Exam Questions, Department of Radiology and Medical Imaging winter session Year 3, Faculty of Medicine

1. The unit of measurement of electric current intensity is:
   a) volt
   b) ampere
   c) ohm
   d) watt
   e) amp/sec

2. The unit of measurement of electric current power is:
   a) kilovolt
   b) ampere
   c) kilowatt
   d) ohm
   e) ampere x sec

3. The unit of measurement of absorbed dose is:
   a) roentgen
   b) curie
   c) gray
   d) sievert
   e) rem

4. A lower contrast radiographic image has the following amount of information:
   a) greater
   b) reduced
   c) greater only for digital images
   d) reduced only for digital images
   e) the same as an image with a higher contrast

5. Increasing the electric voltage of an X-ray tube has the following effect on image contrast:
   a) decreases image contrast
   b) increases image contrast
   c) decreases image contrast only for digital images
   d) increases image contrast only for digital images
   e) is not affecting image contrast

6. A wider tonal range between the lightest and darkest points of a radiographic image is associated with:
   a) a higher contrast and a greater amount of information
   b) a higher contrast and a lower amount of information
   c) a lower contrast and a lower amount of information
   d) a lower contrast and a greater amount of information
   e) no effect on image contrast

7. Radiographic image quality criteria include:
   a) exposure time
   b) image clarity
   c) optical density
   d) patient positioning according to image projection
   e) film dimensions

8. With increasing size of the radiation field, the number of the small elements that can be determined on the radigraphic image is:
   a) increasing
   b) decreasing
   c) not affected if the tube current remains the same
   d) not affected if the tube voltage remains the same
   e) not affected if the tube current and voltage remain the same

9. An X-ray image with a lower radiographic contrast generally contains:
   a) a lower amount of information
   b) a greater amount of information
   c) a lower amount of information only for digital images
   d) a greater amount of information only for digital images
   e) the same amount of information as an image with higher radiographic contrast

10. Geometric unsharpness in a radiographic image is affected by:
   a) optical focus dimensions of the X-ray tube (i.e. source size)
   b) X-ray tube motion during radiography
   c) patient motion during radiography
   d) the distance between the X-ray film and pathological process (i.e. object to detector distance)
   e) the distance between optical focus of X-ray tube and X-ray film (i.e. source to detector distance)

11. X-ray hardness ratio increases when:
   a) X-ray wavelength decreases
   b) X-ray wavelength increases
   c) X-ray frequency decreases
   d) X-ray frequency increases
   e) exposure time increases

12. Increasing the hardness of an X-ray beam has the following effects on patient irradiation:
   a) increases the radiation dose to the skin and intenal organs
   b) increases the absorbed dose
   c) increases the effective dose
   d) decreases the radiation dose to the skin and intenal organs
   e) has no effect on radiation dose

13. A relatively harder X-ray beam generally has the following effects on a radiograhic image:
   a) provides a lower amount of image details compared to a soft X-ray beam
   b) provides a greater amount of image details compared to a soft X-ray beam
   c) provides an image that is smaller compared to its original size
   d) provides an image that is larger compared to its original size
   e) has no effect on the amount of image details

14. For obtaining optimal image quality at the lowest radiation dose, it is preferable to use:
   a) soft X-rays
   b) X-rays of average hardness
   c) hard X-rays
   d) a special combination of soft and hard X-rays
   e) unfiltered X-ray

15. The basic principles of medical ultrasound investigation rely on the following:
    a) absorbtion of ultrasound with body tissues
    b) the interaction of ultrasound waves with body tissues
    c) reflection of ultrasound waves at the surfaces between the tissues of different acoustic impedance
    d) piezoelectric effects of body tissues
    e) reception and recording of the reflected signals

16. Ultrasound is the name given to sound waves that have frequencies greater than:
    a) 10 000 Hz
    b) 20 000 Hz
    c) 10 000 kHz
    d) 20 000 kHz
    e) 1000 Hz

