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General Hygiene and Ecology of  
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**SITUATIONAL TASKS ON EXAM "Hygiene and Ecology"  
for training second (master's) level of higher education  
Knowledge 22 "Health"  
Specialty 222 "Medicine"**

**Situational task 1**

In a boarding-school during conducting of inspection after the personal hygiene rules observance it was exposed, that 10% of students of the 11<sup>th</sup> year of study wore linen worn next to the skin made of nylon, the second layer of clothes - of lvasan, leather shoes with narrowed socks, height of heels 5-7 cm.

1. Which layer of clothes does not correspond to the hygienic requirements?
2. Give hygienic recommendations in relation to quality of fabrics of the worn next to the skin linen?
3. What negative consequences can follow the use of the given shoes?

**Situational task №2**

While working with the radioactive cobalt ( $\gamma$  – constant radionuclide 13.2, its activity is equal to 5 mKi at 1 metre distance within 20 hours per week), the workman is exposed to radiation.

1. Calculate the external irradiation dose per a week, for a year.
2. Count up the permissible time of work of a worker throughout a year.

**Situational task №3**

A hospital consists of a main building in which surgical and therapeutic department are located, and a few smaller departments are intended for infectious, maternity and children's departments. The therapeutic department consists of two ward sections for 40 beds. A ward section consists of one 1-bed, two 2-bed, four 4-bed and three 6-bed wards, and also of the manipulation and procedure room (5-7 m<sup>2</sup>). The area for one bed in all wards is 5 m<sup>2</sup>. Windows of 60 % of wards are faced towards the north. Determine the systems of hospital building, give hygienic assessment to ward section planning, windows orientation of wards, correspondence of the hospital planning to sanitary requirements.

**Situational task №4**

Give hygienic estimation of daily regimen of a 4-year pupil: waking up at 7<sup>00</sup>, preparation of his homework - 3 hours, watching TV - 2 hours, playing games – 2 hours, supper - at 20<sup>00</sup>, going to bed at 24<sup>00</sup>.

**Situational task №5**

Drinking water contains 20,5 mg/dm<sup>3</sup> nitrates, 0,2 mg/dm<sup>3</sup> fluorine, 0,2 mg/ dm<sup>3</sup> iron, general hardness – 7 mmol/dm<sup>3</sup>, general microbic number 110 CFU/sm<sup>3</sup>. Draw a hygienic conclusion of this data of situational task about a danger for the population of the prolonged consumption of the drinking water.

**Situational task №6**

The erythemal dose of UV-radiation by the lamp LE – 30 is provided during 2 min at the distance 0,5m from the source. Calculate the exposure time of the irradiation required to receive the prophylactic dose at a distance 4 m from the source.

#### **Situational task №7**

For sanitation of the air in a school classroom (area 50 m<sup>2</sup>, height 3,5 m) in the period of flu a standard mercury-quartz lamp was used during 1 h. The air volume before and after irradiation carried out by Krotov's device (speed of air aspiration 20 l/min for 10 min) on meat-peptone agar with subsequent thermostat during 24 h. Give a hygienic estimation of efficiency of sanitation, if 65 colonies were grown before, and 12 - after the sanitation.

#### **Situational task №8**

In hospital surgical department air oxidizing is 8 mg O<sub>2</sub>/m<sup>3</sup>, the concentration of CO<sub>2</sub> is 1.07%, the total microbial contamination in the range (1500 in m<sup>3</sup>). Give sanitary and hygienic conclusions about the quality of air environment of the surgical department.

#### **Situational task №9**

The hygienic inspection of the therapeutic department found that the transitional season air microclimate characterized by temperature 17°C, the radiation temperature of the walls 15°C, relative humidity 70%, air velocity 0.25 m/s. The vertical daily fluctuations of temperature ± 2.5°C, horizontal fluctuations of temperature ± 3°C, the daily fluctuations of temperature 6°C. The concentration of carbon dioxide in the air during the inspection was 1.2%.

1. To assess microclimatic parameters in the therapeutic department.
2. Which changes in the body may cause personnel stay in rooms?
3. Give advice to improve hygienic indices of microclimate.

