow-pink, with atherosclerotic plaques covered with ulcers. The width of the pulmonary trunk in the section above the valve is 10 cm. The inner surface of the pulmonary trunk is smooth, whitish. The coronary arteries of the heart gape, their lumen is narrowed in some places by 1/2, atherosclerotic plaques. No hemorrhages were found in the subcutaneous tissue of the neck. The hyoid bone and laryngeal cartilage are intact. Thyroid gland reddish-brown, fine-grained. Tongue without hemorrhage in incisions. The pharynx and esophagus are free, their mucous membrane is pale bluish. The larynx and trachea are free, passable, their mucosa is pale bluish-pink, slightly swollen. The lungs are compacted to the touch; their surface is hilly, in the upper lobes of both lungs of the cavity; fabric with multiple areas of round and indeterminate shape of whitish-gray color, dense consistency; in the thickness of the lower lobe of the left lung, a 9×7 cm area of soft consistency, resembling a white "curd mass", in the section of whitish-green color. No hemorrhages were found on the surface. Examination of the ribs, clavicle, sternum and spine from the chest cavity revealed no damage. The spleen measures 12×9×6 cm. Its capsule is wrinkled. The consistency of the spleen is dense, the tissue in the cut is red-cherry, the scraping is moderate. The liver measures 27×21×15×10 cm. Its capsule is thin. The surface is smooth, the consistency is elastic, the fabric in the cut is reddish-brown, full-blooded. The gallbladder contains about 10 ml of olive

Task 3. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Respiratory failure.
Fibrinous-cavernous pneumonia.
Pulmonary tuberculosis, confirmed histologically.
2. Pulmonary heart failure.
Fibrinous-cavernous tuberculosis.
Pulmonary tuberculosis, confirmed by unspecified methods.
3. Respiratory failure.
Lung cancer.
Malignant neoplasm of lung tissue.
4. Pulmonary heart failure.
Fibrinous-cavernous pneumonia.
Respiratory tuberculosis, unspecified.

Circumstances of the case: The body of citizen P. was found in the apartment, without obvious signs of a violent death.

At autopsy: «**External research:** The corpse was taken to the morgue in clothes: a dark gray zippered jacket, blue pants, a white bra, a blue knitted sweater, a T-shirt. Clothes worn, dressed properly. Female corpse, correct physique, sharply reduced nutrition. Body length is approximately 169 cm. The skin of the body is generally clean, pale bluish. Corpse clogging is defined and well expressed in all commonly studied muscle groups. Corpse spots are seen on the back and partially lateral surfaces of the body, when dosed three times on them partially fade and regain their color within 15 minutes. Septic changes are not expressed on the skin. No damage was found on the scalp on examination and palpation. Facial skin is pale bluish. The eyes are closed, the cornea is transparent, the pupils are dilated evenly, the connecting membranes of the eyes are pale pink, without hemorrhage. The cartilage and bones of the nose are not damaged to the touch. The nostrils and ear canals are free. The mouth is open, the mucous membranes of the lips are bluish. Teeth: natural, single. Tongue in the mouth. In the area of the upper third of the neck on the lateral surface on the right, a postoperative scar 5 cm long, the neck of normal structure. Chest symmetrical, ribs to the touch of the target. Abdomen at the level of costal arches. In the projection of the white line of the abdomen from the xiphoid process of the sternum to the umbilical ring, there is a postoperative scar 13 cm long. The scars are dense to the touch, whitish-gray. The external genitalia are properly developed in the female type, the mammary glands without seals. The drain hole is closed, the skin around it is clean. The limbs are properly developed, their bones are not damaged to the touch. No injuries and other features

3. To draw the objective conclusion on the questions raised to him.
4. To study the criminal code
5. To carry out the expert research, present the conclusion in written form, and sign it.

5. During forensic medical investigation medico-legal expert has such right as:

1. To study the criminal code
2. To know information from case materials
3. To draw the objective conclusion
4. To know the aim of medico-legal investigation
5. Do not give any information to any people about result of investigation before court

6. During forensic medical investigation medico-legal expert responses for:

1. Refusal on answer on questions from non medical or non biological fields
2. Refusal to perform investigation without reason
3. Disclosure of information in the period of pretrial investigation or inquiry
4. Given of non truthful conclusion
5. Refusal to come to court in a case of summon

7. The carrying out of forensic medical investigation is necessarily in case:

1. To establish kind of violent death
2. To establish of fuse of death
3. To establish gravity of injury
4. In case of sex crime
5. To establish age of person

8. Forensic medical examination subordinates to the Health Ministry of Ukraine:

- Yes
- No

9. The establishment where forensic- medical investigation is preformed has name:

1. Forensic Laboratory
2. Forensic polyclinics
3. Bureau of forensic medical examination
4. Forensic department
5. Medical law department

10. There are such departments in Bureau of Forensic medical examination:

1. Polyclinics
2. Thanatological
3. Departments for Examinations of Living Persons: suffering, accused and

others

4. Department of Duty Forensic Medical Experts
5. Department for Forensic medicine examination of material evidences

11. Department for Forensic medical examination of material evidences has such branches:

1. Forensic medical chemical
2. Forensic Medical Cytological
3. Forensic Medical Immunological
4. Forensic Medical Toxicological
5. Forensic Medical Histological

12. The objects of forensic medical examinations are:

1. Animals
2. Living persons
3. Corps
4. Biological evidence
5. Medical, criminal, civil case documentation

13. In Ukraine there is state Forensic medical examination:

- Yes
- No

14. In Ukraine there is official and free form of assignment of Forensic Medical Examination:

- Yes
- No

15. There are such kinds of medico-legal examination:

1. Repeated
2. Secondary
3. Initial
4. Next
5. Additional

16. Medico-Legal Examinations can be performed by Commission and Complexly:

- Yes
- No

17. After Medico-Legal Examination expert composes Conclusion of expert:

- Yes
- No

with thick gray-yellow fibrin films. The tissue of the right lung is mostly dirty brown, with common areas of gray-brown color, sharply reduced airiness, with a matte surface; in the lumen of her small bronchi contains a creamy gray-yellow purulent compartment. Pieces of lung tissue sink into the liquid. The tissue of the left lung is fleshy, reddish-brown; a significant amount of foamed blood is released from the surface of the autopsy. Examination of the ribs, clavicle, sternum and spine from the chest cavity revealed no damage. The spleen measures 11×9×3 cm. Its capsule is thin, the surface is wrinkled. The consistency of the spleen is sluggish; the fabric in the section is loose, purple-cherry color, the scraping is moderate. Liver measuring 26×16×10×9 cm. Its capsule is thin, the surface is smooth; the consistency is compacted; fabric in section reddish-brown, with common yellowish margins. The gallbladder contains thick green bile in a volume of up to 10 ml; its wall is unchanged. There is no content in the stomach cavity. The gastric mucosa is whitish-gray, without ulcers, with fields of autolysis; the pattern of mucosal assemblies is smoothed. The pancreas is yellow-pink, with pronounced lobes, soft. In the intestine, the usual content. The mucous membrane is whitish-pink, without hemorrhages and ulcers, mucosal assemblages are pronounced. Kidneys measuring 11×5×3 cm each. The fat capsule is pronounced, fibrous not fused with the kidneys. The surface of the kidneys is smooth. Kidney tissue in the section of bluish-brown color, full-blooded. The boundary between the layers is recognized. The bowls of the kidneys are free; their mucosa is shiny, smooth. Adrenal glands with automated layers. The bladder is empty, its mucous membrane is pale gray. Prostate of normal size, homogeneous, whitish-gray, without focal changes. Soft scalp on the inside of a pale pink color throughout. The bones of the skull are intact, 0.4-1 cm thick. The dura mater is moderately tense, loosely fused with the bones of the skull. Liquid blood in the upper longitudinal sinus and in the sinuses of the skull base. The meninges are cloudy, gelatinous, translucent; under it the accumulation of a small amount of blood. Soft-walled vessels with swollen walls. The convolutions of the brain and the furrows between them are recognized. Brain tissue is flabby, swollen, with clear boundaries between anatomical formations. There is no foreign odor from the substance of the brain. There is a moderate amount of clear pink fluid in the ventricles of the brain. Vascular plexuses of gray-pink color. The tissue of the cerebellum, Varoli's bridge and medulla oblongata is similar to the tissue of the brain. The bones of the base of the skull are intact.

Data of forensic histological examination: «Ectopia of the nucleus of motoneurons, dilation and increase of blood supply to the vessels of the hemocirculatory tract is observed in the brain tissue. The respiratory epithelium contains numerous goblet cells mass-filled with mucus, there is infiltration of lymphocytes and thickening between the alveolar membranes, there is fluid in the interstitial tissues of the bronchi and in the lumen of the alveoli».

Virological examination bronchial fingerprints showed influenza virus.

there is no discharge from the urethra. The anus is closed, the skin around it is clean. The limbs are developed in proportion to the torso, their bones touch the whole. Damage: in the lower part of the frontal area on the left, and on the anterior surface of the knee joints, one shapeless brown-brown shapeless abrasion measuring 1.3×1 cm to 15×1.6 cm can be seen. The bottom of the abrasions is parchment-dense, not covered with crust. No other injuries or features were found during the external examination of the corpse. **Internal research:** At opening of an abdominal cavity the foreign smell is not felt. The subcutaneous fat layer in the chest reaches 0.4 cm, in the abdomen - 1 cm. The large omentum evenly covers the loops of the intestine, has a moderate amount of adipose tissue. The location of the abdominal organs is normal, the stomach and loops of the intestine are moderately swollen. The peritoneum is smooth, without hemorrhages and overlays, there is no free fluid and adhesions in its cavity. The domes of the diaphragm are located at the normal level, the costal cartilages are dissected with effort. The sternum was removed. The anterior mediastinum contains a small amount of adipose tissue, without hemorrhage. Lungs after opening of a thorax fill pleural cavities. There are no adhesions in the pleural cavities; on the right contains about 50 ml of turbid brown-yellow liquid with admixtures of gray-yellow films of fibrin. The core with the surface of the heart is not fused; in its cavity contains up to 1 ml of pale yellow clear liquid. From a cavity of the main vessels liquid dark blood with elastic mixed convolutions is allocated. The heart is flattened and cone-shaped, its dimensions are 12.5×11.5×6 cm. The epicardium is smooth, contains a small amount of adipose tissue. There are no hemorrhages on the surface of the heart. The width of the right atrioventricular orifice is 10 cm, the left - 8 cm. The cavities of the heart contain liquid blood and a large number of pink-white-red elastic convolutions, easily fixed to the chordal threads, trabeculae and valve leaflets. The muscle of the heart is flaccid, in sections of moderate blood supply, with widespread dull areas of pale brown color, homogeneous. The total thickness of the left ventricular muscle is 1.8 cm, the right - 0.7 cm. Three-leaf valves and two-leaf valves are movable, thin, with a smooth surface. The inner lining of the heart is smooth, thin. The width of the aorta in the section above the valve is 7 cm. Its crescent valves are mobile, smooth. The inner surface of the aorta with multiple draining atherosclerotic plaques of cartilaginous density in the form of stripes and spots. The width of the pulmonary trunk in the section above the valve is 7.5 cm, the crescent valves of its valve are thin, mobile. The inner shell of the pulmonary trunk is smooth. The coronary arteries of the heart gape; their lumen is unevenly narrowed by atherosclerotic plaques of cartilaginous density by 1/2 diameter. No hemorrhages were found in the subcutaneous tissue of the neck. The hyoid bone and laryngeal cartilage are intact. Thyroid gland reddish-brown, fine-grained, homogeneous. Tongue with the usual relief of the mucous membrane, abundantly lined with yellow-gray plaque. The pharynx and esophagus are free, their mucosa is pale bluish. The larynx and trachea are free, their mucous membranes are pale pink. Particles of the right lung to the touch of hepatic density; its pleura is dull, covered

18. Forensic medical expert and doctor of any speciality can fulfill Forensic medical examination:

- Yes
- No

1.2. Examination of the corpse at the scene

Task 1. Give definition:

- The scene –
- Place of discovery of the corpse –
- Additional overview of the scene –
- Re-examination of the scene – appointed in those cases, when
- Static stage inspection of the scene –
- Supravital reactions – ...
- Dynamic stage of scene inspection – research subjects, scene objects, when ...
- Corpse pose – ...
- White-eyed sign – ...

Task 2. Fill in the table the time of formation of the muscle roller on m. Biceps brachii (after V.V. Bilkun, 1980):

The nature of the muscular roller	Age of death (in hours)
Appears quickly, dense, 2-1.5 cm tall	
Height 1.5-1 cm	
Height 0.5 cm or determined by palpation	
Concavity in the area of impact	

Task 3. Write an algorithm of actions of a forensic expert (doctor-expert) at the scene:

1. _____
2. _____
3. _____

Task 4. Fill in the table ways to remove traces of biological origin:

Traces of biological origin	Method of extraction
Traces of blood	
Traces of semen	
Traces of saliva	
Traces of sweat	
Hair	
Particles of organs and tissues	

Task 5. By the photographs (№ 1-2) fill in the “Site Inspection Report” according to the sample below:



Photo 1



Photo 2

SITE INSPECTION REPORT

Sample

"__" _____ yr. under (daylight, mixed) lighting investigator of the Prosecutor's Office of Kyiv Ivanov VP, lawyer 3rd grade, with the participation of a specialist in forensic medicine - forensic expert _____ in the presence of witnesses _____ (residence) inspected the scene and the woman's corpse on the basis of a police report of the death of gr. K., 32 years old. The scene is a square. __, bldg. __, on the street. _____.

INSPECTION DATA:

The apartment in which K. body was found is on the third floor of a three-story building and consists of one room, the door of which opens onto a common corridor. The room where the corpse was found, with an area of 14 m², has a square shape. Opposite the door is a window that faces the street. Near the wall, to the right of the door, is a table covered with a white tablecloth on which lies an empty ashtray. Around the table are 4 chairs. Next to the wall to the left of the door is a bed with a pillow covered with a blue blanket. A woman's corpse lies on the bed.

Examination of the corpse revealed that the corpse was lying on its back, with its head against the window, its head on a pillow, its legs lowered so that its feet rested on the floor, its left arm half-bent and lying on its chest, its right arm bent and hanging from the bed.

Clothing is buttoned, consists of a dress, bra, panties and socks. The clothes are intact, without extraneous layers and dirt.

The corpse of a female person, 49 years old according to the documents, body length 165 cm, correct body structure and good fatness, pale skin color, body temperature in the rectum 30 degrees. In 1 hour - 29 degrees. Corpse spots located on the back and sides of the body are well defined, blue-violet in color, when dosed, they disappear and regain their color after 3 minutes. 35 seconds. The study was conducted at 3 p.m. 30 min Corpse clogging is present only in the masticatory

Task 2. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Cerebral edema.
Cardiovascular insufficiency.
Coronavirus (COVID-19).
2. Cerebral edema.
Cardiovascular insufficiency.
Influenza virus.
3. Respiratory failure.
Broncho-pneumonia.
Influenza, the virus has not been identified.
4. Cerebral edema.
Heart and respiratory failure.
Pneumonia caused by Haemophilus influenzae.

Circumstances of the case: Pers. O. has been in Wuhan, China, for two weeks since the discovery in COVID-19. Then he got to Ukraine by plane during the evacuation. He felt well and did not go to the doctors. While at home 3 days after returning, he felt weak, stuffy in the nose, sore throat and fever. He did not go to the doctors. After 2 days, the state of health deteriorated, there was difficulty breathing and shortness of breath with light exercise, the temperature rose to 39 0C. He was taken to hospital by ambulance. The test for COVID-19 was positive. Pers. O. a preliminary diagnosis of “Coronavirus infection COVID-19? Bilateral lower lobe pneumonia. The patient's condition deteriorated and he died the next day.

At autopsy: «**External research:** Male corpse. The physique is correct, satisfactory fatness. Corpse crouching is well expressed in all commonly studied muscle groups and is disrupted by considerable effort. Corpse spots of dark purple color, seen on the posterior and lateral surfaces of the body, when dosed three times, press on the edge and do not regain their color during the study. The putrefactive changes are not expressed. The skin is pale bluish. No damage was found on the scalp during the examination. The skin is clean. Eyes closed, cornea dull, pupils dilated evenly; membranes of the eyeballs without hemorrhage, with dilated vessels. The cartilage and bones of the nose are not damaged to the touch. The nostrils and ear canals are free. The mouth is slightly open, the mucous membranes of the lips are gray-cyanotic. Teeth are natural, with significant damage to the crowns by caries. The tongue is located in the mouth. Neck of normal structure. Chest of regular shape, symmetrical. The abdomen is swollen, located at the level of the costal arches. In the lower abdomen on the right you can see a linear postoperative scar 6 cm long. The external genitalia are developed correctly,

THEME 11
FORENSIC MEDICAL EXAMINATION OF DAMAGES
AND DEATH FROM THE ACTION OF BIOLOGICAL FACTORS

Task 1. Solve test tasks:

I. Coronavirus (COVID-19) is detected by molecular testing and immunohistochemistry (IHC) staining in the primary and segmental bronchi because:

1. Nucleic acid is found in bronchial cells
2. Viral antigens and nucleic acid are found in the respiratory epithelium of the large airways
3. Viral antigens and nucleic acid are found in the respiratory epithelium of the small airways
4. The most accessible method for testing

II. To confirm COVID-19 it is necessary to carry out testing in the following order:

1. Carry out a test for influenza, and in case of a negative test, test for COVID-19
2. Perform a one-time COVID-19 test and a one-time influenza test
3. Carry out a one-time test for influenza, in case of a negative result, test twice for COVID-19
4. Take a COVID-19 test twice and a flu test twice

III. The following methods are used to diagnose COVID-19:

1. Polymerase chain reaction (PCR)
2. Immunological test
3. Biochemical analysis of blood
4. DNA analysis of blood

IV. To COVID-19 the most sensitive persons with:

1. I blood type
2. II blood type
3. III blood type
4. IV blood type

V. Quarantine measures in case of suspicion of COVID-19 are the most appropriate:

1. 15-day quarantine
2. 14-day quarantine
3. 20-day quarantine
4. 37-day quarantine

muscles, there is no putrefaction. The scalp is undamaged, the eyes are closed, the cornea is transparent, the connective tissue of the eyeballs with small dark red hemorrhages, the ears and nose are free, the mouth and nose are free, the lips are dark blue, the teeth are intact, the tip of the tongue is bitten by the front teeth, dark brown. No damage was detected by palpation of the bones and cartilage. Chest cylindrical, abdomen at the level of costal arches.

High on the neck is a loop of wire, the end of which is cut. Accordingly, there is a strangulation furrow, which is dark brown in color, goes in an oblique-ascending direction, is not closed, is lost in the occipital region of the head, is best expressed on the anterior surface of the neck.

The body was sent to the city morgue for forensic examination. Nothing was removed from the scene.

The review starts at 3 p.m.

Completion of the review 4:30 p.m.

Investigator _____ (signature)

Forensic Specialist _____ (signature)

Witnesses _____ (signature)

Control tests:

1. What is the correct definition of the scene of death? It is...

1. a place where a murder occurs
2. a place where a suicide occurs
3. a place where a dead person (body) is found
4. a place where a person is killed
5. all are correct

2. Which methods of the inspection of the scene of crime do you know?

1. Objective
2. Subjective
3. Central
4. All are correct
5. All are wrong

3. Indicate the correct order of the inspection of a dead body at the scene of death at first:

1. Surroundings-position-pose
2. Surroundings-fixation of the position-general description of the body.
3. position-pose-upper clothes
4. upper clothes-changes in the body-evidences
5. evidences-struggle marks-external injuries

4. Choose the correct statement: The inspection of the scene of death refers to:

1. a practical activity of a judge
2. a practical activity of an investigator.
3. a practical activity of a lawyer
4. a practical activity of a forensic pathologist
5. a practical activity of a doctor

5. There are such tasks of a doctor at the scene of death, except:

1. Whether there is a crime?
2. To establish if a person is alive or dead
3. To determine time since death
4. To fix the position and pose of a corpse
5. To find probable marks of struggle or self-defense

6. The following tasks during the inspection must be solved, except:

1. Whether there is a crime?
2. Who is a criminal?
3. When a crime occurs?
4. How long offenders spend at the scene of crime?
5. How they come at the scene of crime?