17. The speed of ultrasound propagation increases if:
    a) density of the medium decreases and elasticity increases
    b) density of the medium increases and elasticity decreases
    c) density and elasticity are increased
    d) density and elasticity are decreased
    e) the speed of ultrasound propagation is not affected by medium density or elasticity

18. If the wave frequency increases, the wavelength:
    a) does not change
    b) increases
    c) decreases
    d) increases only for electromagnetic waves
    e) decreases only for electromagnetic waves

19. Ultrasound propagation speed is the highest in:
    a) air
    b) hydrogen
    c) vacuum
    d) water
    e) metal

20. Sound is:
    a) an electromagnetic wave
    b) an array of photons
    c) an ionizing radiation
    d) a particle
    e) a mecanic acoustic wave

21. Ultrasound signal attenuation is related to:
    a) wave reflection
    b) wave amplification
    c) wave absorbtion
    d) wave dispersion
    e) piezoelectric effects of body tissues

22. The most important factor causing ultrasound wave reflections at the interface between tissues represents the difference in:
    a) tissue density
    b) acoustic impedance
    c) ultrasound propagation speed
    d) tissue elasticity
    e) piezoelectric effects

23. The parameters required for calculating the distance to a point that is reflecting ultrasound waves include:
    a) ultrasound wave attenuation
    b) ultrasound wave velocity
    c) tissue impedance
    d) type of administered contrast agent
    e) time of signal returning

24. Doppler signal intensity is proportional to:
    a) flux velocity
    b) the angle of projection
    c) density of red blood cells in the blood flow
    d) ultrasound propagation speed
    e) time of signal returning

25. A pregnant employee should be transferred to work which does not expose her to ionizing radiation:
    a) starting from the day she has declared her pregnancy
    b) when the first signs of pregnancy appear
    c) since the moment of medical confirmation of pregnancy
    d) the time of transfer is flexible and depends on employee desire
    e) the time of transfer can vary depending on departmental policies

26. Radiation intensity during an X-ray investigation depends on:
    a) values of kV
    b) radiographic exposure (amperage x exposure time)
    c) patient thickness
    d) filter thickness
    e) distance from X-ray tube to the patient

27. The penetrating ability of an x-ray beam depends on:
    a) values of kV
    b) exposure time
    c) values of anodic current
    d) the electric potential difference between anode and cathode
    e) the energy of individual photons

28. The unit(s) for measuring the absorbed dose is / are:
    a) roentgen (R)
    b) gray (Gy)
    c) rad
    d) biological equivalent of roentgen (BER)
    e) sievert (Sv)

29. The unit(s) for measuring the radioactivity of a radiopharmaceutical is / are:
    a) curie (Ci)
    b) becquerel (Bq)
    c) sievert (Sv)
    d) roentgen (R)
    e) gray (Gy)

30. The unit(s) for measuring the biological dose (or dose equivalent) is / are: ??
    a) gray (Gy)
    b) rad
    c) biological equivalent of roentgen (BER)
    d) sievert (Sv)
    e) rem

31. The unit(s) for measuring the effective dose is / are: ??
    a) roentgen (R)
    b) gray (Gy)
    c) rad
    d) sievert (Sv)
    e) rem

32. The primary goals of radiological investigation of digestive tube without using contrast agents are:
    a) detection of foreign bodies and stones
    b) quality control of patient preparation for the exam before contrast administration
    c) diagnosis of GI evacuation disorders
    d) quality control of patient preparation for double contrast studies
    e) determination of free gas in the abdominal cavity

33. The auxiliary tasks of radiological investigation of digestive tube without using contrast agents are:
    a) detection of foreign bodies and stones
    b) quality control of patient preparation for the exam before contrast administration
    c) diagnosis of evacuation disorders
    d) determination of free gas in the abdominal cavity
    e) diagnosis of gastric ulcer

34. Basic imaging methods of investigation of the digestive tube are:
    a) fluoroscopy
    b) radiography
    c) parietography
    d) primary double contrast study
    e) laparoscopy

35. Special imaging methods of investigation of the digestive tube are:
    a) fluoroscopy
    b) radiography
    c) computed tomography
    d) magnetic resonance imaging
    e) ultrasonography