#### **Situational task №10**

A 32-year-old woman, body weight 60 kg, height 1.68 m, physical activity group III. Calculate the average daily energy and individual needs in basic food substances (proteins, fats, carbohydrates).

#### **Situational task №11**

For the drinking water-supply is used the water which contains 15 mg/dm<sup>3</sup> nitrates, 3,5 mg/ dm<sup>3</sup> fluorine, copper 0,9 mg/ dm<sup>3</sup>, general hardness – 5 mmol/dm<sup>3</sup>, taste – 4 marks, intestinal helminths – 3 in 50 m<sup>3</sup>. E.coli – 50 CFU/100 sm<sup>3</sup>. Draw a hygienic conclusion of this data of situational task about a danger for the population of the prolonged consumption of the drinking water

#### **Situational task №12**

Assess physical development of a 12-year-old girl by regression scale. Anthropometric data: body length 158 cm, weight - 45, 5 kg, chest - 70.9 cm. Height scale regression indicates that at the height of 158 cm body weight should be 47.9 kg, the sight of the chest - 75.2 cm. Shares sigma regression coefficients for body weight and shape of the thorax respectively equal to 5.93 and 5.09.

#### **Situational task №13**

A 20-year-old man, weight 70 kg, height 1.70 m, physical activity group I. Identify the average daily energy and individual needs in basic food substances (proteins, fats, carbohydrates).

#### **Situational task №14**

During examination of people living in arid tropic region the following symptoms was found: dark yellow teeth pigmentation, diffuse osteoporosis of bone apparatus, ossification of cartilages, ossification of joints, functional disorders of the CNS.

1. What does this condition cause?
2. What preventive measures of water quality improvement do you suggest?

#### **Situational task №15**

Among the population of settlement the pigmentation enamels of teeth are exposed, which shows up appearance of yellow-brown spots, there are the cases of generalization osteosclerosis. Origin of these symptoms of connected with consumption of water from an artesian mining hole. It is set at laboratory research of test of water: iron – 0,004 mg/dm<sup>3</sup>, fluorine – 5 mg/dm<sup>3</sup>, nitrates – 47 mg/dm<sup>3</sup>, lead – 0,001 mg/dm<sup>3</sup>, sodium – 15 mg/dm<sup>3</sup>, sulfates – 200 mg/dm<sup>3</sup>.

1. Assess the water quality and decide whether water is good for drinking purposes.
2. What disease can cause the consumption of such water?
3. What prophylactic measures need to be conducted.

#### **Situational task №16**

In the M. town was discovered the pigmental enamel of teeth, which shows up chalk-similar or yellow-brown spots, general osteosclerosis with the calciphycation of intra-vertebral ligaments. These symptoms correlate with the consumption of water from an artesian sources. After laboratory research the tests of water are set: iron – 0,004 mg/dm<sup>3</sup>, fluorine – 5 mg/dm<sup>3</sup>, nitrates – 47 mg/dm<sup>3</sup>, lead – 0,001 mg/dm<sup>3</sup>, sodium – 15 mg/dm<sup>3</sup>, sulfates – 200 mg/dm<sup>3</sup>.

1. Content of what chemical element does not correspond to State sanitary rules and norms № 400, 2010?
2. What disease can cause the consumption of such water?
3. What prophylactic measures need to be conducted.

#### **Situational task №17**

Class room for high school students of secondary school has an area of 40 m<sup>2</sup>. In classroom 34 students enrolled. The room is 6,2 m length and 6.45 m width. Give hygienic assessment of compliance planning a class for students.

#### **Situational task № 18**

School for 489 students located within the neighbourhoods. Territory enclosed with lattice. In the section is sports court, training, and research economic zones. The area of landscaping is 25% of the area. The distance from the building to the red line of 28 m. Ways to approach students cross of main streets roadway. Training facilities are located on one longitudinal wall of the corridor, and the other side towards to sun. Dedicate educational sections for students 1-4 classes, 5-9 classes, 10-11 classes. Evaluate plan and a set of school premises – give recommendations.

#### **Situational task №19**

Pupils of the III class, in 3% of pupils marked myopia, 2% - the first stage of scoliosis. During the checking of class were found: class area is 32 m<sup>2</sup>, pupils are 35. There are 4 rows of desks, 25% of desks do not meet the pupils length, the first desk at 1 m from the board, the light from the windows falls on the left, LC – 1/8, DF -1.18%. Give hygienic conclusion of equipment of the classroom, give recommendations to optimize studying conditions.