7. Where should the body's temperature be measured at the scene of death?

1. In axillar region
2. In a mouth
3. In a whisker
4. In a rectum
5. In iliac area

8. The doctor examines the dead driver and establishes that Cadaveric Staining completely disappears under the thumb pressure. Estimate postmortem interval.

1. Not more than 8-10 hours.
2. 14-18 hours.
3. 20-24 hours.
4. 30-36 hours.
5. More than 36 hours.

9. During the inspection of the scene of death it is established that PML does not disappear under the thumb pressure but it becomes pale. Indicate the stage of PML development.

1. The 1 phase of hypostasis

the contents are absent, the smell is sour, the gastric mucosa is grayish-pink, the fold is preserved. Pancreas, full-blooded, lobed, gray-pink. The contents of the intestine are normal for its departments, the mucous membrane is folded, grayish-yellowish-pink. Kidneys measuring 13×7.0×5.5 cm, both, the fat capsule is expressed without hemorrhage, the fibrous capsule is easily removed, their surface is smooth, the kidney tissue in section is full-blooded, dark red with bluish pyramids, the boundary between the layers is noticeable. Pelvis and ureters are free, passable mucous membrane of their grayish-pink color, without hemorrhage. Leaf-shaped adrenal glands, layers differ. The bladder is empty, its mucous membrane is grayish-pink, folded, without hemorrhage. Soft scalp on the inside of a pale pink color throughout. The dura mater is intact, tense with the bones of the skull vault is not fused. In the upper longitudinal sinus and sinuses of the skull base dark liquid blood. The meninges are swollen, shiny, and full of blood vessels. The vessels of the base of the brain are inflamed. The convolutions of the brain and the furrows between them are pronounced. The brain tissue in the incision is moist, shiny, whitish-milky, full-blooded, sticky to the knife, drops of blood protrude and spread on the surface of the incision. The substance of the brain does not smell much. The ventricles of the brain contain a moderate amount of light, clear fluid. Cerebellar tissue, Varoliev's bridge and medulla oblongata, full-blooded, moist shiny. On both hemispheres of a cerebellum the imprint from bones of a big occipital opening in the form of furrows, depth to 0,3 cm is noted. Bones of a basis of a skull of the whole.

At forensic histological examination revealed swelling of brain tissue.

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tongue in the mouth. Some teeth are missing, their pits are smoothed, gums without mechanical damage. No injuries were found on the neck. The chest is symmetrical, intact to the touch. Abdomen at the level of costal arches. The external genitalia are properly developed in the male type, no discharge from the urethra is detected. The anus is closed, the skin around it is clean. The limbs are properly developed, their bones are intact to the touch. No other damage and developmental features were found on external examination. **Internal research:** At opening of an abdominal cavity of a corpse of a foreign smell it is not felt. Subcutaneous fat in the chest 1.5 cm, in the abdomen 2.5 cm. The omentum is pronounced, evenly covers the loops of the intestine. The location of the abdominal organs is correct. The stomach and loops of the intestine are inflated with gases. Peritoneum clean, smooth, shiny. No free fluid or junction was found in the abdominal cavity. The diaphragm on the right and left is intact. Rib cartilage is easily dissected. The anterior mediastinum is filled with fat. After opening the chest, the lungs completely fill the cavities. In the pleural cavities about 150 ml of light yellow fluid in each. The pericardial sac is intact, its cavity contains a small amount of yellowish, clear fluid. Dark red liquid blood is secreted from the heart cavity and main vessels. The heart is bag-shaped, measuring 12×10.5×8.5 cm. The epicardium contains a moderate amount of fat along the vessels. No hemorrhages and layers were found on the surface of the heart. The perimeter of the right venous opening is 10 cm, the left 8.5 cm. In the heart cavity there is dark liquid blood. Heart muscle of dense consistency, in sections of uneven blood supply, brownish-red color. The wall thickness of the left ventricle is 2.0 cm, the right 0.6 cm. The bicuspid and tricuspid valves are thin, movable, and somewhat compacted at the base. The inner lining of the heart is moist, shiny, without hemorrhage. The width of the aorta above the valves is 8.5 cm, the valves are movable. The inner lining of the aorta is whitish-yellow with single fibrous atherosclerotic plaques. The width of the pulmonary artery in the section above the valves is 8 cm, its valves are smooth, mobile, the inner shell is yellowish-pink, smooth. The coronary arteries of the heart do not collapse in the incisions, in places their lumen is 1/3 narrowed by atherosclerotic plaques. No hemorrhage was detected in the subcutaneous tissue of the neck. The laryngeal cartilage and hyoid bone are intact. The thyroid gland is full-blooded, reddish-brown, fine-grained. The tongue is covered with whitish plaque, the papillae are pronounced, the cut tissue is dark red, without hemorrhage. The pharynx and esophagus are free, passable, their mucous membrane is grayish-bluish in color with longitudinal folding. The larynx and trachea are free, passable, the mucous membrane is pink, swollen. Lungs of air consistency, full-blooded in section, dark red in color, foamy-bloody fluid flows from the surface of the incisions. The spleen measures 19×11×8 cm, its capsule is wrinkled, the consistency is flabby, the incisions are dark red, the scraping is abundant, bloody. Liver of elastic consistency, dimensions 24×20×14×12 cm, smooth capsule, tissue in section reddish-yellowish-brown, the structure is preserved. The gallbladder contains about 10 ml., Dark olive-colored bile, velvety mucous membrane. In the stomach cavity,

2. The 2 phase of hypostasis
3. Stage of stasis (diffusion)
4. Stage of imbibition
5. Stage of blood coagulation

10. Rectal temperature of a dead body during the inspection of the scene of death was 22°C (surroundings - 18°C). How many hours have elapsed since death ?

1. 3 hours
2. 7 hours
3. 14 hours
4. 18 hours
5. 24 hours

1.3. Forensic thanatology.

Task 1. Give a definition:

Thanatology –

Clinical death –

Biological death –

Task 2. Fill in the table a forensic classification of death:

Category of death	
Kind of death	
Type of death	

Task 3. Fill in the table probable and approximate signs of death:

Probable signs	Approximate signs

Task 4. Indicate the stages of corpse spots in the photographs:



1. _____



2. _____



3. _____

Task 5. Identify the organ from the photograph and indicate the absolute sign of death:



Task 6. Fill In the table the features of the late absolute signs of death:

Late absolute signs of death	Features
Rotting corpse	
Mummification	
Peat tanning	
Adipocere	

Task 7. Fill in the table the features of pathological and forensic autopsies:

Forensic autopsy	Pathological autopsy

Task 4. Describe the microscopic manifestations of caisson disease:

Task 5. Describe what injuries occur when a dive contusion:

Task 6. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Multiple organ failure.
Cerebral edema.
High altitude action.
2. Cerebral edema.
Altitude sickness.
High altitude action.
3. High altitude action.
Cerebral edema.
Altitude sickness.
4. Acute pulmonary heart failure.
Cerebral edema.
High altitude action.

Circumstances of the case: The climber, who was in the mountains at an altitude of 7000 m above sea level, his condition deteriorated sharply. There was a pronounced headache, vomiting, muffled consciousness. 1 hour later, his breathing stopped, and he died.

At autopsy: «**External research:** male corpse, correct physique, moderate fatness, body length 182 cm. The skin of the body is generally bluish. Corpse clogging is moderate in all commonly studied muscle groups. Corpse spots are saturated with bluish-purple color, are found on the posterior and lateral surfaces of the body, disappear with dosed pressure and regain their color after 20 minutes. The putrefactive changes are not expressed. Facial skin is bluish, sharply swollen with an increase in the size of the eyelids, lips, ears. No injuries were found on the scalp during the examination and palpation. The eyes are closed, the cornea is dull, the pupils are evenly dilated, their mucous membranes without hemorrhage. Bones and cartilage of the nose to the touch of the target. The nostrils and ear canals are free and clean. The mouth is closed, the mucous membrane of the lips is bluish, the

blooded, lobed, gray-pink. In the intestine, the usual content for its departments, the mucous membrane is folded, grayish-yellowish-pink. Kidneys measuring 12×7.5×5.5 cm, both, the fat capsule is expressed without hemorrhage, the fibrous capsule is easily removed, their surface is smooth, the kidney tissue in section is full-blooded, dark red with bluish pyramids, the boundary between the layers is noticeable. Pelvis and ureters are free, passable mucous membrane of their grayish-pink color, without hemorrhage. Adrenal glands are leaf-shaped, the layers are different. The bladder is empty, its mucous membrane is grayish-pink, folded, without hemorrhage. Soft scalp on the inside, pale pink throughout. The dura mater is intact, not tense with the bones of the skull vault is not fused. In the upper longitudinal sinus and sinuses of the skull base dark liquid blood. The soft meninges are swollen, shiny, and full of blood vessels. The vessels of the base of the brain are inflamed. The convolutions of the brain and the furrows between them are pronounced. The brain tissue in the incision is moist, shiny, whitish-milky, full-blooded, sticky to the knife, drops of blood protrude and spread on the surface of the incision. The substance of the brain does not smell much. The ventricles of the brain contain a moderate amount of light, clear fluid. Cerebellar tissue, Varoliev's bridge and medulla oblongata, full-blooded, shiny moisture. The bones of the base of the skull are intact.

At histologic research detection of numerous ruptures of pulmonary vessels with hemorrhages at the sites of ruptures and air embolism of cerebral vessels.

10.2. The general effect on the body of low atmospheric pressure

Task 1. Define, describe the pathogenesis and clinical manifestations:

Explosive decompression syndrome – _____

Task 2. Define, describe the pathogenesis and clinical manifestations:

Altitude sickness – _____

Task 3. Define and describe the pathogenesis:

Aeroembolism – _____

Task 8. List the laboratory tests used to determine the age of death:

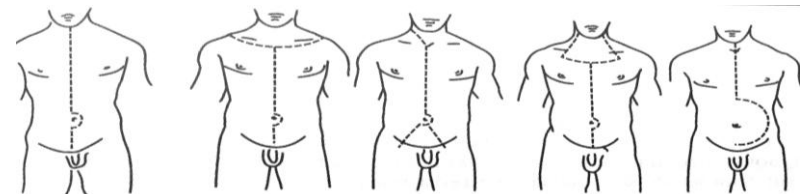
1. _____
2. _____
3. _____
4. _____

1.4. Forensic autopsy of the corpse.

Task 1. Write a sequence of external examination of the corpse:

1. _____
2. _____
3. _____

Task 2. In the schematic image indicate the author's line of incisions at autopsy:



Task 3. Write a sequence of internal examination of the corpse:

1. _____
2. _____
3. _____
4. _____
5. _____

Task 4. Write the features of the study of the corpse of an unknown person, which are contained in «Identification map»:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

1.5. Drawing up of the educational conclusion of the expert.

Task 1. Fill in the table examples of forensic diagnosis and "Medical death certificate" according to the established diagnosis:

Forensic diagnosis	«Medical death certificate»

Task 2. Give an explanation to each part of the «Conclusion of Expert»:

Introductory part _____

The descriptive part _____

Final part _____

Control tests:

1. Early absolute signs of biological death are:

1. rigor mortis
2. cadaveric drying
3. livores mortis
4. puitrefaction
5. cooling of body

2. Livores mortis are a result of:

1. postmortem clots formation
2. postmortem hypercoagulation of blood
3. postmortem accumulation of blood in bottom places of a body
4. cooling of the body
5. postmortem action of surroundings

3. In development of livores mortis consistently distinguish stages as follow:

1. initial
2. hypostasis
3. finally
4. stasis
5. imbibition

the intestine. The location of the abdominal organs is correct. The stomach and loops of the intestine are inflated with gases. Peritoneum clean, smooth, shiny. No free fluid or junction was found in the abdominal cavity. The diaphragm on the right and left is intact. Rib cartilage is easily dissected. The anterior mediastinum is filled with fat. Lungs after opening of a thorax fill pleural cavities, without connections. No free fluid was detected in the pleural cavities. The pericardial sac is intact, its cavity contains a small amount of yellowish, clear fluid. Dark red liquid blood is secreted from the heart cavity and main vessels. A heart-shaped bag, measuring 12×11×7.5 cm. When conducting an air test by immersing the heart in water, followed by drainage of its cavities, air bubbles were found in the right and left halves of the heart. The epicardium contains a pronounced amount of fat along the vessels. No hemorrhages or layers were found on the surface of the heart. The perimeter of the right venous opening is 12.5 cm, the left 11.5 cm. The heart cavity contains dark liquid blood with bloody loose clots. The muscle of the heart is dense, with incisions of uneven blood supply, brownish-red color with multiple areas of small grayish cardiosclerosis. The wall thickness of the left ventricle is 2.3 cm, the right 0.6 cm. The bicuspid and tricuspid valves are thin, movable, and somewhat compacted at the base. The inner lining of the heart is moist, shiny, without hemorrhage. The width of the aorta above the valves is 9.5 cm, the valves are movable. The inner lining of the aorta is whitish-yellow with multiple fibrous atherosclerotic plaques. The width of the pulmonary artery in the section above the valves is 9 cm, its valves are smooth, mobile, the inner shell is yellowish-pink, smooth. The coronary arteries of the heart do not collapse in the incisions, in places their lumen is 1/3 narrowed by atherosclerotic plaques. No hemorrhage was detected in the subcutaneous tissue of the neck. The laryngeal cartilage and hyoid bone are intact. The thyroid gland is full-blooded, reddish-brown, fine-grained. The tongue is covered with whitish plaque, the papillae are pronounced, the cut tissue is dark red, without hemorrhage. The pharynx and esophagus are free, passable, their mucous membrane is grayish-bluish in color with longitudinal folding. The larynx and trachea are filled with liquid blood with pink foam, the mucous membrane is pink, swollen. Lungs of dense consistency, numerous dark red, small-spot hemorrhages under the pleura were found on the surface. The lung tissue in the incision is full-blooded, dark red in color, and foamy-bloody fluid flows from the surface of the incisions. A lumbar sternal fracture at the level of 3 intercostal spaces and fractures of 3-5 ribs along the anterior axillary line with dark red hemorrhages into the surrounding tissues are determined. External bone plates at the fracture site are small-toothed, internal large-toothed. The spleen measures 14 × 7 × 4 cm, its capsule is wrinkled, the consistency is flabby, the incisions are dark red, the scraping is abundant and bloody. Liver of elastic consistency, dimensions 25×17×14×11 cm, smooth capsule, reddish-yellowish-brown tissue in section, structure preserved. The gallbladder contains about 10 ml., Dark olive color of bile, velvety mucous membrane. The stomach contains about 500 ml. light gray liquids, sour smell, grayish-pink gastric mucosa, wrinkles are preserved. Pancreas, full-

Task 4. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Multiple organ failure.
Acute bleeding.
The effect of atmospheric pressure and water pressure.
2. Acute bleeding.
Pulmonary barotrauma.
The effect of atmospheric pressure and water pressure.
3. The effect of atmospheric pressure and water pressure.
Acute bleeding.
Barotrauma.
4. Hemorrhagic shock.
Pulmonary barotrauma.
The effect of atmospheric pressure and water pressure.

Circumstances of the case: The body of the man who carried out repair work of this installation was found in a pressure chamber of medical institution.

At autopsy: **«External research:** the following clothes were found on the corpse: yellow raglan, blue and white cotton stripes, black sneakers. Clothes are whole, worn, dressed correctly. Male corpse, correct physique, moderate fatness, body length 166 cm. The skin of the body is generally pale. Corpse clogging is expressed in all commonly studied muscle groups. Corpse spots are pale, bluish-purple in color, are found on the posterior lateral surfaces of the body, when dosed, they disappear and regain their color after 12 minutes. The putrefactive changes are not expressed. Facial skin is pale. No injuries were found on the scalp during the examination and palpation. Eyes closed, cornea dull, pupils evenly dilated, mucous membranes with small dark red hemorrhages. Bones and cartilage of the nose to the touch of the target. Nostrils with traces of blood, ear canals are free, clean. The mouth is closed, the mucous membrane of the lips is bluish, the tongue in the mouth. Teeth 1, 2, 7 upper right and 1 upper left crown of yellow metal, many teeth are absent, dimples are smoothed, gums without mechanical damage. Liquid blood in the mouth. No injuries were found on the neck. The chest is symmetrical, intact to the touch. Abdomen at the level of costal arches. The external genitalia are properly developed in the male type, no discharge from the urethra is detected. The anus is closed, the skin around it is clean. The limbs are properly developed, their bones are intact to the touch. No other damage and developmental features were found on external examination. **Internal research:** At opening of an abdominal cavity of a corpse of a foreign smell it is not felt. Subcutaneous fat in the chest 2 cm in the abdomen 3 cm. The omentum is pronounced, evenly covers the loops of

4. The hypostasis is characterized by the following peculiarities:

1. lasts only first hours
2. livores mortis have violet color
3. blood in vessels is liquid
4. lasts first 12 hours
5. livores mortis can move if a position of a body was changed

5. At hypostasis after pressing livores mortis become:

1. disappear
2. painted in red color
3. reappear in 1-2 minutes again
4. turn pale on periphery
5. reappear in 3-5 minutes again

6. The second stage in development of livores mortis is characterized by such attributes:

1. appear in 12 hours after death
2. there is a diffusion of plasma in blood vessels
3. blood is coagulated in vessels
4. at pressing the color of livores mortis become light in comparison with surroundin area
5. last 12-48 hours

7. At pressing on a livores mortis in a stasis it is characterized by such attributes:

1. colouring is reappear in 10-15 minutes only
2. disappear completely
3. turn pale
4. does not disappear
5. colouring is restored in 30-60 minutes

8. At change of position of a body of a corpse in a stage stasis cadaveric a stain:

1. remain on former places
2. paint in red color
3. move on new underlying sites of a body
4. do not change the colouring
5. turn pale

9. At change of position of a body of a corpse in a stage hypostasis cadaveric a stain:

1. move on new underlying sites of a body
2. do not change the colouring

3. disappear from former places
4. turn pale
5. paint in bright red color

10. At change of position of a body of a corpse in a stage of imbibition cadaveric a stain:

1. remain on former places
2. disappear
3. move on new places
4. turn pale
5. become brightly red color

11. The third stage of development of cadaveric spots is characterized by the following attributes:

1. come in 48 hours after death
2. comes in 16-24 hours after death
3. the 3-liquid part of blood impregnates fabrics
4. at pressing colouring of a stain turns pale
5. at pressing colouring of a stain does not change

12. Terms of occurrence and development of cadaveric spots depend from

1. character of death
2. time of day
3. duration of dying
4. damage to the epidermis
5. ambient temperatures

13. Value of cadaveric spots will be, that they are:

1. an early absolute attribute of death
2. a parameter of time of approach of death
3. specify the fact of approach of death
4. specify position of a corpse after death
5. allow to assume the possible(probable) reason of death

14. If a leather(skin) in the field of a cadaveric stain to cut, it is possible to find out:

1. liquid blood
2. convolutions of blood
3. impregnation blood of fabrics
4. absence of blood
5. clot of blood

**THEME 10
FORENSIC EXAMINATION OF INJURIES AND DEATH
FROM THE ACTION OF SHARPLY CHANGED BAROMETRIC
PRESSURE**

10.1. General effect on the body of high atmospheric pressure

Task 1. Describe:

Pulmonary barotrauma:

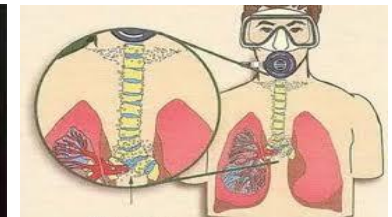
Barotrauma of the hearing organ:

Barotrauma of the paranasal sinuses:

Task 2. According to the illustrated figures to describe the detected damage and describe the mechanism of their formation:



Pic. 1



Pic. 2

Task 3. Define and describe the circumstances under which a diver is pinched:

2011. 447 с.