36. Which of the following methods are used for evaluation of gastrointestinal (GI) mucosa relief state?
    a) planar radiography without contrast enhancement
    b) radioscopy of the region of interest of GI tract without contrast enhancement
    c) thin-layer barium sulfate examination
    d) examination with barium sulfate in the filling phase
    e) primary double contrast study

37. Which of the following methods are used for evaluation of gastrointestinal (GI) mucosa microrelief state (areae gastricae)?
    a) planar radiography without contrast enhancement
    b) radioscopy of the region of interest of GI tract without contrast enhancement
    c) pneumogastrography
    d) examination with barium sulfate in the filling phase
    e) primary double contrast study

38. What is the simplest method of obtaining a double contrast study of the esophagus?
    a) air instillation through a thin tube located in the lumen of the esophagus
    b) air swallowing
    c) swallowing of air together with barium sulfate suspension
    d) per os administration of a solution of bicarbonate and tartaric acid
    e) barium sulfate swallowing combined with intravenous administration of an iodinated contrast

39. Multiview exploration of the gastrointestinal (GI) tract represents:
    a) a special method of contrast enhanced CT of the GI tract
    b) a special method of contrast enhanced MRI of the GI tract
    c) a special method involving maximum intensity projection (MIP) imaging of the GI tract
    d) an additional maneuver applicable to both basic and special methods of examination
    e) of the GI tract for obtaining additional information
    f) multiple planar radiographic images of the GI tract obtained at different intervals to follow the barium passage

40. Patient preparation for radiological examination of the stomach consists of:
    a) X-ray investigation is efetuated on an empty stomach
    b) cleansing enema administered the evening before the exam
    c) abstaining from smoking during the day of examination until the investigaton is completed
    d) administration of a laxative the day before the examination
    e) withholding antacids and drugs affecting gastric physiology until the investigaton is completed

41. Radiological methods providing information about peristalsis include:
    a) fluoroscopy
    b) radiography
    c) primary double contrast study
    d) parietography
    e) computed tomography

42. Which of the listed radiological methods is the most effective for detecting mucosal vegetating lesions of digestive tube?
    a) fluoroscopy
    b) primary double contrast study
    c) computed tomography
    d) abdominal ultrasonography
    e) selective angiography of mesenteric arteries

43. The optimal amount of contrast agent administered for examination of mucosal relief of gastrointestinal tract is:
    a) a small amount
    b) a large amount
    c) a small initial amount followed by a large amount to obtain a double contrast
    d) a large initial amount followed by a small amount to supplement the contrast movement through the GI tract
    e) the amount of administered contrast has no importance for mucosal relief imaging

44. Which drugs are used to accelerate gastrointestinal transit?
    a) atropine
    b) metatin
    c) sorbitol
    d) nitroglycerin
    e) barium sulfate at low temperature

45. Indications for vagotropic medication in gastrointestinal disorders include:
    a) increased gastric motor function
    b) decreased gastric tone
    c) increased tone of the sphincter of Oddi
    d) decreased tone of the sphincter of Oddi
    e) concomitant cardiovascular pathology

46. Indications for sympathomimetic medication in gastrointestinal disorders include:
    a) icreased gastric motor function
    b) decreased gastric tone
    c) icreased tone of the sphincter of Oddi
    d) hepatitis
    e) concomitant cardiovascular pathology

47. Vagotropic medication has the following effects on gastrointestinal tract:
    a) increases gastric tone
    b) increases intestinal tone
    c) accelerates intestinal transit
    d) decreases gastric tone
    e) diminishes intestinal transit

48. The optimal method for exploring the superior part of the stomach in the posteroanterior and lateral views is:
    a) tight-filling phase of upper gastrointestinal (GI) series with the patient in supine position
    b) tight-filling phase of upper GI series with the patient in prone position
    c) a primary double contrast study with the patient in prone position
    d) tight-filling phase of upper GI series with contrasted esophagus
    e) erect position of the patient

