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)

1. **Radiology section**
2. Radiography and X-rays - principle, radiation load, indications, contraindications
3. Fluoroscopy - principles, radiation exposure, indication, contraindication
4. Ultrasound imaging principles - principle, basic indications
5. CT imaging principles - principle, basic indications, contraindications
6. MR imaging principle - principle, basic indications, contraindications
7. Angiography and DSA principles- principle, basic indications
8. Interventional Radiology - division, meaning the method, spectrum of procedures
9. Contrast Agents for X-ray Examination - principle, examples of use, side effects
10. Contrast agents in Ultrasound and MR imaging - principles, examples of use, side effects
11. Adverse reactions following administration of contrast agents, their prevention and treatment
12. Traumatology - axial skeleton - diagnostic methods, types of fractures
13. Traumatology - long bones - diagnostic methods, types of fractures
14. Traumatology - Specifics of childhood (types of fractures, abused child)
15. Imaging of the esophagus - diagnostic methods, basic pathology
16. Heart imaging- diagnostic methods, basic pathology
17. Chest - possibilities of different diagnostic methods
18. Imaging possibilities of non-traumatic diseases of the skeleton – basic pathology
19. Imaging possibilities of soft tissue diseases (trauma, inflammation, tumors) - diagnostic methods
20. Tumors of the lung, pleura and mediastinum expansion - diagnostic methods
21. Chest imaging - specifics of childhood
22. Imaging of the arterial system - diagnostic methods, basic pathology
23. Imaging of the venous system - diagnostic methods, basic pathology
24. Imaging of digestive tract - diagnostic methods, basic pathology
25. Gall bladder and biliary tract imaging - diagnostic methods, basic pathology
26. Pancreas imaging - diagnostic methods, basic pathology
27. Gastrointestinal tract imaging - childhood specifics
28. Uroradiology - diagnostic methods, basic pathology
29. Head and neck imaging incl. imaging methods in dentistry - diagnostic methods, basic pathology
30. Neuroradiology - specifics of childhood
31. Imaging of spinal cord - diagnostic methods, basic pathology
32. Breast imaging
33. Interventional diapeutic (diagnostic-therapeutic) procedures of the vascular system
34. Interventional diapeutic (diagnostic-therapeutic KE) procedures of the urinary system
35. Interventional diapeutic (diagnostic-therapeutic) procedures of the gastrointestinal system
36. Intervention diapeutic (diagnostic and therapeutic) procedures of the central nervous system
37. Interventional Oncology – spectrum of methods and their practical use
38. Percutaneous drainage of collection and abscesses - principles, examples of pathological conditions suitable for drainage
39. Imaging of sex organs in men and women - diagnostic algorithm, basic pathology
40. Gynecology and obstetrics imaging - diagnostic algorithm, basic pathology
41. **Nuclear medicine section**
42. 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
43. Detection of ionizing radiation - interaction with matter - ionizing radiation detectors - shielding, electronic evaluation apparatus
44. Radioactive conversion - alpha, beta-, beta +, gamma
45. Nuclear medicine measuring instruments - scintillation probe, scintillation camera
46. Imaging techniques in nuclear medicine - scintigraphy static and dynamic, planar and tomography - principles, practical use
47. Emission Tomography - SPECT, PET (principles and practical application of methods) PET preparation of the patient, radiopharmaceuticals
48. Radiopharmaceuticals - definition, pharmaceutical forms, requirements for radiopharmaceuticals, their control
49. Sources of radionuclides - principles of nuclear reactor, accelerators and generators (practical examples of radionuclides)
50. The hybrid imaging systems (SPECT / CT, PET / CT, PET / MR) - principles, practical use
51. Radiation load, dosimetry, protective equipment in nuclear medicine
52. Palliative treatment of bone metastases with radionuclides, clinical significance
53. Special features in children's examination - application of radiopharmaceuticals, amount of applied substance, differences in organ distribution
54. Diagnosis with 99m Tc-MIBI
55. Bone scintigraphy, the importance of hybrid methods in focal bone leasions - principle, radiopharmaceuticals, methods of clinical significance
56. Radiation synovectomy, principle, clinical use
57. Diagnosis using 123 I - MIBG, clinical use
58. Perfusion and ventilation scintigraphy and ventilation - principle of the method, radiopharmaceuticals, indication and evaluation
59. Scintigraphy of the esophagus, radionuclid diagnosis of functional gastrointestinal disorders, clinical significance, indication
60. Myocardial perfusion - principle, radiopharmaceuticals, stress tests
61. Radioisotope flebography and evidence of pulmonary embolization
62. Detection of bleeding into GIT and ectopic gastric mucosa
63. Dynamic Cholescintigraphy - Principle, Radiopharmaceuticals, Evaluation, Indication and Differential Diagnosis of Cholestasis Causes
64. Radionuclide diagnosis of gastro-entero pancreatic tumors
65. Dynamic renal scintigraphy - principle, radiopharmaceuticals, indications
66. Diagnostic options for prostate cancer and its metastases by nuclear medicine, including PET
67. Possibilities of using radionuclide methods in endocrinology
68. 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
69. Possibilities of Nuclear Medicine in epileptology , neuroreceptor scintigraphy in CNS (DaTSCAN) - principle, examples of receptors and importance in practice
70. Brain perfusion scintigraphy - conditions for application and importance of the method for clinical practice
71. Diagnosis of sentinel nodes by radionuclides
72. Radionuclide lymphography
73. PET in oncology - indications, contraindications, diagnostic methods of nuclear medicine in oncology and comparison with other imaging methods
74. Nuclear Medicine Therapy - 131 I-MIBG, Receptor Analogs and Antibodies
75. Determination of brain death by radionuclides and comparison with other imaging methods
76. Diagnosis of inflammation by nuclear medicine methods and comparison with other imaging methods