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15. Cadaveric rigor mortis develops in the following order:

1. muscles of finitenesses of the left half of trunk
2. chewing muscles
3. muscles of finitenesses of the right half of trunk
4. muscles of the top finiteness
5. muscles of the bottom finiteness

16. Most frequently cadaveric rigor mortis on the average begins after approach of death:

1. in 12-24 hours
2. in 6-16 hours
3. in 1-2 hours
4. in 3-5 days
5. in 2-3 days

17. Cadaveric rigor mortis develops in the order from below - upwards

1. Yes
2. No

18. Development cadaveric rigor mortis depends on such factors as:

1. reason of death
2. constitution
3. environment
4. feed of the person
5. age of the person

19. A molecular basis of development cadaveric rigor is:

1. absence of regulating influence of nervous system
2. sharp downturn of a body temperature which conducts to blockade of exchange processes
3. absence ATF that results in preservation of impossibility of break of cross communications(connections) between miasine
4. accumulation of carbonic acid
5. accumulation products of an exchange, basically, ammonia

20. Paradoxical cadaveric rigol it is characterized by the following attributes:

1. develops in the order from below upwards
2. arises at a trauma of an oblong brain
3. arises from action of high temperature
4. fixes position of a body at the moment of death
5. it happens at a trauma of a cervical part of a spinal cord

21. At room temperature cooling of a corpse occurs at temperature drop of a body for 1 hour:

1. on 5 degrees
2. on 3 degrees
3. on 1 degree
4. on 10 degrees
5. on 5 degrees

22. At quickly come (stepped) death rotting of a corpse begins:

1. at once on all surface of a body
2. from a head
3. from area of a stomach
4. from cadaveric spots
5. from blood vessels with formation of a putrefactive venous network

23. Rotting a corpse of the deadborn child begins:

1. at once on all surface of a corpse
2. β heads
3. β the most damp sites of a corpse
4. β the bottom finitenesses
5. from belly covers

24. Kinds of natural preservation of corpses are:

1. mummification
2. rotting
3. peat tanning
4. cataleptic cadaveric rigor
5. saponification

25. Mummification comes at:

1. good arining premises (rooms)
2. presence of a moisture
3. high ambient temperatures
4. absence of oxygen
5. dry ground

26. Conditions which promote development saponification, are:

1. absence of air
2. presence humic acids
3. presence of a corpse in an alkaline turbary
4. dry ground
5. enough of a moisture

the chest cavity revealed no damage. The spleen measures 10×6×2 cm, its capsule is wrinkled, the consistency is elastic, the incised tissue is full-blooded, dark cherry, with abundant bloody scraping. The liver measures 23×17×14×8 cm, its capsule is smooth; fabric of dense-elastic consistency, in section full-blooded, reddish-brown color, with focal small diffuse dark yellow inclusions. The gallbladder contains about 20 ml of dark olive bile. The mucous membrane of the gallbladder is reticulate. The stomach is empty. The gastric mucosa is grayish-pink, moderately folded. On the walls of the stomach there are numerous erosions of black-brown color, 0.2-0.3 cm in diameter; in the same place, in 3 cm from the goalkeeper, the through opening of the rounded form, in diameter of 0,6 cm is noted; the edges of the hole are roller-shaped, smoothed, compacted, the stomach wall around the perimeter of the hole at a distance of 0.5 to 1.0 cm is thickened, crimson-cyanotic color, with a branched vascular network. Pancreas of dense-elastic consistency, on sections of uneven blood supply, yellow-gray-pink color, the frequency is weakly expressed. The loops of the small intestine are covered with grayish-green films of fibrin. The contents of the intestine are normal for its departments, its mucous membrane is grayish-bluish, folded, swollen, in places with erosions up to 1 cm in diameter and hemorrhages in the thickness at their locations. Kidneys measuring 12×8×4 cm. The fat capsule is weakly expressed, the fibrous capsule is easily removed, the surface of the kidneys is fine-grained, the tissue of uneven blood supply is cut, due to the pink-red cortical substance and dark red pyramids. The boundary between the layers is pronounced. The pelvis of the kidneys is free, their mucous membrane is whitish-gray. Adrenal glands of normal shape, with visible layers. The bladder is empty, its mucous membrane is pale pink. The ovaries and uterus are absent, numerous surgical sutures. Soft scalp on the inside of their pale pink surface throughout. The bones of the vault and the base of the skull are intact, 0.3-0.8 cm thick. The dura mater is whitish, shiny, whole, not tense, not fused with the bones of the skull. In the upper longitudinal sinus and sinuses of the skull base dark liquid blood. The meninges are moist, shiny, and swollen. Her vessels are full-blooded, convoluted. The vessels of the base of the brain burned, on the intima of their single fibrous atherosclerotic plaques. The convolutions of the brain and the furrows between them are well expressed. The brain tissue is full-blooded, moist, sticks to the knife, on the surfaces of the incisions is a moderate number of drops of blood spreading across the fields of the incisions. The boundary between white and gray matter is pronounced. There is no special smell from the substance of the brain. The ventricles of the brain contain a small amount of colorless transparent cerebrospinal fluid. Cerebellar tissue, Varoliev's bridge and medulla oblongata moderate blood supply.

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them, on all surfaces of the specified area, the skin is pigmented, brownish-purple, with areas of altered skin of indeterminate shape, from 7 × 4 cm to 3 × 2 cm grayish-pink staining, wetting surface with purulent discharge, epithelialized edges (trophic changes). No injuries and other features were found during the external examination of the corpse. Internal examination: At opening of an abdominal cavity the sharp putrid smell is felt. Subcutaneous fat layer in the chest in the form of islands, in the abdomen up to 0.5 cm Breasts in section without features. The omentum is weakly expressed, unevenly covers the loops of the intestine, due to loose adhesions with the loops of the small intestine. The location of the abdominal organs is correct. The stomach and loops of the intestines are inflated with gases. Peritoneum grayish-pink, dull, visible dilated vascular network. In the abdominal cavity about 1000 ml of yellowish-grayish-greenish turbid fluid with films of fibrin. The diaphragm is intact. The costal cartilages dissect with some effort. Anterior mediastinum without hemorrhage. The lungs fill the cavities to open the chest. No free fluid was detected in the pleural cavities. The pericardial sac is intact, in its cavity a small amount of clear yellowish fluid. Dark liquid blood with loose dark red clots is secreted from the cavities of the heart and large vessels. The heart is conical, with a slightly rounded apex, measuring 10×9×5 cm. The epicardium contains a small amount of adipose tissue, without hemorrhage. The perimeter of the right venous opening is 11 cm, the left 10 cm. In the cavities of the heart mixed elastic blood clots are loosely fixed between the trabeculae. The heart muscle is flaccid, in sections of uneven blood supply due to the alternation of red-brown and dark red areas, sometimes with small whitish-gray layers of connective tissue. The thickness of the muscle of the left ventricle is 1.2 cm, the right 0.4 cm. The inner lining of the heart is grayish-pink, shiny, smooth. Three-leaf and two-leaf valves are grayish-pink, smooth, mobile. The width of the aorta in the section above the valve is 7.0 cm, its wings are smooth, mobile, the inner shell of the aorta is yellow with fibrous, sometimes calcined atherosclerotic plaques, mainly in the abdomen. The width of the pulmonary trunk in the section above the valve is 8 cm, the valve leaflets are smooth, mobile, the inner shell of the pulmonary trunk is grayish-pink, smooth. The coronary arteries of the heart do not collapse in the initial sections, their wall is unevenly thickened due to calcined plaques, which in some places narrow the lumen by 50%. No hemorrhages were found in the subcutaneous tissue of the neck. The laryngeal cartilage and hyoid bone are intact. Thyroid gland of moderate blood supply, brownish-red, with a fine-grained structure. Tongue in the thickness without hemorrhage, covered with gray-white layers. The pharynx and esophagus are free, their mucous membrane is grayish-bluish. The larynx and trachea are free, their mucous membrane is yellowish-pink. Lungs to the touch test-flaccid. On the surface of the lungs in some places there are areas of swelling and subsidence of the lung tissue, without hemorrhage. The lung tissue at the autopsies is full-blooded, of a uniform dark red-brown color, with a considerable amount of pale pink foamy fluid, which flows from the surface of the autopsies and during compression of the lung tissue. Examination of the ribs from

27. By the chemical nature saponification represents:

1. process Formations(educations) of fats
2. process of loss of a moisture by fabrics of a corpse
3. saponification of fats
4. process of cooling of a corpse
5. process of formation(education) of wax

28. Conditions at which develops peat tannins, are:

1. presence of a corpse in the environment without oxygen
2. presence of a corpse in an alkaline turbary
3. presence of a corpse in sourturbaries
4. presence of a corpse in alkaline ground
5. presence of a corpse in the damp environment

29. Late absolute attributes of death are:

1. mummification
2. cadaveric rotting
3. saponification
4. cadaveric emphysema
5. peat tannins

30. The prescription of approach of death is that time interval which has passed from the moment of death before research of a corpse:

1. Yes
2. No

31. Definition of prescription of approach of death can be lead (be carried out) on cadaveric changes to which carry:

1. cooling of a corpse
2. cadaveric drying
3. cadaveric a stain
4. rotting of a corpse
5. cadaveric rigor mortis

32. Definition of prescription of approach of death can be lead (be carried out):

1. on supravital to reactions
2. on contents of a gastroenteric path
3. on the external phenomena (changes) of a body of a corpse
4. on a degree of filling of a bladder
5. on etnomoфаuna a corpse

33. The medical certificate on death can be given by the doctor on the basis:

1. stories of relatives
2. records in the medical documentation
3. survey of a corpse
4. previous supervision
5. openings of a corpse

34. At drawing up of the medical certificate on death the doctor should be consistently determined and written down:

1. quantity of alcohol in blood
2. basic diseases (damage)
3. a condition which has resulted the important pathological conditions which promoted in the direct reason of death
4. to approach of death, but are not connected to illness or a trauma
5. what illness or pathological condition, including caused by action of factors of an environment, have directly resulted in death

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Task 5. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Multiple organ failure.
Gastric ulcer with perforation.
Chronic radiation sickness.
2. Multiple organ failure.
Peritonitis.
Chronic radiation sickness.
3. Purulent peritonitis.
Gastric ulcer with perforation.
Chronic radiation sickness.
4. Heart and respiratory failure.
Peritonitis.
Chronic radiation sickness.

Circumstances of the case: An 53-year-old unconscious woman was taken to the hospital without consciousness. It is known that she underwent surgery for uterine cancer 3 months ago and underwent a course of radiation therapy. In the analysis of blood reticulocytopenia, hypochromia, acute anisocytosis. 2 hours later the woman died.

At autopsy: «**External research:** female corpse, body length 164 cm, correct physique, low fatness. Corpse cramps are mild in all commonly studied muscle groups. The skin of the body is generally pale. Corpse spots of purple color are seen on the back and sides of the body. When dosed on them in the lumbar region fade and do not restore their color until the end of the autopsy (within 40 minutes) (17.05.2019, 12:30). The putrefactive changes are not expressed. There is no hair on the head, no damage was found. The skin of the face is pale. The eyes are closed, the cornea is transparent, the pupils are uniform, 0.5 cm in diameter, the connective membranes of the eyes are pale pink, without hemorrhage. Bones and cartilage of the nose to the touch of the target. The nostrils and ear canals are free. The mouth is closed, the mucous membrane of the lips is pale purple, in places with ulcers up to 1 cm in diameter covered with a film of fibrin with roller-like edges. Teeth are natural, not damaged, changed by caries, sometimes absent; dental cells in areas of missing teeth are overgrown. Tongue in the mouth. No injuries were found on the neck. Chest symmetrical, regular shape. The mammary glands are flattened, there is no discharge from the nipples when pressed. The abdomen is below the level of the costal arches. The external genitalia are developed properly, of normal structure, vaginal discharge is not observed. The anus is closed, the skin around it is contaminated with feces. The limbs are developed correctly, their bones are intact. On the lower thirds of both legs there are circular gauze bandages, under

the boundary between the cortical and cerebral layers is well defined. The left kidney is dark brown, measuring 10.0×5.0×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In section, full-blooded, cortical and cerebral layers are moderately pronounced, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The left adrenal gland is leaf-shaped, measuring 3.0×0.7 cm, the boundary between the cortical and cerebral layers is well defined. The bladder is empty, the mucous membrane is bluish. Testicles in the scrotum. Appendages of the right and left testicles without hemorrhage. No hemorrhage was found in the soft tissues of the head. The bones of the vault and the base of the skull are intact. 0.4 cm to 0.9 cm thick. The dura mater is bluish, bluish, unstressed, transparent, up to 0.1 cm thick. The meninges are intact, moist, shiny, transparent, and the vessels are full-blooded. The vessels of the base of the brain are full-blooded, with thin elastic walls. Twists and furrows of a brain are well expressed. The boundaries between gray and white matter are pronounced. In the section, the substance of the brain is swollen, sticks to the knife, drops of blood appear on the surface. Lateral ventricles of normal size, in their cavities up to 3 ml of light yellow clear liquid. Cerebellum on incisions of a tree-like structure, without hemorrhages. Gray nodes of the base of the brain, Varoliev bridge, medulla oblongata with a clear structure on the incisions, without hemorrhage. The paranasal sinuses of the skull are free. Pituitary gland of normal structure, without hemorrhage.

9.2. Chronic radiation injury

Task 1. A chronic radiation sickness it is:

Task 2. Write the degree of chronic local irradiation:

Task 3. Write at what dose of radiation the body develops chronic radiation sickness:

Task 4. Write the consequences of chronic radiation sickness:

THEME 2 SUDDEN DEATH. FORENSIC MEDICAL EXAMINATION OF THE CORPSE IN CASE OF SUDDEN DEATH. INDEPENDENT OPENING CORPSE. EXAMINATION OF THE BODY OF NEWBORN

2.1. Sudden death. Forensic autopsy in case of sudden death.

Task 1. Give a definition:

Sudden death –

Task 2. Fill in the table examples of different types of sudden death according to organs and systems:

Disease	Causes of death
Diseases of the circulatory system	
Respiratory diseases	
Diseases of the digestive system	
Diseases of the central nervous system	
Diseases of the pelvic organs	
Sudden infant death	
Infectious diseases	

Task 3. Read the task, formulate a forensic diagnosis (underlying disease, complications of the underlying disease, comorbidities) and write a «Medical certificate of death»:

«Gr. P., 69 years old, was found dead on May 2, 2016 in his apartment. From the circumstances it is known that on 01.05.16 the deceased with a neighbor during dinner at 19 o'clock. drank 0.5 liters of beer and went home. During the examination of the corpse at 12 o'clock on May 2, 2016, the investigator and forensic doctor found: the corpse of a man lying on the couch, normal fat, without injuries, eyes half open, a small amount of pale pink from the nose and mouth some foamy liquid, no secretions from other natural openings, corpse spots of dark blue color, well expressed, after moderate finger pressure disappear and regain their color after 6 minutes; cadaveric crumpling is well expressed in all muscle groups. During the autopsy, the following were found: in the aorta and large arteries, a significant number of plaques of stony density, some of them have a mushy mass; in the left coronary artery at a distance of 2 cm from the beginning there is a plaque that narrows the hole by 75%, with overlays on the surface of dark red color, which are not washed off with water; myocardium with pale areas and areas of whitish color of dense consistency; the wall thickness of the left ventricle is 1.8 cm, the right - 0.6 cm; on the surface of the kidneys scars of unequal shape of whitish dense tissue. Histological examination of the myocardium revealed a pronounced unevenness of blood supply to the vessels, a large area of cardiomyocytes without

nuclei, areas of fragmentation of cardiomyocytes and their tortuous course with contractures; in the coronary artery parietal thrombus on atherosclerotic plaque, which has signs of petrification, the artery hole is closed by a thrombus completely; in the lungs expressive plethora, in the alveoli edematous fluid with impurities of erythrocytes and brown pigment, in the openings of the bronchi clear fluid; in the brain moderate vascular plethora, significantly dilated perivascular and pericellular spaces. During the forensic toxicological examination 0.3% of ethyl alcohol was found in the blood, there is no alcohol in the urine».

2.2. Examination of the corpse of a newborn.

Task 1. Write a sequence of examinations of corpses of newborns:

1. _____
2. _____
3. _____

Task 2. List and describe the signs of the Newborn:

1. _____
2. _____
3. _____

Task 3. Give a definition:

Live birth –
Full-term –

Task 4. Fill in the table the signs of the newborn and describe their features:

Signs of a newborn	Features

Task 5. Fill in the table methods and tests for determining the signs of live birth of the fetus and describe their features:

Methods and tests for determining signs of live birth	Features

The sternum is intact. The thymus is partially replaced by adipose tissue. In the pleural cavities free light yellow fluid of about 300 ml in each, no adhesions. The position of the lungs is correct. Pleura on the right and left body. The pericardial sac is intact. When incised up to 20 ml of clear light yellow liquid. No injuries or hemorrhages were found on the inner surface of the chest. Ribs on the right and left of the target. The vessels of the neck are intact, at the incision of the right and left carotid arteries no damage was detected. Tongue dark red, with well-defined papillae, without hemorrhages and tooth impressions, in section dark red, without hemorrhages. Entrance to the larynx and esophagus is free. The hyoid bone and laryngeal cartilage are intact. The mucous membrane of the larynx is pale bluish, in places with dark red hemorrhages. Tonsils on the right and left of dark brown color, normal structure, measuring 2.0×1.0 cm on the right and left, in the section there is a small number of follicular cavities without characteristic content. The thyroid gland is full-blooded, dark red, measuring 3.2×2.0 cm right lobe and 4.5×3.0 cm left lobe. Dense consistency. In section, full-blooded, lobular structure, without hemorrhage. The mucous membrane of the esophagus is pale bluish in color, swollen with dark red spots draining hemorrhages. The mucosa is easily destroyed by compression. Light pink, bloody, bloody contents in the trachea and bronchi. The mucous membrane is dark red, in places with hemorrhages. The right and left lungs are compacted to the touch. On the lungs under the visceral pleura spotted drainage hemorrhages of dark red color. In section, both lungs are gray-red, when pressed, a large amount of frothy blood flows. Lung particles drown in water. Heart conical shape, dimensions 13.0×12.0×8.0 cm. In the projection of the left ventricle punctate hemorrhages. Liquid blood in the cavities of the heart. At autopsy, the heart is dark red, without hemorrhage. The thickness of the right ventricle is 0.3 cm, the left 1.2 cm. The coronary arteries are asleep. Two-leaf valves are elastic, thin, 9 cm in size. Three-leaf valves are elastic, thin, 10 cm in size. Aortic valves are elastic, thin, 6 cm in size. Pulmonary artery valves are elastic, thin, 8 cm in size. blood. The width of the aorta above the sash is 8.0 cm. The spleen is anemic, bluish in color, the capsule is wrinkled, measuring 10.0×7.0×1.5 cm. The scraping is small, bloody. The liver is dense to the touch, dark brown, measuring 29.0×23.0×16.0×8.0 cm. The surface is smooth, full-blooded in section, dark brown. Gallbladder of the usual form, the sizes of 6,0×3,0 cm. The stomach is swollen, mucous swollen, gray-cyanotic color with multiple dark blue hemorrhages from point to spotty, in places draining. Pancreatic lobule structure, size 14.0×4.0×3.0 cm, yellow-pink, in places with hemorrhages in its thickness. The intestine is empty, the mucosa is swollen, gray-cyanotic color with multiple dark blue hemorrhages in the wall thickness from spot to spotted, in places superficial ulcers up to 0.5 cm in diameter. Ripple without hemorrhage. The right kidney is dark brown, measuring 12.5×5.5×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In the section full-blooded, cortical and cerebral layers are moderately expressed, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The right adrenal gland is leaf-shaped, measuring 3.0×0.5 cm,

Pneumonia, gastroenteritis.
Bone marrow form of acute radiation sickness.