49. The optimal projection for gastroesophageal junction investigation in decubital position of the patient is:
    a) left anterior oblique (supine)
    b) right anterior oblique (supine)
    c) left posterior oblique (prone)
    d) right posterior oblique (prone)
    e) antero-posterior

50. The wall thickness of a gastrointestinal (GI) organ can be measured using the following imaging modalities:
    a) ultrasonography
    b) primary double contrast study
    c) computed tomography
    d) angiography
    e) simple abdominal radiograph

51. Which of the following radiological symptoms can be found in gastrointestinal wall ulceration?
    a) "nishe"
    b) "lacuna"
    c) elevated inflammatory border
    d) "index finger" sign (de Quervain's symptom)
    e) air-fluid levels

52. Displacement of gastrointestinal organs may be related to:
    a) various pathology of the displaced organ
    b) changes of adjacent organs and/or tissues
    c) an increased amount of air (or other content) within the cavity of displaced organ
    d) pregnancy
    e) none of the above

53. Ulcer characteristics that can be useful for differentiating benign from malignant etiologies include:
    a) ulcer shape
    b) dimensions
    c) contour
    d) localization
    e) number of ulcers

54. Gastrointestinal (GI) evacuation abnormalities may be related to:
    a) functional changes of the GI tract
    b) GI lumen narrowing
    c) GI lumen dilatation due to decreased GI tone
    d) congenital dilatation of GI lumen
    e) mucosal relief

55. Characteristics reflecting gastrointestinal (GI) function include:
    a) shape and dimensions
    b) peristalsis
    c) position of the examined organ
    d) secretion
    e) tone

56. Characteristics reflecting gastrointestinal (GI) morphology include:
    a) shape and dimensions
    b) peristalsis
    c) position
    d) contour
    e) mucosal relief

57. Size changes of a gastrointestinal organ may include:
    a) elongation
    b) shortening
    c) lumen dilatation
    d) lumen narrowing
    e) changes in wall peristalsis

58. Small vegetating lesions of gastrointestinal (GI) mucosa are better detected using:
    a) a liquid contrast agent administered per os or as a barium enema
    b) a relatively viscous contrast agent administered per os or as a barium enema
    c) an intravenous contrast agent
    d) a planar abdominal radiography without contrast administration
    e) the contrast administration or consistency has little importance for vizualing GI mucosa

59. According to Blombar segmentation, the esophagus has:
    a) 3 segments
    b) 4 segments
    c) 5 segments
    d) 7 segments
    e) 9 segments

60. The average diameter of the normal esophagus in the tight-filling phase does not exceed:
    a) 1 cm
    b) 2 cm
    c) 3 cm
    d) 4 cm
    e) 5 cm

61. If the esophagus is shortened and has a narrow lumen, narrow well-distinguished folds and a decreased transit, this most likely indicates:
    a) normal esophageal tone
    b) increased esophageal tone
    c) decreased esophageal tone
    d) esophageal achalasia
    e) benign tumor

62. If the esophagus is elongated, has flattened and dilated folds and an increased transit, this most likely indicates:
    a) normal esophageal tone
    b) increased esophageal tone
    c) decreased esophageal tone
    d) esophageal achalasia
    e) benign tumor

63. The relief of esophageal mucosa is optimally visualized:
    a) before barium administration
    b) just after the passage of barium sulfate
    c) during the tight-filling phase
    d) upon repeat imaging every 15-20 minutes until the barium contrast has cleared
    e) upon administration of pharmacodynamic drugs

64. The optimal projection for visualizing distal esophagus with the patient in erect position is:
    a) anterior
    b) lateral
    c) right anterior oblique
    d) left anterior oblique
    e) left posterior oblique

65. The optimal projection for investigating the cervical part of esophagus is:
    a) anterior
    b) right anterior oblique
    c) left anterior oblique
    d) left posterior oblique
    e) lateral

66. Lateral radiography of the pharynx and cervical esophagus without contrast administration is most frequently used for detection of:
    a) tumors of the pharynx and esophagus
    b) tumors of the thyroid gland
    c) tumor re-staging following resection and post-therapy follow-up
    d) esophageal foreign body
    e) swallowing disorders

