Exam Questions DIA 2018/2019

Exam questions of Diagnostic imaging consist of radiology and nuclear medicine parts and of the clinical problems.
A single question from each question group will be randomly assigned to the student.
When answering questions from a section of radiolohy and nuclear medicine, it is important to list the examination modalities, the diagnostic procedure and the basic pathology.
In the part of clinical problems examiners will assess the correct indication of investigative methods for solving the clinical problem, the accuracy of the methods and contraindications.

1. Special section- the position of imaging techniques in the diagnostic algorithm

1) Headache
2) Stroke
3) Head and neck trauma
4) Hypogastrium pain
5) Epigastrium pain
6) Pancreatitis
7) Expansion in the abdominal cavity
8) Peritoneal irritation
9) Renal colic
10) Hematuria
11) Polytrauma
12) Shortness of breath
13) Chest pain
14) Lower limb pain
15) Lymphadenopathy
16) Injury of the esophagus
17) Enteritis and colitis
18) Elevation of obstructive enzymes
19) Acute back pain
20) Scrotal pain
21) Liver lesion - diagnostic methods, basic pathology (focal and diffuse lesions)

2. Radiology section

1) Radiography and X-rays - principle, radiation load, indications, contraindications
2) Fluoroscopy - principles, radiation exposure, indication, contraindication
3) Ultrasound imaging principles - principle, basic indications
4) CT imaging principles - principle, basic indications, contraindications
5) MR imaging principle - principle, basic indications, contraindications
6) Angiography and DSA principles- principle, basic indications
7) Interventional Radiology - division, meaning the method, spectrum of procedures
8) Contrast Agents for X-ray Examination - principle, examples of use, side effects
9) Contrast agents in Ultrasound and MR imaging - principles, examples of use, side effects

10) Adverse reactions following administration of contrast agents, their prevention and treatment
11) Traumatology - axial skeleton - diagnostic methods, types of fractures
12) Traumatology - long bones - diagnostic methods, types of fractures
13) Traumatology - Specifics of childhood (types of fractures, abused child)
14) Imaging of the esophagus - diagnostic methods, basic pathology
15) Heart imaging- diagnostic methods, basic pathology
16) Chest - possibilities of different diagnostic methods
17) Imaging possibilities of non-traumatic diseases of the skeleton – basic pathology
18) Imaging possibilities of soft tissue diseases (trauma, inflammation, tumors) - diagnostic methods
19) Tumors of the lung, pleura and mediastinum expansion - diagnostic methods
20) Chest imaging - specifics of childhood
21) Imaging of the arterial system - diagnostic methods, basic pathology
22) Imaging of the venous system - diagnostic methods, basic pathology
23) Imaging of digestive tract - diagnostic methods, basic pathology
24) Gall bladder and biliary tract imaging - diagnostic methods, basic pathology
25) Pancreas imaging - diagnostic methods, basic pathology
26) Gastrointestinal tract imaging - childhood specifics
27) Uroradiology - diagnostic methods, basic pathology
28) Head and neck imaging incl. imaging methods in dentistry - diagnostic methods, basic pathology
29) Neuroradiology - specifics of childhood
30) Imaging of spinal cord - diagnostic methods, basic pathology
31) Breast imaging
32) Interventional diapeutic (diagnostic-therapeutic) procedures of the vascular system
33) Interventional diapeutic (diagnostic-therapeutic KE) procedures of the urinary system
34) Interventional diapeutic (diagnostic-therapeutic) procedures of the gastrointestinal system
35) Intervention diapeutic (diagnostic and therapeutic) procedures of the central nervous system
36) Interventional Oncology – spectrum of methods and their practical use
37) Percutaneous drainage of collection and abscesses - principles, examples of pathological conditions suitable for drainage
38) Imaging of sex organs in men and women - diagnostic algorithm, basic pathology
39) Gynecology and obstetrics imaging - diagnostic algorithm, basic pathology

3. Nuclear medicine section

1) Digitization in radiology and nuclear medicine - principles, the ability to store and share images, 3D reconstruction (various types), virtual imaging**,** and image transmission and archiving
2) Detection of ionizing radiation - interaction with matter - ionizing radiation detectors - shielding, electronic evaluation apparatus
3) Radioactive conversion - alpha, beta-, beta +, gamma
4) Nuclear medicine measuring instruments - scintillation probe, scintillation camera
5) Imaging techniques in nuclear medicine - scintigraphy static and dynamic, planar and tomography - principles, practical use
6) Emission Tomography - SPECT, PET (principles and practical application of methods) PET preparation of the patient, radiopharmaceuticals
7) Radiopharmaceuticals - definition, pharmaceutical forms, requirements for radiopharmaceuticals, their control

8) Sources of radionuclides - principles of nuclear reactor, accelerators and generators (practical examples of radionuclides)
9) The hybrid imaging systems (SPECT / CT, PET / CT, PET / MR) - principles, practical use
10) Radiation load, dosimetry, protective equipment in nuclear medicine
11) Palliative treatment of bone metastases with radionuclides, clinical significance
12) Special features in children's examination - application of radiopharmaceuticals, amount of applied substance, differences in organ distribution
13) Diagnosis with 99m Tc-MIBI
14) Bone scintigraphy, the importance of hybrid methods in focal bone leasions - principle, radiopharmaceuticals, methods of clinical significance
15) Radiation synovectomy, principle, clinical use
16) Diagnosis using 123 I - MIBG, clinical use
17) Perfusion and ventilation scintigraphy and ventilation - principle of the method, radiopharmaceuticals, indication and evaluation
18) Scintigraphy of the esophagus, radionuclid diagnosis of functional gastrointestinal disorders, clinical significance, indication
19) Myocardial perfusion - principle, radiopharmaceuticals, stress tests
20) Radioisotope flebography and evidence of pulmonary embolization
21) Detection of bleeding into GIT and ectopic gastric mucosa
22) Dynamic Cholescintigraphy - Principle, Radiopharmaceuticals, Evaluation, Indication and Differential Diagnosis of Cholestasis Causes
23) Radionuclide diagnosis of gastro-entero pancreatic tumors
24) Dynamic renal scintigraphy - principle, radiopharmaceuticals, indications
25) Diagnostic options for prostate cancer and its metastases by nuclear medicine, including PET
26) Possibilities of using radionuclide methods in endocrinology
27) Diagnosis and therapy of thyroid disease, thyroid carcinoma - differences in diagnostic and therapeutic procedures - Thyroid scintigraphy, the use of radioiodine for diagnostic and therapeutic purposes
28) Possibilities of Nuclear Medicine in epileptology , neuroreceptor scintigraphy in CNS (DaTSCAN) - principle, examples of receptors and importance in practice
29) Brain perfusion scintigraphy - conditions for application and importance of the method for clinical practice
30) Diagnosis of sentinel nodes by radionuclides
31) Radionuclide lymphography
32) PET in oncology - indications, contraindications, diagnostic methods of nuclear medicine in oncology and comparison with other imaging methods
33) Nuclear Medicine Therapy - 131 I-MIBG, Receptor Analogs and Antibodies
34) Determination of brain death by radionuclides and comparison with other imaging methods
35) Diagnosis of inflammation by nuclear medicine methods and comparison with other imaging methods