Circumstances of the case: A 45-year-old man who worked as an engineer in an experimental nuclear reactor was taken to a medical facility. On admission, constant headache, nausea, repeated vomiting, body temperature 38°C. The skin and mucous membranes are hyperemic, the patient is excited. General blood test - severe leukocytosis, deep lymphopenia. During the week the general condition of the patient improved slightly. There was increased fatigue, general weakness, sleep disorders, loss of appetite, headache, lability of the pulse, decreased blood pressure, hair loss. General blood test - $0,5 \times 10^9 / l$, lymphocytes - $0,1 \times 10^9 / l$, thrombocytes $30 \times 10^9 / l$. At a bone marrow puncture: atypical lymphocytes, single-changed segmental neutrophils, plasma and reticular cells. In the third week of treatment, the condition deteriorated sharply, consciousness was absent, body temperature 40°C, multiple hemorrhages under the skin and mucous membranes, nosebleeds, bleeding gums, loose stools, tachycardia, low blood pressure, deafness, heart failure, respiratory failure. The patient died.

At autopsy: «**External research:** male corpse, young age, body length 175 cm. The body structure is normosthenic, moderately fat. The skin is pale. Corpse spots are weakly expressed on the back surfaces of the back, blue-violet color, when pressed, fade and regain their color after 15 minutes. Corpse clogging is moderate in all muscle groups. Corpse cooling is well expressed. There is no corpse drying. There are no putrefactive changes. There is no hair on the head. The bones of the skull are intact to the touch. Eyes closed. The eyes are brown, the cornea is cloudy, the pupils on both sides are evenly dilated to 0.3 cm. The bones and cartilage of the nose touch the whole. Blood in the nasal passages. The mouth is open, the mucous membranes of the lips are dark purple, the mucous membranes of the mouth are pale bluish, in places with hemorrhages and superficial ulcers up to 0.5 cm in diameter, pink bottom and swollen shaft-like edges rising above the mucosal surface. Increased shakiness of teeth, teeth intact. Tongue along the line of teeth. The auricles are of normal shape, purple-cyanotic color, the auditory canals are free. The shape of the neck is normal, the mobility of the neck is limited. The shape of the chest is normal, the ribs touch the target. The abdomen at the level of the costal arches, the abdominal wall is elastic. The external genitalia are properly developed, according to the male type. The anus is closed, the skin around it is clean. No injuries or traces of them were detected by external examination. **Internal research:** Soft tissues of the neck, chest and anterior abdominal wall without hemorrhage. The thickness of the subcutaneous fat of the chest is 0.5 cm, the abdomen is 1.0 cm. There is no foreign odor at autopsy. Peritoneum bluish, shiny, moist, without damage and adhesions. The omentum is weakly expressed, evenly covers the abdominal organs. The location of the abdominal organs is correct. The stomach and intestines are significantly swollen. There is no free fluid in the abdominal cavity. The diaphragm is intact. Rib cartilage is easily dissected.

Task 6. Continue the sentence:

«Under active infanticide is understood»

«Under passive infanticide is understood»

Task 7. List the issues that are addressed by forensic experts when examining the corpse of a newborn:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Control tests:

1. The main task during medico-legal investigation of corpse is:

1. To determine the type of death
2. To study case materials
3. To determine the category of death
4. To determine the circumstances of death
5. To determine the cause of death

2. Death, that happened suddenly or rapidly from unknown disease is named as:

1. Unfounded
2. Rapid
3. Sudden
4. From disease
5. Unknown

3. Sudden death has such signs:

1. Absence of evidence of witnesses
2. Tempo of death is rapid
3. Visually the human is healthy and current of disease is latent
4. This death is non violent
5. Suspicious on violent death

4. Such risk factors can lead to sudden death:

1. Traffic accidents

2. Physical load
3. Influence of alcohol
4. Mental load (stress)
5. Character of nutrition

5. Such diseases can lead to sudden death:

1. Skull fractures
2. Pneumonia
3. Myocardial infarction
4. Chronic ischemic heart disease
5. Hypertension

6. The signs for Chronic ischemic heart disease are:

1. Increasing of heart weight (more than 400 g)
2. Increasing of thickness of left Ventricles
3. Limp Heart muscle
4. Ischemic area in myocardium
5. Stenosis of myocardium vessels

7. The signs for Acute ischemic heart disease are:

1. Large myocardial fibrosis
2. Presence on blood clot (thrombus) in myocardium vessels
3. Myocardial infarction
4. Spasm of coronary vessels (histologically)
5. Loss of potassium from myocardium

8. Myocardium infarction may be:

1. Acute
- 2, Chronic
3. Relapsing
- 4, Visual
5. Repeated

9. Hypertensive heart disease can lead to death because of:

1. Cerebral haemorrhage
2. Haemorrhage
3. Large myocardium fibrosis
4. Acute heart insufficient
5. Myocardium infarction

10. Lungs in pneumonia have such signs:

1. Tardieu spots on surface
2. Drown in a water

Task 6. Describe the morphological manifestations of radiation burns depending on the degree and dose of radiation:

Task 7. Write the severity of acute radiation sickness, indicating the radiation dose:

Task 8. Describe the course of acute radiation sickness:

For the period of formation of defeat it is characteristic:

It is typical for the recovery period:

It is typical for the period of consequences:

Task 9. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Multiple organ failure.
Pneumonia, gastroenteritis.
Acute radiation sickness.

2. Acute respiratory failure.
Pneumonia.
Acute radiation sickness.

3. Acute radiation sickness.
Pneumonia, gastroenteritis.
Respiratory failure.

4. Heart and respiratory failure.

**THEME 9
FORENSIC MEDICAL EXAMINATION
OF THE RADIATION TRAUMA**

9.1. Acute radiation injury

Task 1. Describe:

Electromagnetic radiation:

Corpuscular radiation:

Task 2. Describe the three stages of ionizing radiation on a biological substance:

Task 3. An acute radiation sickness it`s:

Task 4. Give a written answer to the following:

In the absorption range of 3-9 Gy. (300-900 councils) is a critical body (system) _____

In the absorption range of 10-100 Gy. (1000-10000 rad) is a critical body (system) _____

In the absorption range of 200 - 1000 Gy. (20000-100000 councils) is a critical body (system) _____

Task 5. Describe the features of forensic examination of radiation injury:

3. Have arias of pus obstruction of bronchus
4. Particoloured on cutting
5. Dence on palpation

11. Sudden Infant death syndrome is a sudden and unexplained death of any infant in the age of two weeks till two years after birth:

1. Yes
2. No

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THEME 3

FORENSICS MEDICAL EXAMINATION OF A LIVING PERSON ON THE TRAUMA SEVERITY. DEFINING STATE OF HEALTH. EXAMINATION OF DISPUTABLE SEXUAL STATES AND SEXUAL ASSAULT

3.1. Forensics medical examination of a living person on the trauma severity

Task № 1. Define terms given:

Bruise – is
An injury is
Fracture – is

Task № 2. Finish a sentence:

From a Forensics point of view a physical trauma is a.....

Task № 3. Fill in the table with a classification of types of injury and fill in examples:

Injury's classification	Examples

Task № 4. Fill in the table with specifics of different types of trauma from dull objects and fill in examples:

Mechanism of injury	Characteristics	Examples
Punch		
Compression		
Strains		
Friction		

Task № 5. List a sequence of actions required during the conduct of a Forensics examination of victim (accused) person:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

bluish, unstressed, transparent, up to 0.1 cm thick. The meninges are intact, moist, shiny, transparent, and the vessels are full-blooded. The vessels of the base of the brain are full-blooded, with thin elastic walls. Twists and furrows of a brain are well expressed. The boundaries between gray and white matter are pronounced. In the section, the substance of the brain is swollen, sticks to the knife, drops of blood appear on the surface. Lateral ventricles of normal size, in their cavities up to 3 ml of light yellow clear liquid. Cerebellum on incisions of a tree-like structure, without hemorrhages. Gray nodes of the base of the brain, Varoliev bridge, medulla oblongata with a clear structure on the incisions, without hemorrhage. The paranasal sinuses of the skull are free. Pituitary gland of normal structure, without hemorrhage.

Data of forensic histological examination: «Tissue of internal organs with edema and diapedetic hemorrhage, foci of rupture with hemorrhage and myocardial fragmentation and rupture of the coronary artery wall, rupture of the walls of some vessels and interstitial tissue of internal organs with small focal hemorrhages, severe edema of brain tissue), loose hemorrhages in the pituitary gland, trunk without visible cellular response. Focal hemorrhages in TMO, thymus, salivary gland - without visible cellular reaction. Areas of acute alveolar emphysema, alveolar dystelectasis with some signs of bronchospasm».

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The mucous membrane of the esophagus is pale bluish in color with well-defined folds, on the walls of the esophagus a small amount of solid food masses of white color. No damage. There are no foreign objects in the trachea and bronchi. The mucous membrane is dark red with a small amount of foamy parietal blood. The right and left lungs are emphysematous, airy to the touch, with the presence of a characteristic crepitation crunch. On the posterior surface of the lower lobe of the left and right lungs under the visceral pleura punctate hemorrhages, on the diaphragmatic surfaces of both lungs under the visceral pleura punctate hemorrhages (Tardier spots). In section, both lungs are pink-red, when pressed, a small amount of liquid and foamy blood flows. Conical heart, size 13.0×12.0×8.0 cm in the projection of the left ventricle punctate hemorrhages. Under the epicardium in the projection of the anterior wall of the left ventricle punctate hemorrhages (Tardier's spots). Liquid blood in the cavities of the heart. At autopsy, the heart is dark red, without hemorrhage. The thickness of the right ventricle is 0.3 cm, the left 1.2 cm. The coronary arteries are asleep. Two-leaf valves are elastic, thin, 9 cm in size. Three-leaf valves are elastic, thin, 10 cm in size. Aortic valves are elastic, thin, 6 cm in size. Pulmonary artery valves are elastic, thin, 8 cm in size. blood. The width of the aorta above the sash is 8.0 cm. The spleen is full-blooded, bluish in color, the capsule is moderately tense, measuring 16.0×11.0×0.5 cm. The scraping is significant, bloody. The liver is dense to the touch, dark brown, measuring 29.0×23.0×16.0×8.0 cm. The surface is smooth, full-blooded in section, dark brown. The gallbladder of the usual form, in the sizes of 6,0×3,0 cm. The gallbladder together with contents is withdrawn for carrying out forensic toxicological research. The stomach is bloated. The stomach and its contents were removed for forensic toxicology. Pancreatic lobe, size 14.0 × 4.0 × 3.0 cm, yellow, without hemorrhage. The contents of the intestine are normal for its departments. The segments of the small and large intestines together with the contents were removed for forensic toxicological examination. Ripple without hemorrhage. The right kidney is dark brown, measuring 12.5×5.5×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In the section full-blooded, cortical and cerebral layers are moderately expressed, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The right adrenal gland is leaf-shaped, measuring 3.0×0.5 cm, the boundary between the cortical and cerebral layers is well defined. The left kidney is dark brown, measuring 10.0×5.0×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In section, full-blooded, cortical and cerebral layers are moderately pronounced, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The left adrenal gland is leaf-shaped, measuring 3.0×0.7 cm, the boundary between the cortical and cerebral layers is well defined. The bladder is full, at an incision the liquid of light yellow color, a mucous membrane of bluish color follows. Testicles in the scrotum. Appendages of the right and left testicles without hemorrhage. In the soft tissues of the head from the inner surface of a small number of small hemorrhages. The bones of the vault and the base of the skull are intact. 0.4 cm to 0.9 cm thick. The dura mater is bluish,

Task № 6. Fill in the table with morphologic characteristics of soft tissue hemorrhages:

Type of injury	Morphologic characteristics
Mucosal hemorrhage	
Bruise	
Hematoma	

Task № 7. Using examples given in the description of bruises on below presented pictures (1, 2, 3, 4, 5, 6) describe the injury presented:

Examples description sequence: «In the left periorcular area (*localization*) an uneven oval bruise (*shape*), which is 2×3 cm in size (*size*), with its center being blue-violet in color and sides having a shade of green (*color*)»

« On the front surface of the upper third of the right thigh (*localization*) strip shaped bruise (*shape*), being 1.5×2 cm in size (*size*), greenish color in the center with a yellowish shade on the periphery (*color*)».

« On the back of the middle third of the left tibia (*localization*) oval shaped bruise (*shape*), being 1×1.5 cm in size (*size*), yellow in color (*color*)».

« On the lateral surface of the upper third of the right shoulder (*localization*) oval shaped bruise (*shape*), being 2×1.5 cm in size (*size*), yellow in color (*color*)».

« On the anterior surface of the chest on the right in the III intercostal space alongside the middle-clavicular line (*localization*) oval shaped bruise (*shape*), being 1.5×1.5 cm in size (*size*), greenish color in the center with a yellowish shade on the periphery (*color*)».

« On the back surface of the back on the left in the III intercostal space along the shoulder line (*localization*) oval shaped bruise (*shape*), being 1×1 cm in size (*size*), greenish color in the center with a yellowish shade on the periphery (*color*)».

« In the frontal area on the left, at a distance of 3 cm from the median line of the body and 1 cm from the body of the left eyebrow (*location*) oval shaped bruise (*shape*), being 1.5×1.5 cm in size (*size*), yellow in color (*color*)».



Pic. 1



Pic. 2



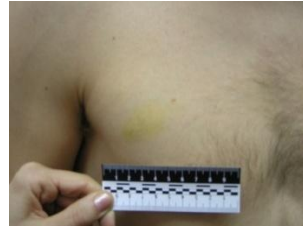
Pic. 3



Pic. 4



Pic. 5



Pic. 6

Task № 8. Using examples given in the description of abrasion on below presented pictures (1, 2, 3) describe the injury presented:

Examples of abrasion description sequence: «On the front of a left knee (location) lineal abrasion (shape), 1,5×2 cm in size (size), abrasion's surface is covered with a crust brown in color (color), placed on the level of undamaged surrounding skin (crust's location)».

« On the front surface of the upper third of the right thigh (localization), a strip shaped abrasion (*shape*), being 1.5×2 cm in size (*size*), the surface of the abrasion is covered with a crust of brown color (color), located at the level of the intact surrounding skin (location of the crust)».

«On the back of the middle third of the left shin (localization) of a strip shaped abrasion (shape), 1 × 1.5 cm (in size), the surface of the abrasion is covered with a crust of brown color (color) located above the level of the intact surrounding skin with a certain peripheral detachment (location of the crust)».



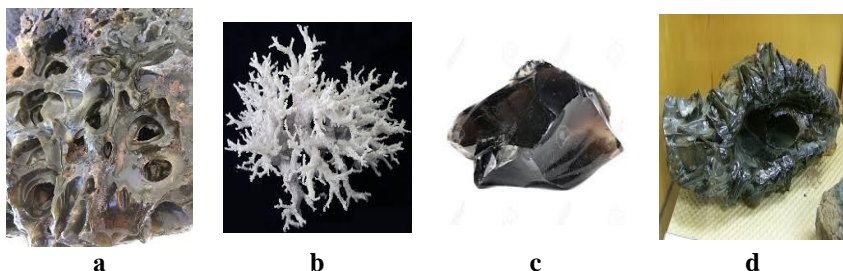
Pic. 1



Pic. 2

There is no corpse drying. There are no putrefactive changes. Hair color on the head is dark, up to 1 cm long, burnt. The bones of the skull are intact to the touch. Cyanosis of the face and neck is noted. The eyes are closed, the corneas are cloudy, the pupils on both sides are evenly dilated to 0.3 cm, on the sclera of both eyelids small hemorrhages. Bones and cartilage of the nose to the touch of the target. The nasal passages are free. The mouth is open, the mucous membranes of the lips are dark purple, the mucous membranes of the mouth are pale bluish. There are no foreign objects in the oral cavity. Teeth are whole, natural, cariously changed. Tongue along the line of teeth. The auricles are of normal shape, purple-cyanotic color, the auditory canals are free. The shape of the neck is normal, the mobility of the neck is limited. The shape of the chest is normal, the ribs touch the target. On the anterior surface of the thorax along the mid-clavicular line in the projection of the III-IV intercostal space on the right and on the anterolateral surface of the thorax along the anterior-axillary line in the projection of the V-VI intercostal space on the left one drain tree-like pattern is seen area of 20×15 cm, the surface of the skin above it is swollen, convex, dark red, its edges are slightly blurred. The abdomen at the level of the costal arches, the abdominal wall is elastic. The external genitalia are properly developed, according to the male type. The anus is closed, the skin around it is clean. In the chin area on the right is a wound, zigzag, measuring 2.0×1.5 cm, the edges of the wound are uneven, the ends are slightly rounded, at the bottom of the wound there are tissue membranes. No other injuries or traces of them were detected by external examination. **Internal research:** Soft tissues of the neck, chest and anterior abdominal wall without hemorrhage. The thickness of the subcutaneous fat of the chest is 0.5 cm, the abdomen is 2.0 cm. There is no foreign odor at autopsy. Peritoneum bluish, shiny, moist, without damage and adhesions. The omentum is weakly expressed, evenly covers the abdominal organs. The location of the abdominal organs is correct. The stomach and intestines are significantly swollen. There is no free fluid in the abdominal cavity. The diaphragm is intact. Rib cartilage is easily dissected. The sternum is intact. The thymus is partially replaced by adipose tissue. There is no free fluid and adhesions in the pleural cavity. The position of the lungs is correct. Pleura on the right and left body. The pericardial sac is intact. When incised up to 5 ml of clear light yellow liquid. No injuries or hemorrhages were found on the inner surface of the chest. Ribs on the right and left of the target. The vessels of the neck are intact, at the incision of the right and left carotid arteries no damage was detected. Tongue dark red, with well-defined papillae, without hemorrhages and tooth impressions, in section dark red, without hemorrhages. Entrance to the larynx and esophagus is free. The hyoid bone and laryngeal cartilage are intact. The mucous membrane of the larynx is pale bluish. Tonsils on the right and left of dark brown color, normal structure, measuring 2.0×1.0 cm on the right and left, in the section there is a small number of follicular cavities without characteristic content. The thyroid gland is full-blooded, dark red, measuring 3.2×2.0 cm right lobe and 4.5×3.0 cm left lobe. Dense consistency. In section, full-blooded, lobular structure, without hemorrhage.

Task 4. Which of the presented photos are fulgurites?