67. Distal esophagus and stomach cardia form an angle (the angle of Hiss) which is normally:
    a) acute
    b) right
    c) obtuse
    d) straight
    e) blunt

68. An esophagogram reveals advanced contractions of distal esophagus and 3-5 localized symmetrical dilatations separated by indentations in that region. The condition most likely represents:
    a) secondary esophageal contractions
    b) tertiary esophageal contractions
    c) corkscrew esophagus
    d) esophageal achalasia
    e) esophageal diverticulosis

69. Common causes of reflux esophagitis include:
    a) decreased tone of inferior esophageal sphincter
    b) increased tone of superior esophageal sphincter
    c) gastric and esophageal motor disorders
    d) reduced propulsive activity of the stomach
    e) aspiration pneumonia

70. Strictures of the proximal esophagus are commonly encountered in:
    a) esophageal cancer
    b) sequela of caustic esophageal injuries
    c) sclerosing esophagitis
    d) fibrosing (sclerosing) mediastinitis
    e) esophageal achalasia

71. Narrowing of the esophageal lumen is commonly encountered in:
    a) endophytic esophageal cancer
    b) sequelas of esophageal ulcers
    c) esophageal varices
    d) benign tumors of the esophagus
    e) esophageal diverticula

72. Mediastinal widening is more likely to occur in:
    a) caustic esophageal injuries
    b) achalasia of the esophagus
    c) reflux esophagitis
    d) esophageal varices
    e) none of the above

73. A horizontal fluid level can be encountered in the following esophageal pathology:
    a) esophageal diverticulum
    b) esophageal varices
    c) congenital short esophagus
    d) esophageal achalasia
    e) tumor of esophagus

74. A chest X-ray of a patient in satisfactory condition reveals a mediastinal opacity with air-fluid level. The first-line investigation in this situation is:
    a) patient examination in lateral position
    b) linear tomography of the mediastinum
    c) computed tomography of the chest
    d) esophageal examination with opaque substance
    e) MRI of the chest

75. In patients with “thoracic stomach”, the esophagus is most likely:
    a) dilated
    b) shortened
    c) deformed
    d) elongated and corrugated
    e) calcified

76. Common causes of esophageal varices are:
    a) liver cirrhosis
    b) splenic vein thrombosis
    c) liver neoplasms
    d) chronic pulmonary embolism
    e) caustic esophageal injuries

77. Esophageal strictures post caustic esophageal injuries are most common at the level of:
    a) superior third of esophagus
    b) middle third of esophagus
    c) distal (abdominal) part of esophagus
    d) physiological narrowings
    e) cervical part of esophagus

78. A distinctive radiological sign of esophageal atresia is:
    a) esophageal narrowing
    b) esophageal dilatation
    c) determination of a "blind pouch"
    d) esophageal deformation
    e) esophageal elongation

79. The rat-tail sign is characteristic for:
    a) scleroderma
    b) esophageal cancer
    c) achalasia of the cardia
    d) epiphrenic diverticulum
    e) gastric cancer

80. In patients with achalasia of grade III-IV the gastric air bubble is:
    a) deformed
    b) absent
    c) reduced
    d) increased
    e) elongated

81. Axial hiatal herniation differs from paraesophageal herniation by the following:
    a) length of the esophagus
    b) positon of the abdominal part of esophagus compared to diaphragm
    c) position of the cardia compared to diaphragm
    d) position of the gastric fornix
    e) position of the gastric antrum

82. Esophageal ulcers are most frequently located at the level of:
    a) cervical portion of the esophagus
    b) superior third of the esophagus
    c) middle third of the esophagus
    d) inferior third of the esophagus
    e) pharyngoesophageal junction

83. The most frequent complication of esophageal ulcer is:
    a) malignization
    b) scarring and esophageal narrowing
    c) esophageal wall perforation
    d) esophageal hemorrhage
    e) generation of related gastric and duodenal ulcers