#### **Situational task №20**

The land area of a district hospital for 150 beds makes 225 000 m<sup>2</sup>. 17% of the territory is occupied by buildings, 58% - by greenery (parks, gardens). The hospital area has four entrances. Wards buildings

are located at the distance of 20 m from the nearest habitation. Distances between wards buildings constitute no more than 20 m. Give hygienical estimation to this hospital area, its planning and correspondence of the hospital planning to sanitary requirements, offer sanitary measures.

#### **Situational task №21**

An operating-room is situated on floor of surgical department in blind alley with sluice near entrance and consist of septic and aseptic operating-room. X-ray cabinet of dentistry polyclinic is situated in basement-premises of dwelling house. To give hygienic estimation of planning of hospital's separate department, to propose health-improvement measures.

#### **Situational task №22**

The data of soil analysis, selected from the territory of the school playground: the coli-titer - 0.01, titer anaerobes - 0,001, the number of eggs of worms - 70 in 1 kg, the natural level of radiation activity in the soil exceeded 2 times, the lead content is at 30 LPC. Make a conclusion about the state of the soil contamination.

#### **Situational task №23**

Analysis of soil showed the presence of pesticides in it: karbofos 13 mg/kg (LPC = 2 mg/kg), dilor 6.5 mg / kg (LPC =0.5 mg/kg). Make a conclusion about the degree of soil contamination by pesticides.

#### **Situational task №24**

In dental-technical laboratory concentration of mercury, metilmetacrilat and CO are more than LPC in air of work zone, temperature of air 26<sup>0</sup>C– 28<sup>0</sup>C, humidity 30 %, on work desk of dental technicer drawing don't work, noise is more than LPL.

1. Which diseases dental-technician can have?
2. Which LPC of that chemicals, microclimate indexes is and LPL of noise must be in that laboratory?
3. Which general and individual prevention against influence of production harmfuls to organism and sanitation.

#### **Situational task №25**

For the water-supply is used the water which contains 65 mg/dm<sup>3</sup> nitrates, 2,5 mg/ dm<sup>3</sup> fluorine, copper 1,3 mg/ dm<sup>3</sup>, general hardness –5 mmol/dm<sup>3</sup>, taste – 3 points, intestinal helmint – 5 in 50 m<sup>3</sup>. E.coli – 40 CFU/100 sm<sup>3</sup>. From data of situation task do a sanitary-hygienic conclusion about a danger for the population of the consumption of the given water.

#### **Situation task №26**

By the sanitary-epidemiological station in the summer received an urgent message about the mass illness of children in sanatoria. The disease started 3-4 hours after dinner. In 110 children were headaches, nausea, vomiting, severe pain into epigastric and the abdominal pain, diarrhea. Body temperature was normal or low-grade, a few children 38,0-38,5 ° C. As a result sanitary and epidemiological investigation found that for a celebratory dinner before the kids prepare cakes custard, which kept the morning into refrigerator, and from morning to afternoon - at the confectionery shop. Established that after midnight were disconnected the flow of electric current to the resort for 4 hours. At the medical examination cooks found that cook had catarrhal symptoms of upper respiratory tract.

1. What do you think food poisoning occurred in this case?
2. Name the reasons that led to of food poisoning.
3. Name the the principles of prevention of food poisoning of microbial etiology.

#### **Situational task №27**

The patient had clinical features present: insomnia, depression, irritability, dry and cyanosis, dry tongue, bright red, painful, cracked nipples, hypotrophy, flaky skin. Laboratory data: content in the blood: Vitamin C - 30 mmol /l, pyridoxine - 0.4 mmol /l, niacin - 4 mmol /l in the daily urine: N-methyl nicotine amide - 9mmol, Vitamin C - 75 mmol.

1. Lack of vitamins, which have caused the emergence of the symptoms.
2. Give recommendations for alimentary prevention of this condition of the patient.