Task 5. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Cerebral edema.
Traumatic brain injury.
Accident due to a blow with a blunt object.
2. Cerebral edema.
Hematoma of the right chin area.
Open traumatic brain injury.
3. Cardiovascular insufficiency, cerebral edema.
Atmospheric current damage.
The accident was caused by an electric current from an electric pole.
4. Acute heart failure.
Lightning strike.
The accident was caused by other specified sources of electric current.

Circumstances of the case: Body pers. D. was found in a field under a tree branch with a burnt trunk.

At autopsy: «**External research:** The corpse was delivered in clothes: blue trousers, a white shirt, burnt in places, black socks. Corpse of a male, young age, body length 170 cm. The body structure is normosthenic, moderately fat. The skin is pale. Corpse spots are well expressed on the back of the neck and back, blue-violet color, when pressed, fade and regain their color after 5 minutes. Corpse cramps are well expressed in all muscle groups. Corpse cooling is well expressed.



Pic. 3



Pic. 4

Task № 9. Fill in the table with physical injury criteria according to the trauma severity:

Physical harm classification	Criteria	Examples
Minor trauma		
Minor trauma with a short-term health disorder		
Moderate trauma		
Severe trauma		

Task № 10. Read the task and determine the mechanism and the prescription of damages, as well as substantiate the degree of their severity «A male citizen, Mr. M., 40 years old, seeking medical care, went to the emergency care room, having complaints of pain in the area of his left ear. From the anamnesis it is known that two days ago his wife, on the ground of jealousy, bit his left ear. At inspection: in the area of the left ear is imposed bandage with antibacterial ointment. After removing the bandage, it was fixed: the upper half of the auricle is absent, on the other part - the wound surface with uneven shroud-shaped coarse festonchymal edges of light red color and yellowish cartilage shreds up to 0.6 cm. The wound covers the upper part of the helix and antihelix, as well as part of the antitragus. The earlobe is not damaged. The hearing is saved. Re-examination in a month: the wound healed completely, the ear flap is deformed - the upper edge is absent. In other areas of the posterior margin, rough dense wrinkled scars of pinkish-blue color.

3.2. Defining state of health

Task № 1. Define terms given:

- Aggravation - is
- Simulation - is ...
- Dissimulation - is ...

3.3. Examination of disputable sexual states and sexual assault

Task № 1. Define given terms:

Sexual maturity is
 Hermaphroditism. - is...

Task № 2. List issues that are solved by a forensic expert during an examination on sexual condition:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Task № 3. Fill in the table with sexual maturity traits for both male and female:

Male	Female

Task № 4. List the signs of passing through labor:

1. _____
2. _____
3. _____
6. _____
7. _____
8. _____

Task № 5. List signs of a criminal abortion:

1. _____
2. _____
3. _____
4. _____

Task № 6. Give examples of methods used to cause a criminal abortion:

1. _____
2. _____
3. _____
4. _____
5. _____

and their isomers were not detected in blood and urine. In the tissues of the stomach containing, liver with gallbladder, small intestine, blood and urine derivatives of barbituric acid, 1,4-benzodiazepines, phenothiazines, opium alkaloids (codeine, morphine), heroin, cocaine, promedol, ephedrine and ephedrine diphenhydramine is not detected».

Data of forensic histological examination: «Electrostatic label in the skin from the plantar surface of the right foot with focal hemorrhages in the dermis without visible cellular reaction; morphological signs of electric current in the skin of the fingers of the right hand with small focal hemorrhages without visible cellular reaction. Morphological signs of electric current on the tissues of internal organs with edema and diapedetic hemorrhages; foci of ruptures with hemorrhage and myocardial fragmentation and rupture of the coronary artery wall; ruptures of the walls of some vessels and interstitial tissue of internal organs with small focal hemorrhages; pronounced swelling of brain tissue and dystrophic changes of neurons (tigrolysis, shadow cells), loose hemorrhages in the neurohypophysis, trunk without visible cellular reaction. Focal hemorrhages in TMO, thymus, salivary gland – without visible cellular reaction. Areas of acute alveolar emphysema, alveolar dystelectasis with some signs of bronchospasm. Small focal nephrosclerosis. Clear cell pseudoadenomas in the adrenal gland. Focal loose hemorrhage without visible cellular reaction in the epicardium of the heart with injection».

8.2. Damage from atmospheric electricity

Task 1. Give a definition:

Lightning – _____

Task 2. Describe the damage that occurs when struck by lightning:

Task 3. According to the photograph describe the damage:



(in the area of the interventricular septum). Liquid blood in the cavities of the heart. At autopsy, the heart is dark red, without hemorrhage. The thickness of the right ventricle is 0.3 cm, the left 1.2 cm. The coronary arteries are asleep. Two-leaf valves are elastic, thin, 9 cm in size. Three-leaf valves are elastic, thin, 10 cm in size. Aortic valves are elastic, thin, 6 cm in size. Pulmonary artery valves are elastic, thin, 8 cm in size. blood. The width of the aorta above the sash is 8.0 cm. The spleen is full-blooded, bluish in color, the capsule is moderately tense, measuring 16.0×11.0×0.5 cm. The scraping is significant, bloody. The liver is dense to the touch, dark brown, measuring 29.0×23.0×16.0×8.0 cm. The surface is smooth, full-blooded in section, dark brown. The gallbladder of the usual form, in the sizes of 6,0×3,0 cm. The gallbladder together with contents is withdrawn for carrying out forensic toxicological research. The stomach is bloated. The stomach and its contents were removed for forensic toxicology. Pancreatic lobule structure, size 14.0×4.0×3.0 cm, yellow, without hemorrhage. The contents of the intestine are normal for its departments. The segments of the small and large intestines together with the contents were removed for forensic toxicological examination. Rippled without hemorrhage. The right kidney is dark brown, measuring 12.5×5.5×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In the section full-blooded, cortical and cerebral layers are moderately expressed, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The right adrenal gland is leaf-shaped, measuring 3.0×0.5 cm, the boundary between the cortical and cerebral layers is well defined. The left kidney is dark brown, measuring 10.0×5.0×1.0 cm, the surface is fine-grained, smooth, the capsule is intact. In section, full-blooded, cortical and cerebral layers are moderately pronounced, the mucous membrane of the pelvis and ureters is bluish, without hemorrhage. The left adrenal gland is leaf-shaped, measuring 3.0×0.7 cm, the boundary between the cortical and cerebral layers is well defined. The bladder is full, at an incision the liquid of light yellow color, a mucous membrane of bluish color follows. Testicles in the scrotum. Appendages of the right and left testicles without hemorrhage. In the soft tissues of the head from the inner surface of a small number of small hemorrhages. The bones of the vault and the base of the skull are intact. 0.4 cm to 0.9 cm thick. The dura mater is bluish, bluish, unstressed, transparent, up to 0.1 cm thick. The meninges are intact, moist, shiny, transparent, and the vessels are full-blooded. The vessels of the base of the brain are full-blooded, with thin elastic walls. Twists and furrows of a brain are well expressed. The boundaries between gray and white matter are pronounced. In the section, the substance of the brain is swollen, sticks to the knife, drops of blood appear on the surface. Lateral ventricles of normal size, in their cavities up to 3 ml of light yellow clear liquid. Cerebellum on incisions of a tree-like structure, without hemorrhages. Gray nodes of the base of the brain, Varoliev bridge, medulla oblongata with a clear structure on the incisions, without hemorrhage. The paranasal sinuses of the skull are free. Pituitary gland of normal structure, without hemorrhage.

Data forensic toxicological study: «Ethyl, methyl, propyl, butyl, amyl alcohols

Task № 7. Fill in the table with features of sexual assaults/crimes

Sexual crime	Features
Rape	
Child sex abuse	
Sexual intercourse with a person who is sexually immature	

Task № 8. Draw a scheme of hemoglobin oxidation in hemorrhages:



Control tests:

1. Forensics examination is carried out on the basis of:

1. Judgement of examining court
2. Referral from investigative authorities
3. Request of the injured party
4. Court judgment (judge's order)

2. Forensics medical examination is carried out on the basis of:

1. Judgement of examining court
2. Referral from investigative authorities
3. Request of the injured party
4. Court judgment (judge's order)

3. Minor bodily injuries have such criteria:

1. Loss of general working capability by less than 10%
2. Absence of life threatening trauma
3. Long-lasting health disorder (over 3 weeks)
4. A stable loss of one third of working capability (loss of working capability from 10% to 33%)

4. There are medium trauma criteria:

1. Loss of general working capability by less than 10%
2. Absence of life threatening trauma
3. Long-lasting health disorder (over 3 weeks)
4. A stable loss of one third of working capability (from 10 to 33%)

5. There are grievous trauma criteria:

1. Loss of general working capability by less than 10%
2. A stable loss of working capability of more than 33%
3. Life-threatening conditions

4. Non-life-threatening conditions that have severe manifestations and consequences

6. Life-threatening severe trauma – is an injury that may cause a life-threatening conditions for life at the moment of causing or during clinical progression

1. Yes
2. No

7. Age determination is possible in the following ways:

1. By skin condition
2. By hair colors
3. By teeth condition
4. By DNA

8. Minor trauma by the long-lasting health disorders is:

1. Minor trauma
2. Minor trauma with a short-term health disorder
3. Longevity of health disorder lasts between 15 to 35 days
4. Long-lasting health disorder (over 3 weeks)

9. Minor trauma with a short-term health disorder by the longevity of health disorders is:

1. Between 6 to 10 days
2. Between 7 to 21 days
3. Between 15 to 21 days
4. Between 21 to 30 days

10. Minor trauma by the longevity of health disorders:

1. Between 6 to 10 days
2. Between 10 to 15 days
3. Between 10 to 21 days
4. Between 21 to 30 days

11. Injuries considered to be a grievous trauma if it's:

1. Hearing loss
2. Opened and closed skull base fractures
3. Loss of sexual/reproductive function
4. Opened and closed calvarial bones fractures

12. Injuries considered to be a grievous trauma if it's:

1. Cervical vertebrae dislocation
2. Closed injury of a cervical spinal cord

the left forearm, ranging in size from 1.05×0.5 cm to 2.5×0.1 cm; on the lateral surface of the lower third of the left tibia in the projection of the location of the lateral bone, measuring 2.0×1.0 cm on the palmar surface of the right hand in the area of the first phalanges of the I-V fingers are multiple small hemorrhages. On the plantar surface of the right foot is an area of skin of excessive density, round shape, measuring 0.3×0.3 cm, with raised edges and a retracted black bottom. No other injuries or traces of them were detected by external examination. **Internal research:** Soft tissues of the neck, chest and anterior abdominal wall without hemorrhage. The thickness of the subcutaneous fat of the chest is 0.5 cm, the abdomen is 2.0 cm. There is no foreign odor at autopsy. Peritoneum bluish, shiny, moist, without damage and adhesions. The omentum is weakly expressed, evenly covers the abdominal organs. The location of the abdominal organs is correct. The stomach and intestines are significantly swollen. There is no free fluid in the abdominal cavity. The diaphragm is intact. Rib cartilage is easily dissected. The sternum is intact. The thymus is partially replaced by adipose tissue. There is no free fluid and adhesions in the pleural cavity. The position of the lungs is correct. Pleura on the right and left body. The pericardial sac is intact. When incised up to 5 ml of clear light yellow liquid. No injuries or hemorrhages were found on the inner surface of the chest. Ribs on the right and left of the target. The vessels of the neck are intact, at the incision of the right and left carotid arteries no damage was detected. Tongue dark red, with well-defined papillae, without hemorrhages and tooth impressions, in section dark red, without hemorrhages. Entrance to the larynx and esophagus is free. The hyoid bone and laryngeal cartilage are intact. The mucous membrane of the larynx is pale bluish. Tonsils on the right and left of dark brown color, normal structure, measuring 2.0 × 1.0 cm on the right and left, in the section there is a small number of follicular cavities without characteristic content. The thyroid gland is full-blooded, dark red, measuring 3.2×2.0 cm right lobe and 4.5×3.0 cm left lobe. Dense consistency. In section, full-blooded, lobular structure, without hemorrhage. The mucous membrane of the esophagus is pale bluish in color with well-defined folds, on the walls of the esophagus a small amount of solid food masses of white color. No damage. There are no foreign objects in the trachea and bronchi. The mucous membrane is dark red with a small amount of foamy parietal blood. The right and left lungs are emphysematous, airy to the touch, with the presence of a characteristic crepitation crunch. On the posterior surface of the lower lobe of the left and right lungs under the visceral pleura punctate hemorrhages, on the diaphragmatic surfaces of both lungs under the visceral pleura punctate hemorrhages (Tardier spots) (photo 5). In section, both lungs are pink-red, when pressed, a small amount of liquid and foamy blood flows. Heart conical shape, dimensions 13.0×12.0×8.0 cm. In the projection of the left ventricle punctate hemorrhages. Under the epicardium in the projection of the anterior wall of the left ventricle punctate hemorrhages (Tardier spots) (photo 6). A punctate wound (medical manipulation during emergency medical care) was found 1.0 cm from the apex of the heart on the border between the right and left ventricles

Electric mark.

The accident was caused by other specified sources of electric current.

4. Damage by technical current.

Heart failure.

The accident was caused by an electric current from an electric pole.

Circumstances of the case: Body pers. K. was found under an electric pole 7 meters high.

At autopsy: «**External research:** The corpse was delivered in clothes: blue pants, white shirt, black socks. Corpse of a male, young age, body length 170 cm. The body structure is normosthenic, moderately fat. The skin is pale. Corpse spots are well expressed on the back of the neck and back, blue-violet color, when pressed, fade and regain their color after 5 minutes. Corpse cramps are well expressed in all muscle groups. Corpse cooling is well expressed. There is no corpse drying. There are no putrefactive changes. The color of the hair on the head is dark, up to 1 cm long. The bones of the skull are intact to the touch. Cyanosis of the face and neck with small-spot hemorrhages is noted. Eyes closed. Eyes brown, cornea cloudy, pupils on both sides evenly dilated to 0.3 cm, on the sclera of both eyelids small hemorrhages. Bones and cartilage of the nose to the touch of the target. The nasal passages are free. The mouth is open, the mucous membranes of the lips are dark purple, the mucous membranes of the mouth are pale bluish. There are no foreign objects in the oral cavity. Teeth are whole, natural, cariously changed. Tongue along the line of teeth. The auricles are of normal shape, purple-cyanotic color, the auditory canals are free. The shape of the neck is normal, the mobility of the neck is limited. The shape of the chest is normal, the ribs touch the target. On the anterior surface of the thorax along the mid-clavicular line in the projection of III-IV intercostal space on the right and on the anterolateral surface of the thorax along the anterior-axillary line in the projection of V-VI intercostal space on the left are ring-shaped abrasions (traces of action from plates defibrillator). The abdomen at the level of the costal arches, the abdominal wall is elastic. The external genitalia are properly developed, according to the male type. The anus is closed, the skin around it is clean. A punctate wound was found on the anterior surface of the right elbow joint (medical manipulation during emergency medical care). On the anterior surface of the upper third of the right thigh is a wound, zigzag, measuring 9.0×5.05 cm, the edges of the wound are uneven, the ends are slightly rounded, at the bottom of the wound there are tissue membranes. All below are described abrasions striped, brownish-red color with the bottom located below the level of intact skin and are located in the following anatomical areas: in the fronto-temporal area on the left, sizes from 1.0×2.2 cm to 4.0×0.3 cm; in the left parieto-occipital area, ranging in size from 1.0×2.2 cm to 5.0×0.3 cm; on the anterior-inner surface of the middle third of the right forearm, ranging in size from 2.4×0.2 cm to 1.0×0.1 cm; on the posterolateral surface of the upper third of

3. A fracture of one or a few pectoral or lumbar vertebrae

4. Closed injury of pectoral, lumbar or sacral segments for spinal cord

13. II degree burns – over 30% of overall body surface injuries considered to be:

1. Minor trauma
2. Severe trauma
3. Moderate trauma

14. III degree burns – over 20% of overall body surface injuries considered to be:

1. Minor trauma
2. Moderate trauma
3. Severe trauma

15. Grievous non-life-threatening trauma also includes:

1. Injury of a wall of pharynxes, larynxes, trachea, main bronchi, esophagus
2. Loss of any organ (or part of the body)
3. Mental diseases
4. Closed and opened injury of endocrine glands of the neck (thyroid, parathyroid, thymus)

16. Loss of sexual/reproductive function is:

1. Loss of an ability to participate in a coitus
2. Loss of an ability to conceive
3. Injury that led to interruption of pregnancy
4. Loss of an ability to child birth

17. Hearing loss – complete or partial hearing loss of both ears or at a distance more than 3-5 cm from his/her ear

1. Yes
2. No

18. Permanent disfigurement of face can be determined by:

1. Court
2. Forensics expert
3. Plastic surgeon
4. Beautician

19. Simulation is:

1. hiding disease presence
2. exaggeration of symptoms or manifestations of injury
3. recreation of an unexciting disease

4. injuries created artificially using nonhazardous methods

20. Aggravation is:

1. injuries created artificially using nonhazardous methods
2. physical harm to one's own body
3. hiding disease presence
4. exaggeration of symptoms or manifestations of an injury

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Task 8. Describe the research methods and microscopic features of the electrobag:



Task 9. Which of the described situations are life-threatening?

1. The person in hands holds a source of a direct electric current with a voltage of 300 V. It is known: on the average the general resistance of a human body at long action of current on a way of a hand-hand makes 1 kOhm
2. The person in hands holds a source of a direct electric current with a voltage of 400 V. It is known: on the average the general resistance of a human body at long action of current on a way hand-hand makes 1 kOhm
3. The person in hands holds a source of alternating electric current with a voltage of 110 V. It is known: on the average the general resistance of a human body at long action of current on a way of a hand-hand makes 1 kOhm
4. The person in hands holds a source of an alternating electric current with a voltage of 220 V. It is known: on the average the general resistance of a human body at long action of current on a way of a hand-hand makes 1 kOhm

Task 10. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Cerebral edema.
Traumatic brain injury.
Accident due to falling from a height of electrical support.
2. Acute heart failure.
Atmospheric current damage.
The accident was caused by other specified sources of electric current.
3. Acute heart failure.

Task 5. According to the photos, indicate the degree of burns from electric shock:



1. _____



2. _____

Task 6. Describe the signs of lifelong electric shock:

Task 7. According to the photo describe the electric label:



**THEME 4
 GENERAL ISSUES OF FORENSIC MEDICAL TRAUMATOLOGY.
 DAMAGE BY BLUNT OBJECTS. TRANSPORT INJURY. FALLING
 FROM HEIGHT. DAMAGE BY SHARP OBJECTS. FORENSIC
 JUSTIFICATION OF INJURY MECHANISM AND CAUSES OF DEATH**

4.1. General issues of forensic traumatology. Damage by blunt objects.

Task 1. Give a definition:

- Traumatism –
- Trauma –
- Blunt object –
- Blunt weapon –
- Blunt instrument –

Task 2. List the damage caused by blunt objects and describe their morphological features:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Task 3. List the main tasks facing forensic experts in case of damage from blunt objects:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

4.2. Transport Injury.

Task 1. Give a definition:

Car injury –

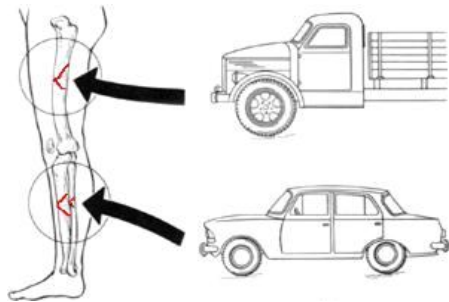
Task 2. Fill in the table the mechanism of formation of damages according to phases of collision of the car with the pedestrian and to give examples of bodily injuries:

Phases of a car collision with a pedestrian	Mechanism	Injuries
I phase		
II phase		
III phase		
IV phase		

Task 3. Schematically describe the phases of moving a car wheel through the human body:



Task 4. According to the schematic image to describe the mechanism of formation of «bumper fracture»:



THEME 8 FORENSIC MEDICAL EXAMINATION OF DAMAGES FROM THE ACTION OF ATMOSPHERIC AND TECHNICAL ELECTRICITY

8.1. Damage from the action of technical electricity

Task 1. Describe current loops (left-right, top row, bottom row) :



Task 2. Describe the arc contact:

Task 3. Describe the step voltage:

Task 4. Describe the features of electric current:

For specific action is characteristic

For nonspecific action is characteristic:

inside of a pale pink color throughout. The bones of the skull are intact, 0.4-0.5 cm thick. The dura mater is intact, with the bones of the skull vault is not fused. Liquid blood in the upper longitudinal sinus and in the sinuses of the skull base. Soft meninges moist, transparent; under it the accumulation of a small amount of colorless transparent liquid. Soft-blooded vessels of uneven blood supply; the vessels of the base of the brain are filled with blood. The gyri of the brain are flat, the furrows between them are somewhat narrowed. The brain tissue is flabby, in the section of uneven, mostly increased blood supply, sticking to the blade of the knife. The substance of the brain does not smell much. In the ventricles of the brain a moderate amount of colorless clear fluid. The tissue of the cerebellum, Varoli's bridge and medulla oblongata is flaccid. The bones of the base of the skull are intact.