84. The most frequent benign tumor of the esophagus is:
    a) adenoma
    b) papilloma
    c) leiomyoma
    d) fibroma
    e) lipoma

85. Esophageal cancer is most frequently located at the level of:
    a) cervical portion of the esophagus
    b) superior third of the esophagus
    c) middle third of the esophagus
    d) abdominal portion of the esophagus
    e) pharyngoesophageal junction

86. Which type of esophageal tumor is most frequently associated with esophageal suprastenotic dilatation?
    a) esophageal cancer with endophytic growth
    b) esophageal cancer with exophytic growth
    c) esophageal adenoma
    d) esophageal leiomyoma
    e) esophageal fibroma

87. Colon tumors are commonly localized at the level of:
    a) rectosigmoid colon
    b) descending colon
    c) transverse colon
    d) ascending colon
    e) ceco-ascending colon

88. In longilin asthenic type of constitution, the gastric position is characterized by:
    a) an obtuse angle of the small curvature
    b) the lowest point of the stomach situated lower than normally
    c) elongated duodenal bulb with relatively right angles
    d) small duodenal bulb with convex contours (except for distal segment)
    e) an acute angle of the small curvature

89. In the picnic and athletic type of constitution, the gastric position is characterized by:
    a) an acute angle of the small curvature
    b) direction of the pylorus and duodenal bulb from top to bottom (craniocaudal)
    c) elongated duodenal bulb with straight contours
    d) small duodenal bulb with convex contours (except for distal segment)
    e) an obtuse angle of the small curvature

90. Modifications of the stomach position or dimensions include:
    a) ptosis
    b) elongation
    c) volvulus
    d) displacement
    e) accelerated evacuation

91. Radiological findings of normotonic stomach include:
    a) filling from top to bottom
    b) round shaped air bubble
    c) “inverted pear” shape of the contrasted stomach filled with barium
    d) filling of the entire stomach up to the fornix regardless of the amount of administered contrast
    e) contrast filling of the dependent (lower) portion of the stomach with an air-fluid level in its upper part

92. Hypotonic stomach is more likely to occur in patients with:
    a) abdominal pain
    b) multiple pregnancies
    c) chronic stomach pathologies
    d) vegetative neurosis
    e) endocrine disorders

93. Radiological findings of hypotonic stomach include:
    a) filling from top to bottom
    b) oval shaped air bubble that is elongated along its vertical axis (i.e. “tall and narrow” air bubble)
    c) filling of the entire stomach only if a large amount of contrast is administered
    d) oval shaped air bubble that is elongated along its horizontal axis (i.e. “short and wide” air bubble)
    e) filling from bottom to top

94. Hypertonic stomach is more likely to occur in patients with:
    a) abdominal pain
    b) inflammatory processes
    c) endocrine disorders
    d) vegetative neurosis
    e) multiple pregnancies

95. Radiological findings of hypertonic stomach include:
    a) filling from top to bottom
    b) oval shaped air bubble that is elongated along its vertical axis (i.e. “tall and narrow” air bubble)
    c) filling of the entire stomach only if a large amount of contrast is administered
    d) oval shaped air bubble that is elongated along its horizontal axis (i.e. “short and wide” air bubble)
    e) filling from bottom to top

96. Radiological appearance of gastric mucosa depends on:
    a) gastric tone
    b) abdominal muscle tone
    c) pacient constitution
    d) imaging technique
    e) type of contrast agent

97. Gastric emptying depends on:
    a) chemical composition of the ingested content
    b) amount of ingested content
    c) gastric muscle layer state
    d) elastacity of the pyloris and duodenal wall
    e) patient’s desire

98. Delayed gastric emptying is more likely to occur in patients with:
    a) antral spasm
    b) chronic gastritis
    c) abnormalities of pyloric and duodenal tones
    d) subcardial carcinoma with invasion of pancreatic head and neural plexus
    e) gastric hypoacidity

99. Accelerated gastric emptying is more likely to occur in patients with:
   a) gastric hyperacidity
   b) gastric hypoacidity
   c) gastric and pancreatic pathologies
   d) infiltrating gastric cancer
   e) antral spasm