#### **Situational task №28**

A girl 12 year old has physical development "below average", frequent acute respiratory diseases, heart disease is formed, rheumatism in remission stage. Test dosed physical activity: heart rate, respiratory rate and blood pressure came to normal within 12 minutes after the test. Which group of health should include a girl?

#### **Situational task №29**

Dentist feels headache, weakness after working in polymerizing-room of dental laboratory. Carboxyhaemoglobin was determined in dentist's blood. Give a hygienical estimation of the quality of air environment of the room. Give recommendations for prevention.

#### **Situational task №30**

A man gets 70 grams of protein with a daily diet. The ratio between proteins, fats and carbohydrates is 1:1:5. How much fats (g) and carbohydrates (g) in the diet of man?

#### **Situational task №31**

In a town was discovered the pigmental enamel of teeth, which shows up chalk-similar or yellow-brown spots, general osteosclerosis with the calcification of intra-vertebral ligaments. These symptoms correlate with the consumption of water from an artesian sources. After laboratory research the tests of water are set: iron – 0,004 mg/dm<sup>3</sup>, fluorine – 5 mg/dm<sup>3</sup>, nitrates – 47 mg/dm<sup>3</sup>, lead – 0,001 mg/dm<sup>3</sup>, sodium – 15 mg/dm<sup>3</sup>, sulfates – 200 mg/dm<sup>3</sup>.

1. Content of what chemical element does not correspond to State sanitary rules?
2. What disease can cause the use of such water?
3. What prophylactic measures need to be conducted.

#### **Situational task №32**

Surgeon of dentistry clinic stands 80% of work time, 40% from them he is situated in statical fixal pose. Every 1,5-2 hours of work and after every operation he has 10-15-min. of break. In operating-room temperature 24-25 °C in summer, 17-18 °C in winter, humidity 55%, speed of air 0,15 m/sec. In air of operating-room content CO<sub>2</sub> -1,1%. To define character of work regime and work condition action on surgeon's health and propose sanitation measures.

#### **Situational task №33**

5 persons diagnosed with the disease in 12 hours after eating cooked meat, salad from cucumbers and the canned homemade mushrooms. Clinical symptoms: weakness, vomiting, diarrhoea, body temperature is normal, after 6 h. appeared dry mouth, difficulty swallowing, hoarse voice, drooping eyelids. Which of food poisoning typically has these clinical signs? What could cause of food poisoning? List the prevention of this disease.

#### **Situational task №34**

Surgeon of hospital stands 80% of work time, 40% from them he is situated in statical fixal pose. Every 1,5-2 hours of work and after every operation he has 10-15-min of break. In operating-room

temperature 24-25°C in summer, 17-18°C in winter, humidity 55%, speed of air 0,15 m/s. In air of operating-room content CO<sub>2</sub> -1,1‰. General artificial illumination - 300 lk, illumination of operating field – 3000 lk.

To define character of unfavourable action of work regimen and resting, work condition to surgeon's health and to propose sanitation measures. To give hygienic estimation of hospital's sanitary regime, to propose sanitation measures.

#### **Situation task №35**

An operating-room has: 2 operating-tables, square 30 m<sup>2</sup>, height 3 m, 1 window 2,5 x 2 m to north-east, artificial ventilation with air-exchange 1,5 time per hour. Does operating-room correspond to hygienic norms?

#### **Situation task №36**

Allowable daily intake of nitrates is 5 mg/kg. With daily food rations a child with body mass 20 kg received 300 mg of nitrate (acceptable daily intake for an adult).

1. Calculate the actual daily dose of nitrate that got a child.
2. What disease can cause excessive revenues nitrates and nitrites into the body of the child.
3. What are the most basic principles of prevention of food poisoning that may be caused by chemical substances?

#### **Situational task №37**

The land area of a district hospital for 150 beds makes 2.25 hectares. 17% of the territory is occupied by buildings, 58% - by greenery (parks, gardens). The hospital area has four entrances. Wards buildings are located at the distance of 20 m from the nearest habitation. Distances between wards buildings constitute no more than 20 m. Give hygienic estimation to this hospital area, its planning and correspondence of the hospital planning to sanitary requirements, offer sanitary measures.