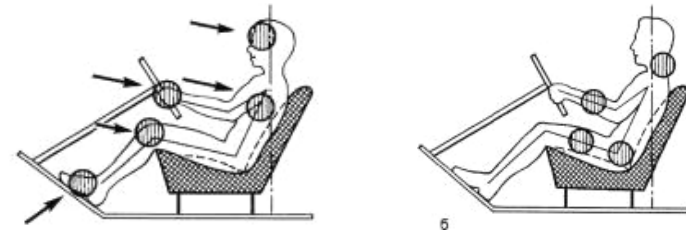
Forensic toxicological data: «Ethyl alcohol was found in the blood at a concentration of 3.03 ‰, in the urine at 3.68 ‰».

Data forensic histological examination: «Compression of the myocardial stroma with cardiomyocyte dystrophy, signs of Osminkin in the lungs, Vishnevsky spots in the stomach with signs of survival, proliferative-dystrophic changes in the epithelium of the tubules of the kidney and testis. Violation of the rheological properties of blood with the separation of formed elements of the blood, small focal loose erythrodiapedesis. Small focal delipidization of adrenal cortex spongiocytes. Small focal pancreatic necrosis with hemorrhagic component. Cardiomyodystrophy, myocardial lipomatosis. Protein hepatocyte dystrophy; chronic persistent hepatitis, incomplete septal cirrhosis».

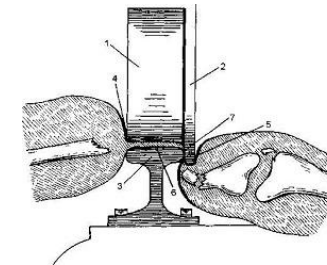
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Task 5. Schematically describe the damage that occurs to the driver in the car:



Task 6. According to the schematic image to describe the mechanism of occurrence of damages arising from a rail injury:



Task 7. List the features of injuries in rail injury:

1. _____
2. _____
3. _____

4.3. Falling from a height.

Task 1. Schematically describe the damage that occurs when falling from a height of their own height:



Task 2. Fill in the table the features of injuries that occur when falling from a height on the head and legs:

Falling from a height on his head	Falling from a height on his feet

Control tests:

1. Injury has such characteristics:

1. Violation of morphological integrity of any tissue
2. It is a result of any disease
3. It is a result of action of environmental factors
4. Violation of physiological function of any tissue
5. It is a result of trauma

2. What is the difference between injury and trauma?

1. Trauma is violation of morphological integrity of tissue only
2. Injury is superficial trauma
3. Injury and trauma are the synonyms
4. Trauma is a deeper than injury
5. Trauma is violation of physiological function of any tissue only

3 Any injury is a result of action of any causative environmental factor on human organism

- Yes
- No

4. Causative environmental factors are following

1. Mechanical
2. Physical
3. Mental
4. Chemical
5. Biological

5. Physical environmental factors of surrounding may be like:

1. Action of high or low temperature
2. Action of high or low barometric pressure
3. Action of mechanical object
4. Action of electricity (atmosphere or technique)
5. Action of ionizing radiation

no free fluid in its cavity. The diaphragm is intact, the costal cartilages are dissected with effort. The sternum is intact. The anterior mediastinum is filled with adipose tissue, without hemorrhage. Lungs after opening of a thorax fill pleural cavities. There are no adhesions and free fluid in the pleural cavities. The core is whole, in its cavity contains about 5 ml of clear colorless liquid. Liquid dark blood is secreted from the cavities of the heart and large vessels. The heart is conical, measuring 13×9×7 cm. The epicardium does not contain a large amount of adipose tissue. There are no hemorrhages on the surface of the heart. The width of the atrioventricular openings on the right is 12 cm, on the left 10 cm. Dark liquid blood is in the cavities of the heart. The muscle of the heart is flat and elastic, in sections of uneven blood supply, reddish-brown, homogeneous. The thickness of the muscle of the left ventricle is 1.5 cm, the right 0.4 cm. Bicuspid and tricuspid, the valves of large vessels are smooth, mobile, well cover the corresponding openings. The inner lining of the heart is smooth, whitish, without hemorrhage. The width of the aorta in the section above the valve is 8.5 cm. The inner shell of the aorta is yellow, smooth. The width of the pulmonary trunk in the section above the valve is 10 cm. The inner surface of the pulmonary trunk is smooth, whitish. The coronary arteries of the heart collapse, their intima is smooth. No hemorrhages were found in the subcutaneous tissue of the neck. The hyoid bone and laryngeal cartilage are intact. Thyroid gland reddish-brown, fine-grained. Tongue without hemorrhage in incisions. The pharynx and esophagus are free, their mucous membrane is pale bluish. The larynx and trachea are free, passable, their mucosa is pale bluish-pink. The lungs are tested to the touch; on the surface of their hemorrhages are not detected. The tissue of the lungs is pink-red in section, with foamy, bloody separation. Examination of the ribs, clavicle, sternum and spine from the chest cavity revealed no damage. The spleen measures 12×10×5 cm. Its capsule is smooth. The consistency of the spleen is elastic, the tissue in the cut is red-cherry, the scraping is moderate. The liver measures 28×20×18×12 cm. Its capsule is thin. The surface is smooth, the consistency is elastic, the fabric in the cut is reddish-brown, full-blooded. The gallbladder contains about 50 ml of olive liquid bile; mucosa of its velvety appearance. In the gastric cavity up to 150 cubic meters. cm light brown liquid mass, with the smell of alcohol. The gastric mucosa is gray-pink, without ulcers, the folding of the mucosa is pronounced; at the tops of the folds are numerous small black and red hemorrhages that are easily removed with a knife. Pancreas dark pink, lobular, increased blood supply. In the intestine the usual contents; its mucous membrane is pale pink, without hemorrhages and ulcers, folds are moderately pronounced. Kidneys measuring 11×7×5 cm. each. The fat capsule is poorly developed, fibrous is easily removed. The surface of the kidneys is generally smooth. Kidney tissue in section of pink-brown color with dark red pyramids. The boundary between the layers is well defined. The pelvis of the kidneys and ureters are free, their mucous membrane is pale bluish. Adrenal glands are leaf-shaped, their layers differ in sections. The bladder contains about 50 ml of yellow transparent urine, its mucous membrane is pale yellow. Soft scalp on the

General hypothermia.

An accident associated with the action of excessively low outside temperatures.

Circumstances of the case: Body pers. M. was found under a balcony on the lawn.

At autopsy: «**External research:** The corpse was taken to the morgue in clothes: a light black jacket with an orange lining, a white T-shirt, dark gray trousers with a brown leather belt, black briefs, black and blue combined sneakers. The clothes are intact, dressed correctly. Male corpse, correct physique, moderate diet. Body length is approximately 176 cm. The skin of the body is generally clean, pale bluish, cold. Corpse clogging is defined and well expressed in all commonly studied muscle groups. Corpse spots are seen on the posterior and partially lateral surfaces of the body, when dosed three times on them, they partially fade and regain their color within 20 minutes. Septic changes are not expressed on the skin. No damage was found on the scalp during examination and palpation. Facial skin is pale bluish. The eyes are closed, the cornea is transparent, the pupils are dilated evenly, the connecting membranes of the eyes are pale pink, without hemorrhage. The cartilage and bones of the nose are not damaged to the touch. The nostrils and ear canals are free. The mouth is closed, the mucous membranes of the lips are bluish. Teeth: natural, without damage. Tongue in the mouth. No injuries were found on the neck, the neck is of normal structure. Chest symmetrical, ribs to the touch of the target. Abdomen at the level of costal arches. The external genitalia are properly developed by the male type; testicles involved in the scrotum. The drain hole is closed, the skin around it is clean. The limbs are properly developed, their bones are not damaged to the touch. On the upper eyelid of the left eye is a spindle-shaped wound measuring 1.2×0.6 cm, with relatively smooth (from 0.3 cm to 0.7 cm) edges, sharp ends focused on 4 and 10 hours of the conventional dial. The bottom of the wound is represented by soft tissues. In the left temporal area there are two abrasions of striped shape, measuring 0.9×0.4 cm and 1.3×0.6 cm, respectively, the surface of these abrasions is covered with a crust of brown-red color, located below the level of intact skin; in the area of the chin in the center of one abrasion of a striped shape, size 4.0×0.7 cm, the surface of the abrasion is covered with a crust of brown-red color, located below the level of intact skin. In the area of the upper lip in the center there is a swelling of soft tissues, on the mucous membrane of this lip in the projection of the swelling, a hemorrhage measuring 2×2.5 cm dark red. No other injuries and features were found during the external examination of the corpse. **Internal research:** At opening of an abdominal cavity the smell of alcohol is felt. The subcutaneous fat layer in the chest reaches 0.4 cm, in the abdomen 1.0 cm. The omentum is poorly developed, covers the loops of the intestine, not fused with the peritoneum and loops of the intestine. The location of the abdominal organs is normal, the stomach and loops of the intestines are swollen. The peritoneum is smooth, without hemorrhages and overlays, there is

6. Anatomical injury has following characteristics:

1. Can be determine by visually
2. Visually morphological violation is absent
3. Can be determine by instrumental investigation
4. Microscopically morphological violation is absent
5. Can be determine by microscopic investigation

7. Fuctional injury may be determine as following:

1. Visually morphological violation is present
2. There are pathological clinical symptoms
3. Visually morphological violation is absent
4. There are changings in clinical analyses
5. There are changings in results of clinical instrumental investigations

8. Blunt object has following general characteristics:

1. Contact surface more than sharp end
2. Contact surface is flat
3. Contact surface may be different
4. Contact surface is rounded
5. Contact surface more than sharp edge

9. Blunt object may be like

1. Upper and low extremities only
2. Head, nails, teeth only
3. Any anatomical part of human body
4. Head only
5. Objects out of human body

10. Contact striking surface of blunt object may be as following:

1. Flat limited
2. Rounded (spherical, cylindrical)
3. Flat unlimited
4. With edge
5. Uncertain

11. Action of blunt object may be such:

1. Cut
2. Blow (impact)
3. Squeezing
4. Tension
5. Friction

12. Such anatomical injuries can produced by blunt object:

1. Commotion of brain
2. Abrasion
3. Bruise
4. Laceration
5. Fracture of bone

13. Abrasion has following characteristics:

1. It is a deep destruction of skin (mucous membrane)
2. Color of skin changes during healing
3. It is a superficial destruction of skin (mucous membrane)
4. Scar is present after healing
5. Scar is absent after healing

14. Abrasion is caused by:

1. Impact of blunt object
2. Squeezing of blunt object
3. Friction of blunt object
4. Tension of blunt object
5. Cut of blunt object

15. In a first few hours (about 3) after trauma surface of abrasion becomes

1. Low than undamaged skin
2. On the level of undamaged skin
3. Dried because of evaporation of liquid and scab formation
4. Higher than undamaged skin
5. Scab begin to fall

16. In a first 12 hours after trauma abrasion

1. Scab on the level of undamaged skin
2. Scab higher than undamaged skin
3. Scab Low than undamaged skin
4. Scab begin to fall
5. Becomes dried because of evaporation of liquid and scab formation

17. In 12-24 hours after trauma surface of abrasion

1. Begin to fall
2. Low than undamaged skin
3. On the level of undamaged skin
4. Becomes dried because of evaporation of liquid and scab formation
5. higher than undamaged skin



5. _____

Task 3. Describe the phases of hypothermia:

Task 4. Describe the signs of lifelong origin of hypothermia:

Task 5. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Cerebral edema.
Multiple organ failure.
General hypothermia.
Accident due to hypothermia.

2. General hypothermia.
Multiple organ failure.
An accident associated with the action of excessively low outside temperatures.

3. Cardiovascular insufficiency.
General hypothermia.
An accident associated with the action of excessively low outside temperatures.

4. Multiple organ failure.



2. _____



3. _____



4. _____

18. In a period more than 24 hours but less than 4 days after trauma abrasion

1. Becomes dried because of evaporation of liquid and scab formation
2. Begin to fall
3. Higher than undamaged skin
4. Low than undamaged skin
5. Low than undamaged skin

19. In a period more than 4-5 days after trauma scab of abrasion

1. Begin to fall off from centre to peripheral zone
2. Fall off completely
3. Begin to fall off from peripheral zone to centre
4. Fall off partially
5. Transforms into scar

20. In a period about 9-12 days after trauma healing is finished and scab of abrasion disappears completely

- Yes
- No

21. Bruise has following characteristics:

1. There is no destruction of skin
2. Blunt object acts by blow
3. There is effusion of blood into tissue from damaged vessels
4. Blunt object acts by friction
5. There is destruction of skin

22. During healing a bruise changes their colour

- Yes
- No

23. In a first few hours (about 3) after trauma colour of bruise becomes

1. Red
2. Greenish
3. Blue-purple
4. Brown
5. Yellow

24. In a period till 4-5 days after trauma colour of bruise becomes

1. Blue
2. Yellow
3. Greenish
4. Red
5. Blue-purple

25. In a period more than 5 days but less than 8 days after trauma colour of bruise becomes

1. Blue-purple
2. Greenish
3. Yellow
4. Red
5. Blue

26. In the middle of 2-nd week bruise disappears completely

- Yes
- No

27. The result of healing of laceration is:

1. Scab formation
2. Red spot
3. Scar formation
4. Blue spot
5. Normal skin because of absent of scar

28. Main signs for laceration are:

1. Red spot
2. Absence of connective tissue intersections (fibrous strands) in a deep of wound
3. Presence of connective tissue intersections (fibrous strands) in a deep of wound
4. Margins are uneven, bruising
5. Presence of hair bridges in a deep of wound

29. Bone fracture according mechanism of formation may be like:

1. Closed
2. Nonclosed
3. Opened
4. Direct
5. Indirect (distance)

30. Biological property that leads to bone damage is:

1. Bone stands to squeezing
2. Bone stands to impact
3. Bone stands to tension
4. Bone does not stand to squeezing
5. Bone does not stand to tension

7.2. Damage from low temperature

Task 1. Describe the degree of frostbite:

For I degree is typical:

For II degree is typical:

For III degree is typical:

For IV degree is typical:

Task 2. According to the photos indicate the degree of frostbite:



1. _____

touch; on the surface of the left lung overlapping threads and films of fibrin whitish-greenish color. Lung tissue in section is dark red, full-blooded, with foamy, bloody separation. Examination of the ribs, clavicle, sternum and spine from the chest cavity revealed no damage. The spleen measures 15 × 11 × 6 cm. Its capsule is smooth, with the imposition of greenish-whitish fibrin films. The consistency of the spleen is dense. Fabric cut red-cherry color, moderate scraping. The liver measures 26×17×15×9cm. Its capsule is thin. The surface is hilly, with the imposition of greenish-whitish fibrin films. The consistency is dense, the tissue in section yellow-gray, low blood supply, coarse-grained. The gallbladder contains about 15 ml of olive liquid bile; mucosa of its velvety appearance. In the stomach up to 250 ml of green liquid mass with mucus, without a special odor. The gastric mucosa is gray-pink, without ulcers, mucosal congestion is not expressed. Pancreas dark pink, lobular, increased blood supply, swollen. In the intestine the usual contents; its mucous membrane is pale pink, without hemorrhages and ulcers, folds are moderately pronounced. Kidneys measuring 14×9×6 cm. each. The fat capsule is moderately developed, fibrous is easily removed. The surface of the kidneys is generally granular. Kidney tissue in section of pink-brown color with dark red pyramids. The boundary between the layers is well defined. The pelvis of the kidneys and ureters are free, their mucous membrane is pale bluish. Adrenal glands are leaf-shaped, their layers differ in sections. The bladder is empty, its mucous membrane is pale yellow. Soft scalp on the inside of a pale pink color throughout. The bones of the skull are intact, 0.4-0.6 cm thick. The dura mater is intact, with the bones of the skull vault is not fused. Liquid blood in the upper longitudinal sinus and in the sinuses of the skull base. Soft meninges moist, transparent; under it the accumulation of a small amount of colorless transparent liquid. Soft-blooded vessels of uneven blood supply; the vessels of the base of the brain are somewhat sclerosed, filled with blood. The gyri of the brain are flat, the furrows between them are slightly narrowed. The brain tissue is flabby, in the section of uneven, mostly increased blood supply, sticking to the blade of the knife. The substance of the brain does not smell much. In the ventricles of the brain a moderate amount of colorless clear fluid. The tissue of the cerebellum, Varoli's bridge and medulla oblongata is flaccid. The bones of the base of the skull are intact.

Data of forensic histological examination: «Macrophage-desquamative alveolitis, focal nephroncrosis, delipidization of cells of the adrenal cortex. Focal hemorrhage into subepicardial adipose tissue without reactive changes, atherosclerosis of the coronary artery with thrombosis, small focal interstitial cardiosclerosis. Focal hemorrhage into the meninges without reactive changes, swelling-swelling of the brain. Mono-multilobular cirrhosis of the liver. Morphological signs of hemorheology disorders in the vessels of internal organs. Purulent-productive inflammation in the skin with signs of epithelialization. Parenchymal dystrophy of internal organs».