100. Fornix has anatomical relationships with:
   a) transverse colon
   b) descending colon
   c) ascending colon
   d) left hepatic lobe
   e) spleen

101. The head of the pancreas has anatomical relationships with:
   a) duodenal bulb
   b) cardia
   c) descending part of the duodenum
   d) horizontal inferior portion of the duodenum
   e) spleen

102. Posterior surface of the stomach has anatomical relationships with:
   a) pancreas
   b) gallbladder
   c) colon loops
   d) small bowel loops
   e) left suprarenal gland

103. Posterior surface of the stomach has anatomical relationships with:
   a) left ureter
   b) gallbladder
   c) left colic (splenic) flexure
   d) aorta
   e) spleen

104. Which of the following stomach regions has the strongest fixation to adjacent anatomical structures?
   a) fornix
   b) body
   c) gastric angle
   d) antrum
   e) pyloric canal

105. Deviation of gastric folds commonly indicates the existence of:
   a) gastric folds edema
   b) external compression
   c) an infiltration caused by chronic inflamation
   d) a benign tumor
   e) an invasive malignant tumor

106. The most effective medication for differentiating functional from morphological gastro-duodenal abnormalities is:
   a) atropine
   b) nitroglycerin
   c) buscopan
   d) morphine
   e) epinephrine

107. Left posterior displacement of the gastric cardia with caudal displacement of the gastric antrum is commonly noted in:
   a) portal hypertension
   b) enlargement of the left lobe of the liver
   c) enlargement of the pancreas
   d) enlargement of the spleen
   e) gastric cancer

108. Functional changes related to gastric mucosal abnormalities include:
   a) atonia
   b) hypersecretion
   c) hypertonia
   d) spasm
   e) gastric varices

109. The stomach displacement in affected adjacent organs with volume changes is commonly:
   a) towards the midline of the abdomen
   b) towards the lateral side of the abdomen
   c) in a craniocaudal direction
   d) towards the pathological process
   e) away from the pathological process

110. A simple abdominal radiograph was effectuated for a patient presenting with acute abdomen. The patient was determined to have free gas in his abdominal cavity. The radiologist must:
   a) perform a double contrast study of the stomach
   b) examine the stomach with barium sulphate
   c) terminate the investigation
   d) perform laterography to confirm the findings
   e) attempt to remove the gaz using a sterile needle and repeat the investigation

111. The niche characteristics in benign gastric ulcers may include:
   a) pedicular form
   b) rectangular shape
   c) prominent contour
   d) oval or round shape
   e) diappearence of the folds

112. Penetrative gastric ulcers of the great curvature commonly penetrate into:
   a) liver
   b) pancreas
   c) spleen
   d) left kidney
   e) duodenum

113. Penetrative gastric ulcers of the inferior portion of the lesser curvature commonly penetrate into:
   a) liver
   b) pancreas
   c) spleen
   d) left kidney
   e) duodenum

114. Penetrative gastric ulcers of the superior portion of the lesser curvature commonly penetrate into:
   a) liver
   b) pancreas
   c) spleen
   d) left kidney
   e) duodenum

115. Radiological features of the niche in benign gastric ulcers include:
   a) smooth ulcer mound
   b) Hampton's line
   c) anarchic periulcer mucosal relief
   d) clubbing of radiation folds (i.e. thickened mucosal folds with a "drum sticks" appearance)
   e) diappearence of the folds

116. In contrast to ulcerating cancers, benign gastric ulcers commonly demonstrate:
   a) predominance of their depth over surface extension (i.e. deep narrow ulcers)
   b) predominance of surface extension over depth (i.e. large and flat gastric ulcers)
   c) the inner margin is usually concave toward the gastric lumen
   d) the inner margin is usually convex toward the gastric lumen
   e) irregular ulcer crater with adjacent nodular mucosa and clubbing/fusion/amputation of radiation folds

117. Penetrative gastric ulcers of the posterior gastric wall are more likely to penetrate into:
   a) liver
   b) pancreas
   c) spleen
   d) left kidney
   e) duodenum