#### **Situational task №38**

In the air casting dental laboratory number silicon containing dust with the size 5 micron to several times higher than normal, CO<sub>2</sub> is 2%, mercury - 0,001 mg/ m<sup>3</sup> (MPC - 0.01 mg/m<sup>3</sup>), lead - 0,001 mg/m<sup>3</sup> (MPC - 0,01 mg/m<sup>3</sup>), oxidation - 8 mg/m<sup>3</sup>, total microbial contamination - 3500 m<sup>3</sup>, the number of hemolytic Staphylococcus - 24 in m<sup>3</sup>.

1. According to the situational task give hygienic evaluation of air working environment.
2. Specify the disease may develop.
3. Provide hygienic evaluation of the results.

#### **Situational task №39**

Parents and two children 6 and 8 years old were hospitalized with infectious diseases. Clinical picture: general weakness, dizziness, vomiting, pain into the stomach, pale skin, weak pulse, bradycardia. After providing medical condition has improved parents, children remained in serious condition. On the second day into children yellowed sclera, skin face and body, there was severe headache. After appropriate treatment within 20 days of the children recovered. Since history was that the disease started after 8 hours after consumption of fresh mushrooms, which was bought in the market. Mushrooms roasted in butter without any additional pretreatment.

1. Give a conclusion about the nature of disease and cause.
2. What actions doctors have to be done in this situation?
3. Name the prevention of similar illnesses.

#### **Situational task №40**

An adult carries 18 respiratory movements during 1 min with a volume of 0.5 liters each. Calculate hour exhale air volume and content of carbon dioxide, if the average percentage of CO<sub>2</sub> in exhaled air is 4.18%.

#### **Situational task №41**

Dentist feels headache, weakness after working in polymerizing-room of dental laboratory. Carboxyhaemoglobin was determined in dentist's blood. Give a hygienical estimation of the quality of air environment of the room. Give recommendations for prevention.

#### **Situational task №42**

Determine (by calculation) the safe activity of the gamma-irradiation source while working with Co<sup>60</sup> (K $\gamma$  – 13,2) in the distance of 1 m within a 27-hour working week.

#### **Situational task №43**

Determine (by calculation) the safe permissible period of time (within the week per year) while working with the gamma-irradiation source; its activity is equal to 5 mg/ekv of radium in the distance of 1 meter.

#### **Situational task №44**

Determine the safe permissible distance while with the gamma-irradiation source; its activity is equal to 1,25 mg/ekv of radium. The duration of the working hours within the year is equal to 1000 hours.

#### **Situational task №45**

Determine the permissible dose capacity at the place of work of  $\chi$ -ray specialist (roentgenologist), mber/h, taking into account that the duration of the working week is equal to 25 hours.

#### **Situational task №46**

While working with the radioactive cobalt ( $\gamma$  – constant radionuclide 13,2), its activity is equal to 5 mKi at 1 metre distance within 20 hours per week, the workman is exposed to radiation. Calculate the external irradiation dose for a week, for a year.

#### **Situational task №47**

Medical personnel of the X-ray department of a hospital while working with  $\gamma$  -irradiation sources with the activity 5mg/ekv of radium on 0,5 metre distance. The duration of a working week of a medical personnel is equal to 20 hours; 50 working weeks a year.

1. Calculate the annual dose of irradiation for the medical personnel.
  2. Indicate (write down) the effective limit dose of irradiation for medical personnel.
- Estimate the annual irradiation dose for medical personnel.

#### **Situational task №48**

The X-ray room for general examination is situated on the ground floor of the polyclinic has treatment room (20 m<sup>2</sup>), control panel room (6 m<sup>2</sup>), photolaboratory (10 m<sup>2</sup>), xerolaboratory (12 m<sup>2</sup>). The radiation monitoring reveals that the power of irradiation in the treatment room is equal to 17mR/h. The following protective means for X-ray specialist are available in the X-ray room: lead-saturated glass, that protects the fluorescent screen, small protective screen, individual protective means – gloves, lead-saturated rubber apron (in textile cover).

- 1) Give an estimation of a hygienic condition and organization of the antiradiological protection of the physician in the X-ray room;

Make conclusions and give necessary recommendations as to the equipment of the X-ray room.