4.4. Damage with sharp objects. Forensic justification Mechanism of injury and cause of death.

Task 1. According to the photos describe the features of the cut wound:



Task 2. According to the photo describe the cut wound caused by your own hand:



Task 3. According to the photo identify and characterize stab wounds and stab wounds:



Task 4. List the features of injuries caused by the action of chopping objects:

1. _____
2. _____
3. _____

Task 5. List the signs of vitality of injuries caused by sharp objects:

1. _____
2. _____
3. _____

Task 6. List the signs of vitality of injuries caused by sharp objects:

1. _____
2. _____
3. _____

Task 7. Write questions that are solved by forensic experts during the examination of injuries caused by blunt and sharp objects:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

Control tests:

1. Sharp object has such characteristics:

1. Thin edge
2. Sharp edge
3. Flat limited surface
4. Sharp end
5. Sharp edge and sharp end simultaneously

2. Sharp objects can produced such injuries:

1. Lacerations
2. Stab wound
3. Incised-stab wound
4. Chopped wound
5. Incised wound

3. An incised wound is inflicted by object which has:

1. Sharp edge and sharp end simultaneously
2. Sharp end only
3. Sharp edge only
4. Flat thin limited surface
5. Flat thin limited surface and Sharp edge only

removed into the abdominal cavity. The external genitalia are properly developed in the male type. The drain hole is closed, the skin around it is clean. The limbs are properly developed, their bones are not damaged to the touch. On the anterior-lateral surfaces of the abdomen in the lower third of its size 20×7 cm; on the pubic surface measuring 7×4 cm; on the anterior-inner surface of the right thigh throughout the size of 30×16 cm; on the anterior-inner surface of the left thigh throughout the size of 32×17 cm, in the scrotum with a size of 12×8 cm; on the skin of the penis more on the right, size 8×4 cm, burn surfaces which are presented in the form of black scab above the level of the skin, in places with a wet bottom greenish-pink. No other injuries and other features were found during the external examination of the corpse. **Internal research:** At opening of an abdominal cavity the foreign smell is not felt. The subcutaneous fat layer in the chest reaches 0.5 cm, in the abdomen 2.5 cm. The omentum is moderately developed, covers the loops of the intestine, not fused with the peritoneum and loops of the intestine. The location of the abdominal organs is normal, the stomach and loops of the intestines are swollen. The peritoneum is smooth, without hemorrhages and overlays, there is no free fluid in its cavity. The diaphragm is intact, the costal cartilages are dissected with effort. The sternum is intact. The anterior mediastinum is filled with adipose tissue, without hemorrhage. Lungs after opening of a thorax fill pleural cavities. There are no adhesions in the pleural cavities. The left pleural cavity contains up to 300 ml of yellowish turbid fluid on the left. The core is whole, its cavity contains about 15 ml of clear colorless liquid. Liquid dark blood with loose dark red clots is secreted from the cavities of the heart and large vessels. The heart is bag-shaped, measuring 16×12×8 cm. The epicardium does not contain a large amount of adipose tissue. On the surface of the heart focal large dot hemorrhages of dark red color. The width of the atrioventricular foramen on the right is 12 cm, on the left 10 cm. The cavities of the heart are dilated. Loose blood clots are mixed in the cavities of the heart. The muscle of the heart is flattened, in sections of uneven blood supply, reddish-brown, with multiple layers of connective tissue, evenly distributed in the thickness of the myocardium. The thickness of the muscle of the left ventricle is 1.4 cm, the right 0.4 cm. Bicuspid and tricuspid, the valves of large vessels are smooth, mobile, well cover the corresponding openings. The inner lining of the heart is smooth, whitish, without hemorrhage. The width of the aorta in the incision above the valve is 8 cm. The inner lining of the aorta is yellow, with stony density, covered with ulcers, atherosclerotic plaques. The width of the pulmonary trunk in the section above the valve is 10 cm. The inner surface of the pulmonary trunk is smooth, whitish. The coronary arteries of the heart gape, their lumen is narrowed in some places by 2/3, in places of stone density by atherosclerotic plaques. No hemorrhages were found in the subcutaneous tissue of the neck. The hyoid bone and laryngeal cartilage are intact. Thyroid gland reddish-brown, fine-grained. Tongue without hemorrhage in incisions. The pharynx and esophagus are free, their mucous membrane is pale bluish. The larynx and trachea are free, passable, their mucosa is pale bluish-pink. The lungs are tested to the

Task 7. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Multiple organ failure
Cryptogenic sepsis
Burns by flames of the III B st.
Accident due to fire of clothes.
2. Cardiovascular insufficiency
Sepsis. Multiple organ failure
Burns by flames of the II-III st.
Accident due to fire of clothes.
3. Multiple organ failure.
Cryptogenic sepsis.
Burns by flames II A - III B st.
Accident due to fire of clothes.
4. Cerebral edema.
Multiple organ failure.
Burns by flames of the III B st.
Accident due to fire of clothes.

Circumstances of the case: It is known from the resolution that pers. B. was taken to the burn department on January 28 after being injured on January 27 due to a fire in his clothes from the stove in the country. He was taken to hospital by ambulance. He died on February 16.

At autopsy: «**External examination:** The corpse was taken to the morgue without clothes. Male corpse, correct physique, moderate diet. Body length is approximately 164 cm. The skin of the body is generally clean, pale bluish. Corpse clogging is defined and well expressed in all commonly studied muscle groups. Corpse spots are seen on the posterior and partially lateral surfaces of the body, when dosed three times on them partially fade and restore their color within 16 minutes. Septic changes are not expressed on the skin. No damage was found on the scalp during examination and palpation. Facial skin is pale bluish. The eyes are closed, the cornea is transparent, the pupils are dilated evenly, the connecting membranes of the eyes are pale pink, without hemorrhage. The cartilage and bones of the nose are not damaged to the touch. The nostrils and ear canals are free. The mouth is closed, the mucous membranes of the lips are bluish. Teeth: natural, most of them missing, changed by caries. Tongue in the mouth. No injuries were found on the neck, the neck is of normal structure. Chest symmetrical, ribs to the touch of the target. Abdomen at the level of costal arches; on the anterior-lateral surface of the abdominal wall on the left stands a PVC catheter, the inner end of which is

4. The mechanism of incised wound inflicting consist of:

1. Moving of sharp object
2. Cutting by sharp blade of object
3. Pressing of sharp object
4. Tension of object
5. Blow of object

5. In incised wound:

1. It length is longer than depth
2. Shape is usually spindle-shaped
3. May be greater retraction of the edges in the centre than in.
4. The gaping of margins is larger if cutting is perpendicular to connective tissues fibres.
5. The gaping of margins is not large if cutting is parallele to connective tissues fibres.

6. Stab wound produced by object which has:

1. Sharp end only
2. Sharp edge only
3. Combination of sharp edge and sharp end
4. Some length
5. Some corner

7. The mechanism of stab wound consist of:

1. Stabbing into depth of tissue
2. Cutting by sharp blade of object
3. Moving of sharp object
4. Pressing of sharp object into depth
5. Moving into depth of tissue

8. Stab wound has such morphological parts:

1. Wound of entrance
2. Tissue intersections
3. Wound exit in all cases
4. May be wound exit
5. Wound canal

9. In Stab wound:

1. Margin is clean-cut
2. Have narrow abrasion around the entrance of wound
3. Wound entrance has the Shape corresponding to object
4. Application of substances from surface of sharp object around the entrance of wound
5. Depth is the larger than length on skin

10. Chopped wound inflicted object, having:

1. Flat limited surface
2. Sharp blade
3. A sharp-cutting edge
4. Combination of sharp edge and sharp end
5. Large weight (heavy weapon)

11. Chopped wound has such characteristics:

1. Bone is not damaged
2. The margins show bruising
3. Bone is damaged in all cases
4. The margins show slight abrasion
5. Application of substances from surface of sharp object around the wound

12. Incised-stab wound is produced object, having:

1. Sharp blade
2. Sharp end only
3. Combination of sharp edge and sharp end
4. Sharp edge only
5. Large weight

13. The tailing of the cut wound indicates the direction in which the cut was made

- Yes
- No

14. Self-inflicted wounds have such signs as follows:

1. They are multiple
2. The direction of wound canal corresponds to comfortable position of own hand
3. Placed on one area
4. They are uniform in direction
5. They are parallel to each other

15. The causes of death due to wounds may be:

1. Haemorrhage
2. Sudden death
3. Air Embolism
4. Fat Embolism
5. Blood aspiration (mechanical asphyxia)

brown, fine-grained. Tongue without hemorrhage in incisions. The pharynx and esophagus are free, their mucous membrane is pale bluish. The larynx and trachea are free, passable, their mucosa is pale bluish-pink, slightly swollen. The lungs are tested to the touch; on the surface of their dotted dark red hemorrhages in the area of the roots. Lung tissue in section is dark red, full-blooded, with foamy, bloody separation. Examination of the ribs, clavicle, sternum and spine from the chest cavity revealed no damage. The spleen measures 12×8×5 cm. Its capsule is smooth. The consistency of the spleen is elastic, the tissue in the cut is red-cherry, the scraping is moderate. The liver measures 28×21×17×12 cm. Its capsule is thin. The surface is smooth, the consistency is elastic, the fabric in the cut is reddish-brown, full-blooded. The gallbladder contains about 50 ml of olive liquid bile; mucosa of its velvety appearance. There are traces of greenish liquid in the stomach cavity, without a special smell. The gastric mucosa is gray-pink, without ulcers, mucosal congestion is not expressed. Pancreas dark pink, lobular, increased blood supply, swollen. In the intestine the usual contents; its mucous membrane is pale pink, without hemorrhages and ulcers, folds are moderately pronounced. Kidneys measuring 12×8×5 cm each. The fat capsule is overdeveloped, fibrous is easily removed. The surface of the kidneys is generally granular, with cicatricial indentations. Kidney tissue in section of pink-brown color with dark red pyramids. The boundary between the layers is well defined. The pelvis of the kidneys and ureters are free, their mucous membrane is pale bluish. Adrenal glands are leaf-shaped, their layers differ in sections. The bladder is empty, its mucous membrane is pale yellow. Soft scalp on the inside of a pale pink color throughout. The bones of the skull are intact, 0.6-1.2 cm thick. The dura mater is intact, with the bones of the skull vault is not fused. Liquid blood in the upper longitudinal sinus and in the sinuses of the skull base. Soft meninges moist, transparent; under it the accumulation of a small amount of colorless transparent liquid. Soft-blooded vessels of uneven blood supply; the vessels of the base of the brain are filled with blood. The gyri of the brain are flat, the furrows between them are somewhat narrowed. The brain tissue is flabby, in the section of uneven, mostly increased blood supply, sticking to the blade of the knife. The substance of the brain does not smell much. In the ventricles of the brain a moderate amount of colorless clear fluid. The tissue of the cerebellum, Varoli's bridge and medulla oblongata is flaccid. The bones of the base of the skull are intact.

Data of forensic histological examination: «Violation of hemodynamics and rheological properties of blood with erythrosthosis, separation of blood cells, microthrombi, erythrocyte sludge in the capillary bed. Focal diffuse cardiosclerosis, contractural changes of cardiomyocytes, myocardial lipomatosis. Focal pancreatic necrosis. Swelling-swelling of the brain. Morphological signs of high temperature in skin objects».

burnt. Skin in the head, face, brown-black color, with the imposition of soot. The eyes are closed, the cornea is transparent, the pupils are dull, the connecting membranes of the eyes are pale pink, without hemorrhage. The cartilage and bones of the nose are not damaged to the touch. The nostrils and ear canals are free. The mouth is closed, the mucous membranes of the lips are brownish-black. Teeth: natural, partially absent. Tongue in the mouth. Neck of normal structure. Chest symmetrical, ribs to the touch of the target. Abdomen at the level of costal arches. A surgical wound was sutured 2 cm below the navel. The external genitalia are properly developed in the male type. The orifice is closed, the skin around it is clean. The limbs are properly developed, their bones are not damaged to the touch. The skin in the lower third of the forearms on the left and right with the transition to the palms, on the posterior lateral surface of the lower third of the torso with the transition to the right thigh, reaching the middle third, devoid of gray-red epidermis, with a wet bottom. In the area of the hands on the dorsal surfaces as well as on the inner surfaces of the lower extremities stripe-shaped incisions. No other injuries and other features were found during the external examination of the corpse. Internal examination: At opening of an abdominal cavity the foreign smell is not felt. The subcutaneous fat layer in the chest reaches 1.1 cm, in the abdomen 3.5 cm. The omentum covers the loops of the intestine, not fused with the peritoneum and loops of the intestine. The location of the abdominal organs is normal, the stomach and loops of the intestines are swollen. The peritoneum is smooth, without hemorrhages and overlays, there is no free fluid in its cavity. The diaphragm is intact, the costal cartilages are dissected with effort. The sternum is intact. The anterior mediastinum is filled with adipose tissue, without hemorrhage. Lungs after opening of a thorax fill pleural cavities. There are no adhesions and free fluid in the pleural cavities. The core is whole, in its cavity contains about 5 ml of clear colorless liquid. Liquid dark blood with loose dark red clots is secreted from the cavities of the heart and large vessels. The heart is sac-shaped, measuring 16×12×9 cm. The epicardium contains a moderate amount of adipose tissue. There are no hemorrhages on the surface of the heart. The width of the atrioventricular openings on the right is 13 cm, on the left 11 cm. Elastic blood is mixed in the cavities of the heart. The heart muscle is dense, in sections of uneven blood supply, reddish-brown in color, with layers of connective tissue evenly distributed in the thickness of the myocardium. The thickness of the muscle of the left ventricle is 2.1 cm, the right 0.6 cm. Bicuspid and tricuspid, the valves of large vessels are smooth, mobile, well cover the corresponding openings. The inner lining of the heart is smooth, whitish, without hemorrhage. The width of the aorta in section above the valve is 9 cm. The inner shell of the aorta is yellow, with a large number of flat atherosclerotic plaques. The width of the pulmonary trunk in the section above the valve is 12 cm. The inner surface of the pulmonary trunk is smooth, whitish. The coronary arteries of the heart gape, their lumen is narrowed in some places by atherosclerotic plaques. No hemorrhages were found in the subcutaneous tissue of the neck. The hyoid bone and laryngeal cartilage are intact. Thyroid gland reddish-

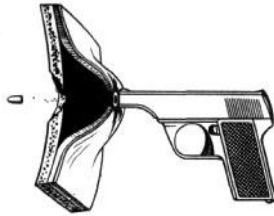
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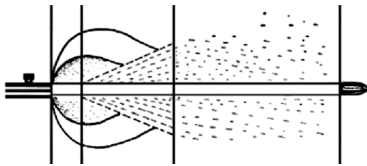
THEME 5
FORENSIC EXAMINATION OF A GUNSHOT WOUND. FORENSIC
EXAMINATION OF A MECHANICAL ASPHYXIA. FORENSIC
JUSTIFICATION OF A MECHANISM OF TRAUMA AND THE CAUSE
OF DEATH

5.1. Forensic examination of a gunshot wound

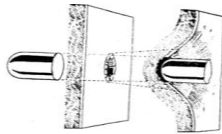
Task 1. Based on pics. presented describe signs of a contact shot:



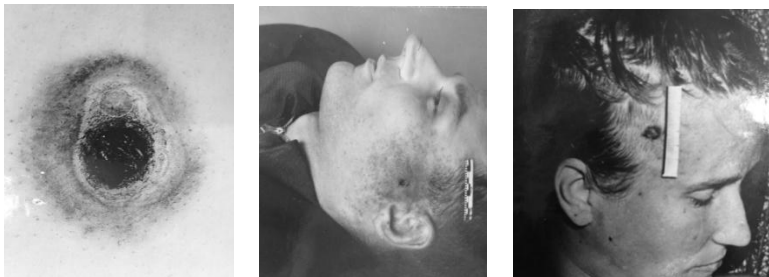
Task 2. Based on pics. presented describe signs of a near-contact wound:



Task 3. Based on pics. presented describe signs of an intermediate-range shot:



Task 4. Based on pics. presented define the proximity of a shot:



Task 4. Describe the signs of lifelong origin of burns:

Task 5. Describe the signs of overheating of the body:

Task 6. Which of the proposed «Medical Certificates of Death» corresponds to the content of the situational task?

1. Thermal burns II B - III st. 65% of the body surface.
Accident due to blast furnace explosion.
Multiorgan failure.
2. Cerebral edema.
Multiple organ failure.
Thermal burns II - III A st. 65% of the body surface.
3. Multiple organ failure.
Thermal burns III B st. 65% of the body surface.
Accident due to blast furnace explosion.
4. Cerebral edema.
Cardiovascular insufficiency.
Thermal burns III A st.

Circumstances of the case: It is known from the resolution that pers. A. was injured in an explosion and fire in the working shop of the Uvazar plant. He was taken to hospital by ambulance. After 2 days in hospital he died.

At autopsy: "External examination: The corpse was taken to the morgue without clothes. Male corpse, correct physique, satisfactory nutrition. Body length is about 180 cm. The skin of the body is generally clean, pale bluish. Corpse clogging is defined and well expressed in all commonly studied muscle groups. Corpse spots are seen on the posterior and partially lateral surfaces of the body, when dosed three times on them do not change their color. Septic changes are not expressed on the skin. No damage was found on the scalp on palpation. The hair is



4. _____

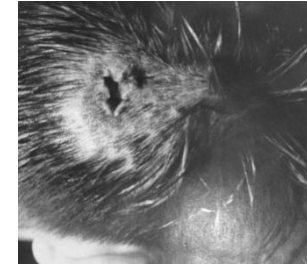
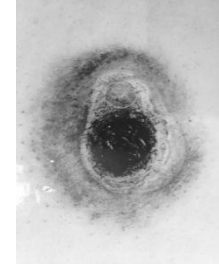


5. _____

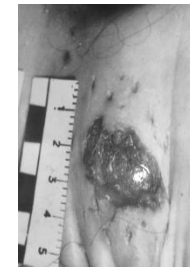


6. _____

Task 5. Based on pics. presented, describe an Entrance and Exit wound:



Task 6. Based on pics. provided define the proximity of each gunshot wound from a hunting rifle:



Task № 7. List laboratory methods used for gunshot wound inspection:

1. _____
2. _____
3. _____

Task № 8. List questions solved by forensics during examination of physical harm caused by guns:

1. _____
2. _____
3. _____
4. _____
5. _____

Task № 9. Describe Savigny-Nekiforov sign:

1. _____
2. _____
3. _____
4. _____

Task № 10. List causes of death (and why did they happened) caused by guns:

1. _____
2. _____
3. _____
4. _____
5. _____

Task № 11. Name characteristics of damage caused by a gunshot to a flat bone and a cylindrical bone:

1. _____
2. _____
3. _____
4. _____

Task № 12. In the table below describe ways to determine whether damage was done while a body was still alive:

Methods	Ways of conduct
Histology	
Histochemical	
Biochemical	

Task № 13. Name damage characteristics of bullet hydrodynamic activity:

1. _____
2. _____
3. _____

Control tests:

1. Gun shot injury is injury on human body due to bullet or part of bullet that receives energy to moving from chemical energy of gunpowder.