#### **Situational task №49**

The X-ray room of the district hospital consists of the treatment room (30 m<sup>2</sup>); control panel room (4 m<sup>2</sup>), photolaboratory (4 m<sup>2</sup>) the consulting room of the physician (X-ray specialist) (6 m<sup>2</sup>) reception ward (4,8 m<sup>2</sup>). Ventilation in the treatment room – natural plenum-exhaust, with ventilation dust near the floor and near the ceiling (height 3m). In order to protect the X-ray specialist, the lead-saturated glass with 10mm thickness and small protective screen with the lead-saturated rubber with 4mm thickness.

- 1) Determine whether the hygienic norms and working conditions of the medical personnel in the X-ray room of the district hospital meet the requirements;
- 2) Propose (if it necessary) the well-grounded recommendations as to the optimization of conditions in the X-ray room.

#### **Situational task №50**

In radiological department of the hospital and in premises – the permanent place of the medical personnel (i.e. treatment room in particular), the actual power factor dose of irradiation is equal to 6,8mP/h, the distance of screen to X-ray tube – 2m, anode current – 3mA.

- 1) Calculate the coefficient of irradiation reduction;
- 2) Point out the permissible of power factor of the irradiation dose in the exact premises.

Make the hygienic evaluation of the radiological situation in the department.

#### **Situational task №51**

The industrial workers execute their function (if the work is not heavy) in working uniforms. The air temperature in the shop is equal to 38°C, relative humidity – 70%, air velocity (speed) 0,4 m/s. name the textile which is the most suitable for clothes that can provide the heat comfort to workers.

#### **Situational task №52**

Give hygienic estimation of the basic treatment properties of students according to the data of the situational task.

While testing the medical students in order to determine the temperament properties, the following rules are obtained: extraversion–6 grades, rigidity of nervous processes–10 grades, emotional excitability–17 grades, reaction tempo–15 grades, activity– 9 grades, frankness–15 grades.

#### **Situational task №53**

While testing the patient K after V.M. Rusalov's questionnaire the following results were obtained: extraversion–20 grades, rigidity of nervous processes–5 grades, emotional excitability–10 grades, reaction tempo–19 grades, activity–25 grades, frankness–14 grades. Be ready to substantiate the hygienic conclusion as to the leading properties of temperament of a person under examination.

#### **Situational task №54**

Make a hygienic evaluation of types of daily curves of biological rhythms taking into consideration the body temperature and heart beat rate of a medical student if the body temperature at 8<sup>00</sup> was 36,3C, his heartbeat rate was equal to 74 beats per minute, at 12<sup>00</sup> – his body temperature was equal to 36,4C, his heartbeat rate – 70 beats per minute, at 20<sup>00</sup> – his body temperature – 36,6C, his heartbeat rate was equal to 76 beats per minute.

#### **Situational task №55**

A female patient addressed the neuropathologist with complaints: bad sleep, overirritation, undue fatigability and poor working, capacity. She suspected that her general malaise and fatigue and other disorders were due to changes in her work regime; that is when she was transferred from the first shift to the third one.



1. Make evaluation of the desynchronous form of the patient;
2. Give recommendations as to the preventive measures concerning the development of the pathological condition.

#### **Situational task №56**

The industrial workers execute their function (if the work is not heavy) in working uniforms. The air temperature in the shop is equal to 38°C, relative humidity – 70%, air velocity (speed) 0,4 m/s. name the textile which is the most suitable for clothes that can provide the heat comfort to workers.

#### **Situational task №57**

On land plot of municipal hospital of general type on 500 beds by an area 40000 m<sup>2</sup> distinguished next zones: curative building for noninfectious patients, curative building for infectious patients, polyclinic, morbid anatomical building, economic, and also general for both curative building park and garden zone by an area 5000 m<sup>2</sup>. Percentage of building's area is 25%, greenery planting is 40%. Give a hygienic estimation to the area of land lot, planning of the hospital, offer sanitary measures.

#### **Situational task №58**

A hospital consists of main building with surgical and therapeutic departments, and a few smaller houses intended for infectious, maternity and children's departments. A therapeutic department consists of two wards sections for 40 beds each. A ward section consists of one-bed, 2 two-beds, 4 four-beds and 3 six-beds wards, and also medical consulting room and procedure room. An area per one bed in all wards equals 8 m<sup>2</sup>. The windows of 60% wards are oriented to the north.

To give the hygienic estimation of area a hospital, define a construction system, give the hygienic estimation of planning of the ward section, sanitary equipment of hospital wards.

#### **Situational task №59**

The area of land lot of district hospital on 150 beds is 2,25 hectare. The hospital site housing density is 17 %, green area is 58 %. A hospital area has four entrances. Hospital buildings are located in the distance of 20 m from the nearest dwelling-houses. The distances between the hospital buildings are no more than 20 m. Give a hygienic estimation of the area of land lot, planning and sanitary equipment of a hospital, offer recommendations as to the optimization of planning.

#### **Situational task №60**

The admission department of multilateral municipal hospital consists of separate departments for the reception of somatic, infectious patients, pregnant and children. A reception and sanitization of pregnant in the obstetric department come true in one stream. Patients with suspicion on particularly dangerous infections are hospitalized in a box of infectious department, passing an admission department; sanitary treatment of these patients is executed in sanitary unit of the box. Give the hygienic estimation of organization of work of admission department of the hospital.

#### **Situational task №61**

A surgeon of a district hospital 80 % of working day is in a standing posture, upright, about 40 % of them - in the static fixed pose. Each 1,5-2 hours of work and after every operation he has a rest during 10-15 minutes. From data of territorial sanitary-and-epidemiological service temperature in an operating-room in summer is 24-25°C, in winter is 17-18°C, relative humidity is 55 %, rate of movement of air a 0,15 m/s. In air in an operating-room at the end of operation, content of carbon dioxide is 1,1%, microorganisms - 1500 m<sup>3</sup>, concentration of nitrous oxide is 6-10 mg/m<sup>3</sup> and ftorotan is 30 mg/m<sup>3</sup>. General artificial lighting of operating-room presents 300 lux, luminosity of the operating field - 3000 lux.

Define character of unfavorable influence of the working conditions on the state of health of the surgeon and offer health preventive measures. Give a hygienic estimation and offer preventive measures in relation to optimization of the sanitary mode of the hospital.

#### **Situational task №62**

An operating-room of general-surgical profile has an area 36 m<sup>2</sup>, is equipped by two operating tables. General luminosity is 400 lux, luminosity of the operating field is 5000 lux, windows of the operating-room are turned to south-west, ventilation of the operating-room is conducted due to artificial outlet ventilation. Give a hygienic estimation and offer health preventive measures in relation to optimization of planning and sanitary equipment of the operating-room.

#### **Situational task №63**

An infectious hospital is equipped by boxes with the general area of 27 m<sup>2</sup>, 3 beds are located in every box. The outlet-inlet ventilation system of boxes is used. The centralized water system provides the serve of water in an amount 350 l per one patient. The disinfection of sewage is executed on municipal general sewage treatment plants. The coefficient of natural illumination of the box is 1: 6, the day light factor is 1%, general artificial illumination is 100 lux. Give a hygienic estimation of the area and capacity of the box, technical equipment (ventilation, water-supply, illumination) of infectious hospital.

#### **Situational task №64**

The menu of patient with chronic gastritis an insufficient secretion at the unsharp exacerbation includes such dishes: breakfast - cottage cheese, milk buckwheat gruel, tea with sugar and cake. Dinner - meat broth with a pasta, chops, mashed potatoes with sauerkraut, kissel, rye bread. Snack before supper – tea of wild rose, biscuits. Supper - rice pudding, carrot puree, tea with sugar, white bread. At night - kefir.

1. Estimate a menu in accordance to the basic principles of making up the diet at chronic gastritis with an insufficient secretion.
2. Give the recommendation to the patient's nutrition taking into account chemical composition and curative properties of food stuffs.

#### **Situational task №65**

A man 30 years-old were examined and revealed signs of deficiency of iodine, iron and calcium.

1. Write physiological and hygienic value and the daily needs of these minerals.
2. How should be enriched the food ration of the man?

#### **Situational task №66**

The patient began tempering by water procedures 30°C, then took air baths 25°C from 10 to 15 minutes, was increasing the duration of each subsequent 5-10 min. Give a hygienic assessment of the correctness of the procedures and offer recommendations for their conduct.