1. Yes
2. No

2. According to purposes of using the firearms can be following:

1. Homemade
2. Sport (sport pistols)
3. Battle (pistols, revolvers, carbines ect.)
4. Special (signal or start pistols)
5. Hunting (hunting carbines)

Task 3. According to the photo indicate the degree of burns on the photos:



1. _____



2. _____



3. _____

**THEME 7
FORENSIC MEDICAL EXAMINATION OF DAMAGES
AND DEATH FROM THE ACTION OF EXTREME TEMPERATURES**

7.1. Damage from high temperature

Task 1. Describe the degree of burns:

For I degree is typical:

For II degree is typical:

For III degree is typical:

For IV degree is typical:

Task 2. Fill in the table the percentage of burn area depending on the affected areas:

Affected area of the body	Percent
Head and neck together	
The front surface of the torso	
The back surface of the torso	
Upper limb	
Lower limb	
Perineum (including genitals)	

3. According to the peculiarities of barrel canal the firearms can be following:

1. Battle
2. Factory-made
3. Rifled
4. Homemade
5. Smooth-bore

4. According to the length of barrel the firearms can be following:

1. Middle-barreled (length is about 200-500 mm)
2. Short-barreled (length is about up to 500 mm)
3. Short-barreled (length is about up to 200 mm)
4. Long-barreled (length is 200-500 mm)
5. Long-barreled (length is more 500 mm)

5. Firearms can have different caliber:

1. Large-caliber (over 9 mm)
2. Middle-caliber (4-9 mm)
3. Small-caliber (less 9 mm)
4. Middle-caliber (7-9 mm)
5. Small-caliber (4-6 mm)

6. Firearms cartridge consists of:

1. Firearms case
2. Capsule
3. Cartridge case
4. Gunpowder
5. Bullet

7. Depending of kinetic energy the bullet can demonstrates different type of action:

1. Tangent
2. Explosive
3. Contusion
4. Penetrative
5. Wedge-shaped

8. Hydrodynamic action of bullet is:

1. Ruptures of some inner organs that have rich in fluid
2. Contusion of surrounding tissues
3. Ruptures of some inner organs –that do not have liquid content
4. Ruptures of all inner organs
5. Ruptures of inner organs that have liquid content only

9. Such morphological signs indicate on a gunshot wound origin:

1. Presence of accompaniment component of shot around the entrance wound
2. Presence of weapon near the body
3. Tissue defect (minus-tissue)
4. Presence the bullet near the body
5. Rim of abrasion around the entrance wound

10. Shot from weapon can be produced from such following ranges:

1. Shot from close range
2. Shot from 2 m
3. Shot from contact range
4. Shot from distant range
5. Shot till 1 m

11. Main signs of shot from distant range are following:

1. Tissue defect (minus-tissue) may be manifested if the bullet action is penetrative
2. Absence of accompaniment component of shot around the entrance wound
3. Presence of tissue defect (minus-tissue) in all cases
4. Rim of abrasion around the entrance wound
5. Tissue defect (minus-tissue) can not be present if the bullet action is wedge-shaped

12. Generally the distant range of shot is:

1. Over 1 meter
2. Over 5 mm
3. Over 2 meters
4. From 1 till 2 meters
5. About 2 meters

13. Rim of abrasion around the entrance wound is a result of such contact between bullet and skin as:

1. Blow
2. Cutting
3. Friction
4. Pressing
5. Stretching

14. Contaminating ring around the entrance wound in case on shot from distant shot is a result of:

1. Blow of bullet on skin
2. Accumulation of accompaniment component of shot around the entrance wound

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29. Female Sex origin of blood can be proved using:

1. Examination of erythrocytes
2. Y chromatin
3. Barr bodies in nucleus
4. Examination of Leukocytes
5. Barr bodies near nucleus

30. Male Sex origin of blood can be proved using:

1. Examination of erythrocytes
2. Y chromatin
3. Barr bodies in nucleus
4. Examination of Leukocytes
5. Barr bodies near nucleus

31. Age origin of blood can be found using:

1. Reaction of Precipitation
2. Microcrystal reaction using Teichmann technology
3. Hemoglobin F
4. Microcrystal reaction using Takayama technology
5. Hemoglobin A

32. Time of blood is based on following characteristics:

1. Color after UV lighting
2. Finding of choline esterase
3. Red color
4. Brown color
5. Green color

33. ABO group consist of such following antigens and antibodies:

1. Antigens A and C
2. Antigens A and B
3. Antibodies alpha only
4. Antibodies alpha and beta
5. Antigens O

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3. Contact between bullet and skin during passing of bullet
4. "Schtanz-mark"
5. Contact between barrel and skin

15. Contact range of shot can be like:

1. Partially at an acute angle
2. Non-hermetic if the distance between barrel and skin is more 5 mm
3. Hermetic
4. Non-hermetic if the distance between barrel and skin is not more 5 mm
5. Non hermetic if the gun point located about 5 mm before skin

16. Contact range of shot has following sings:

1. Presence of accompanies component of shot in wound canal
2. Cross-shaped injury
3. Presence of "schtanz-mark"
4. Absence of accompanies component of shot in wound canal
5. Red (pink) color of tissues in wound canal

17. Red (pink) color of tissues in wound canal is a result of:

1. Because of red color of blood
2. Presence of accompanies component of shot
3. Carbon monoxide (CO) due to burning of powder in leck of oxygen
4. Oxygenation of damaged tissues in wound canal
5. Hermetic contact with barrel

18. Close range from weapon is characterized by following signs:

1. Presence of metallization like a accompany component of shot around the entrance wound
2. Tissue defect (minus-tissue)
3. Shot from 5 mm till 2 meters generally
4. Presence of soot like a accompany component of shot around the entrance wound
5. Presence of particles of gunpowder like an accompany component of shot around the entrance wound

19. The "schtanz-mark" is a result of contact between muzzle and skin

1. Yes
2. No

20. Bullet exit wound is characterized by following sings:

1. Defect of "minus-tissue" may be present but less than in entrance wound
2. Irregular shape
3. Absence of a accompany component of shot around the wound

4. Presence of "schantz-mark"
5. Absence of defect of "minus-tissue"

21. Suicide with the use of firearms is characterized by following signs:

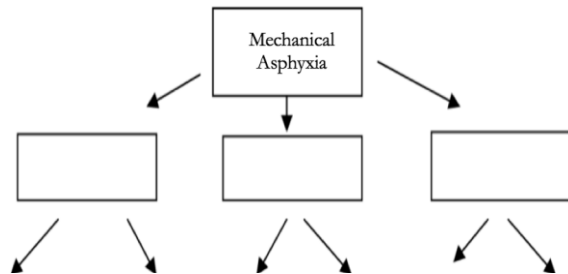
1. One shot only
2. Contact range of shot
3. Shot into mouth, temporal area of head, heart
4. Direction of shot and wound canal correspond to comfortable position of the arm
5. Presence of an accompany component of shot on arm that kept the firearm

5.2. Forensic examination of a mechanical asphyxia

Task № 1. Provide definitions:

- Hangings –....
- Ligature strangling –....
- Airways obstruction with foreign bodies –....
- Compressive Asphyxia –....
- drowning –....

Task № 2. Complete a diagram by adding to classification of Mechanical Asphyxia:



Task № 3. Fill the table with Asphyxia's development stages:

Stage	Pathogenesis
I	
II	
III	
IV	

Task № 4. Fill the table by adding General external/internal signs of Asphyxiation:

External signs	Internal signs

23. In forensic medical immunological branch the presence of blood can be proved using:

1. Biochemical reaction on Hemoglobin
2. Teichmans Microcrystal reaction
3. Spectral investigation on Hemoglobin
4. Takayama Microcrystal reaction
5. Spectral investigation on Hemoglobin derivates

24. Microcrystal using Teichmann technology are:

1. Like parallelograms
2. Hemohromogen
3. Brown color
4. Like needles
5. Hemin hydrochloride

25. Microcrystals using Takayama technology are:

1. Like parallelograms
2. Hemohromogen
3. Hemin hydrochloride
4. Like needles
5. Red color

26. Biological origin of blood means:

1. Origin from human
2. Origin from baby
3. Origin from insects
4. Origin from adult
5. Origin from animal

27. Origin from human is proved using:

1. Immunological reaction
2. Finding of Hemoglobin
3. Reaction of precipitation
4. Microcrystal reaction
5. Finding of Hemoglobin derivates

28. The solving of question about individual belongings of blood is based on:

1. Immunological reaction
2. Blood group from Leucocytes
3. Blood group from erythrocytes
4. Blood group from Trombocytes
5. DNA from nucleus of blood cells

17. Blood sports are sending in such structural subdivisions of bureau like:

1. Laboratory division of bureau
2. Forensic medical cytological branch
3. Department of examination of material evidences
4. Branch of examination of material evidences
5. Forensic medical immunological branch

18. During examination of blood traces from place of incident following questions can be estimated:

1. Biological origin
2. Individual origin (characteristics)
3. Presence of blood
4. Age and sex origin
5. Time of blood

19. On place of incident question about presence of blood can be solve using:

1. Color of spot
2. Finding of Hemoglobin
3. Chemical reactions
4. Finding of Hemoglobin derivates
5. Color after UV lighting

20. During inspection of place of incident Specialist in FM uses following methods:

1. General
2. Biochemical
3. Preliminary
4. Simple
5. Definitive tests

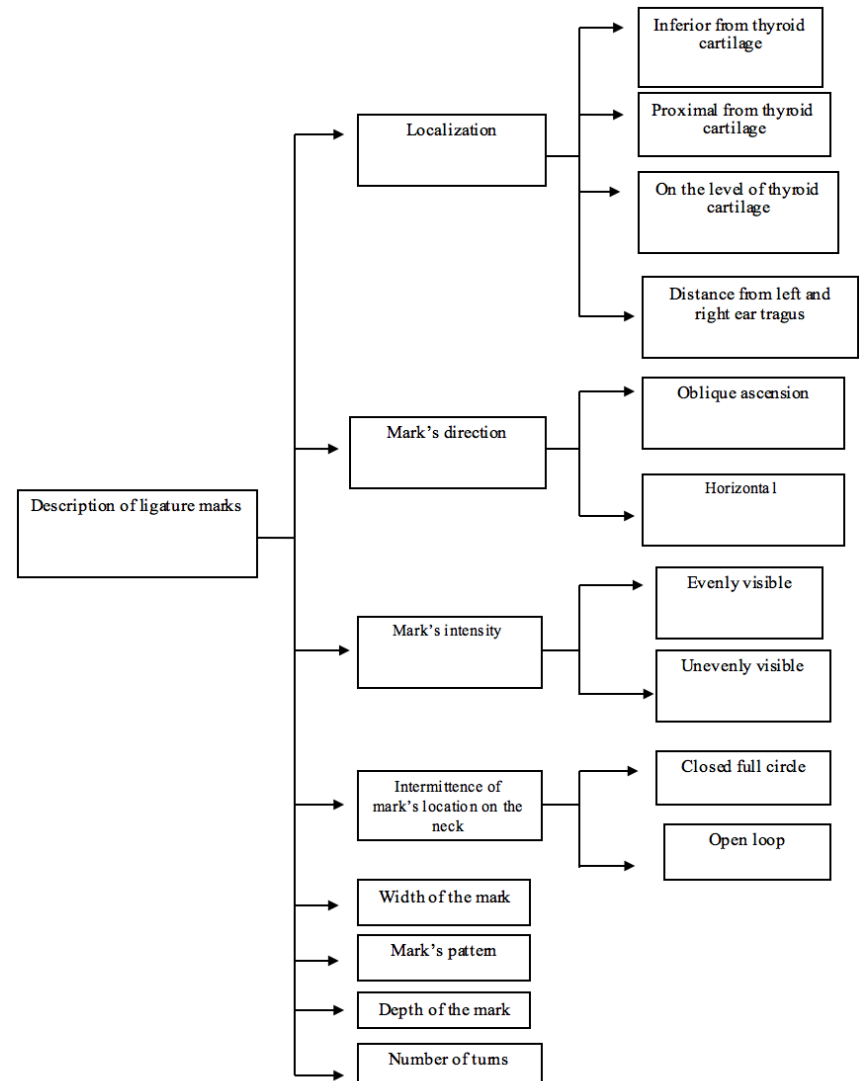
21. Chemical reactions that can be used on blood are following:

1. with H₂O₂
2. with HCL
3. Red color
4. with Luminol
5. with Chromogenic substrate

22. Chemical reactions that can be used on blood are Preliminary only:

1. Yes
2. No

Task № 5. Based on algorithm provided described ligature marks on two given pics. (1, 2) and define a type of a Mechanical Asphyxia:





Pic. 1.



Pic. 2.

Task № 6. Based on pics. (3,4) provided below define and explain the type of Mechanical Asphyxia:



Pic. 3



Pic. 4

Task № 7 List specific signs related to Mechanical Asphyxia caused by chest/abdomen compression:

1. _____
2. _____
3. _____
4. _____
5. _____

Task № 8. Dill the table with signs of drowning and signs a body being in the water:

Body being in the water	Signs of drowning

11. Blood can be presented during inspection of incident like following:

1. Drops
2. Spots from drops
3. Pool
4. Spots from splashes
5. Streaks

12. During inspection of place of incident blood may be find like:

1. Flow mottles
2. Imprints
3. Soakings
4. Stains from pool
5. Strokes

13. During inspection of place of incident we can think about blood using such characteristics as:

1. UV lighting
2. Prasence of Hemoglobin
3. Color
4. Spectral analysis
5. Microcrystal reactions

14. Blood on place of incident can have following color:

1. Green
2. Blue
3. Red
4. Yellow
5. Brown

15. Under UV lighting blood traces may have following color:

1. Green
2. Red
3. Brown
4. Yellow
5. Orange

16. All material evidences of biological origin have to send to bureau of forensic medical expertise in:

1. Wet condition
2. Native condition
3. Dried condition

5. Forensic medical toxicological branch

5. Blood spots, saliva, sperm, hair is investigated in:

1. Forensic Medical immunological department
2. Forensic Medical Laboratory
3. Forensic Medical immunological branch
4. Forensic Medical cytological branch
5. Forensic Medical immunological laboratory

6. Person who take parts in inspection of place of incident is named as:

1. Expert
2. Specialist in Forensic Medicine
3. Forensic Medical Expert
4. Doctor-expert
5. Forensic Expert

7. Specialist in Forensic Medicine may be like:

1. Doctor-expert
2. Expert
3. Nearest Doctor of any curative spatiality
4. Expert in Forensic Medicine
5. Forensic Medical Expert

8. After coming on place of incident he (she) first of all has to:

1. Find blood spots
2. Find of signs of clinical death on corpse
3. Find signs of biological death on corpse
4. Find biological objects
5. Find material evidences of biological origin

9. Finding of Material evidences is performed during such stage on inspection of place of incident:

1. Dynamic stage
2. Static stage

10. The order of work of Specialist in Forensic medicine during inspection of place of incident is following:

1. Take object
2. Prepare to sending
3. Find material evidences of biological origin
4. Make the description of object
5. Help low investigator to compose special questions for expertise

5.3. Forensic justification of a mechanism of trauma and the cause of death

Task № 1. List and explain signs that a body was hanged while still being alive:

1. _____
2. _____
3. _____

Task № 3. List and explain causes of death from different types of Mechanical Asphyxia:

1. _____
2. _____
3. _____

Task № 3. List number of questions to answered by forensics service after Mechanical Asphyxia examination:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Control tests:

1. General external asphyxiation signs are:

1. Cyanotic face (blue face)
2. Livor mortis has dark-purple color
3. Right heart chambers are filled with blood
4. Subconjunctival hemorrhage

2. General internal signs of a mechanical asphyxiation are:

1. Dark-red blood is liquid
2. Subconjunctival hemorrhage
3. Right heart chambers are filled with blood
4. Internal organs are plethoric

3. Specific signs of hanging are:

1. Ligature mark is horizontal
2. Made into a full circle

3. Ligature mark is oblique-ascending
4. Rapture of an intima layer of carotid artery

4. Specific signs of ligature strangulation are:

1. Ligature mark is horizontal
2. Made into a full circle
3. Ligature mark is oblique-ascending
4. Placed on the same level or below cricoid cartilage

5. Rapture of an intima layer of carotid artery named as:

1. Walcher's sign
2. Tardieu's spots
3. Amussat's sign
4. A sign of Kreshevsky

6. Hemorrhage into nodding muscles are:

1. Walcher's sign
2. Amussat's sign
3. Life-threatening severe trauma
4. Tardieu's spots

7. Specific signs of manual strangulation are:

1. Ligature mark is oblique-ascending
2. There are half-moon bruises around the neck
3. Ligature mark is horizontal
4. larynx's cartilages and hyoid have fracture

8. Specific signs of airways obstruction by foreign bodies are:

1. Small hemorrhages on the mucus lining of airways (trachea, bronchi)
2. Walcher's sign
3. Foreign bodies on the mucous layer of airways (trachea, bronchi)
4. Amussat's sign

9. Signs of a body which was in the water:

1. Wet clothes and hair
2. Maceration of skin
3. Diatomic plankton in lungs and in the stomach are
4. There are foam around the mouth

10. Signs of drowning are:

1. Skin's maceration
2. There are foam around the mouth
3. Water in sphenoid sinus
4. Diatom plankton in kidneys and bone marrow

Task 4. Write questions that are resolved by forensic experts during the forensic examination:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Control tests:

1. Any object, any substance, any item that prove any event has such name as:

1. Biological object
2. Proving object
3. Material evidence
4. Forensic medical object
5. Material evidence of biological origin

2. Bureau of Forensic Medical expertise consist of:

1. 5 Branches
2. 3 Departments
3. 5 Departments
4. 5 Laboratory brances
5. 4 Departments

3. Department where material evidences are examined has such name as:

1. Department of FM investigation of Material Evidences
2. Research department
3. Forensic Medical laboratory
4. Special Branch of FM examination of Material Evidences
5. Department of FM examination of material evidences

4. Department of Forensic Medical Examination of material evidences has such structural units as:

1. Department of examination of blood
2. Forensic medical histological branch
3. Forensic medical immunological branch
4. Forensic medical cytological branch

Task 5. Describe the features of DNA testing:

6.2. Forensic research methods.

Task 1. Fill in the table the purpose of using each method of research and give examples:

Research method	Goal	Examples
Spectral method		
Ultraviolet radiation		
Infrared radiation		
Luminescent study		
X-ray method		
Electrographic method		
Pearls' reaction		
Thierman's reaction		
The method of color prints		
Measuring methods		
Photography		
Stereoscopic photography		
Optical methods		

Task 2. List the objects of forensic research:

- _____
- _____
- _____

Task 3. List and justify ways to identify a person by bones:

- _____
- _____
- _____
- _____
- _____
- _____

11. Specific signs of chest and abdomen compression are:

- Ecchymosis mark on upper parts of the body
- Diatom plankton in lungs and in the stomach
- There are foam around the mouth
- Carminic pulmonary edema

12. How many stages of mechanical asphyxia development has:

- 2
- 3
- 5
- 6

13. Is it true that «Mechanical Asphyxia – is a condition of severely deficient supply of oxygen to the body and a rapid accumulation of a carbon dioxide, that happens due to an external mechanical barrier for an air flow through airways»:

- Yes
- No

14. Obstructive mechanical asphyxia are:

- Hanging
- Airways obstruction by a foreign body
- Drowning
- Aspiration by vomit

15. Aspiration asphyxia are:

- Hanging
- Drowning
- Airways obstruction by a foreign body
- Aspiration by vomit

16. The hanging strangulation furrow is always closed?

- Yes
- No

17. Obstructive asphyxia due to category and kind of death can be:

- Murder
- Suicide
- Accident
- Violent death
- Nonviolent death

18. There are signs of in vivo penetration of a foreign body into the respiratory tract:

- Foreign body in the airways

2. Hemorrhage in the mucous membrane in the place of foreign body
3. Swelling of the mucous membrane at the site of foreign body
4. Pulmonary emphysema
5. Tardieu's spots

19. Non-lethal aspiration asphyxia is complicated by such diseases:

1. Pneumonia
2. Pulmonary thromboembolism
3. Pulmonary infarction
4. Atelectasis
5. Emphysema

20. Is it possible to return to life at any stage of mechanical asphyxia?

1. Yes
2. No

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**THEME 6
EXAMINATION OF BLOOD TRACE AND OTHER BIOLOGICAL
OBJECTS (HAIR, SALIVA, FORENSIC CYTOLOGICAL
EXAMINATIONS). MEDICAL AND CRIMINAL RESEARCH METHODS.**

6.1. Examination of traces of blood and other biological objects (hair, saliva, forensic cytology).

Task 1. Give a definition:

Physical evidence –

Task 2. Fill and substantiate in the table the methods of detecting traces of physical evidence of biological origin:

Traces of biological origin	Detection methods
Blood	
Saliva	
Semen	
Sweat	
Hair	

Task 3. Fill in the table the functions of the departments of the forensic bureau, which investigate traces of biological origin:

Branches	Functions
Forensic cytological branch	
Forensic immunological branch	
DNA branch	
Forensic medical criminal branch	
Forensic toxicological branch	

Task 4. Fill in the table the features of animal hair and human hair:

Hair of human origin	Wool of animal origin