118. Morphological signs of gastric ulcers include:
   a) niche
   b) amputation
   c) convergence of mucosal folds
   d) periulcer inflammatory changes
   e) lacuna

119. The minimum amount of free gas in the abdominal cavity that can be detected radiologically is:
   a) 1 cm3
   b) 10 cm3
   c) 25 cm3
   d) 50 cm^3
   e) 100 cm3

120. In suspected gastric or duodenal perforation, the primary radiological investigation is:
   a) examination of abdominal cavity without contrast enhancement
   b) primary double contrast study of the stomach and duodenum
   c) examination of the gastrointestinal tract with barium sulphate to detect the site of perforation
   d) examination of abdominal cavity after insufflation of air into the stomach
   e) examination of abdominal cavity after intravenous contrast administration

121. Radiological features of malignant gastric ulcers include:
   a) smooth ulcer mound
   b) Hampton's line
   c) anarchic periulcer mucosal relief
   d) irregular ulcer crater with adjacent nodular mucosa and clubbing/fusion/amputation of radiation folds
   e) "coffee bean" sign

122. Features suggesting malignant gastric ulcer include:
   a) does not protrude beyond the gastric contour (endoluminal)
   b) irregular and shallow ulcer crater with nodular and angular ulcer mound
   c) outpouching of ulcer crater beyond the gastric contour (exoluminal)
   d) nodular gastric folds that do not reach the ulcer margin
   e) Carman meniscus sign (lenticular shape of barium in cases of large and flat gastric ulcers, in which the inner margin is convex toward the lumen)

123. Features suggesting benign gastric ulcer include:
   a) does not protrude beyond the gastric contour (endoluminal)
   b) smooth rounded and deep ulcer crater
   c) outpouching of ulcer crater beyond the gastric contour (exoluminal)
   d) smooth gastric folds that reach the margin of ulcer
   e) Carman meniscus sign (lenticular shape of barium in cases of large and flat gastric ulcers, in which the inner margin is convex toward the lumen)

124. To which concepts or disease staging the term "early gastric cancer" relates?
   a) radiological
   b) endoscopic
   c) surgical
   d) morphological
   e) functional

125. Diaphragmatic motion abnormalities are commonly found in patients with:
   a) pancreatitis
   b) mechanical intestinal obstruction
   c) cholecystitis
   d) subphrenic liver abscess
   e) early gastric cancer

126. The organ most likely to be initially displaced in patients with splenomegaly (enlarged spleen) is:
   a) diaphragm
   b) stomach
   c) large intestine
   d) small intestine
   e) duodenum

127. The most predictive radiographic sign of an intra-abdominal abscess is:
   a) mottled soft-tissue mass
   b) displacement of adjacent organs
   c) localized ileus (bowel paresis)
   d) air-fluid level within a round or ring-shaped opacity with well-defined borders
   e) absence of psoas outlines

128. The most appropriate modalities for detecting duodenal abnormalities caused by adjacent abdominal pathology are:
   a) stomach and bowel investigation with barium sulphate
   b) duodenography
   c) intravenous cholangiography
   d) computed tomography
   e) double-contrast irrigography

129. The angle of Treitz is located at the junction of:
   a) esophagus and stomach
   b) stomach and duodenum
   c) duodenum and jejunum
   d) jejunum and ileum
   e) ileum and cecum

130. The mucosal relief is most abundant (expressed by the greatest number and hight of folds) in the:
   a) rectum
   b) duodenum
   c) jejunum
   d) ileum
   e) appendix

131. Centrally located loops with relatively less expressed mucosal relief and a slow intestinal transit are most likely to be encountered in:
   a) duodenum
   b) jejunum
   c) ileum
   d) transverse colon and colonic flexures
   e) ascending and descending colon

132. The normal transit or the oral contrast through the small bowel is usually within:
   a) 20 - 60 minutes
   b) 30 - 90 minutes
   c) 30 minutes - 3 hours
   d) 2 - 4 hours
   e) up to 6 hours

133. The main functions of the ileum are:
   a) adsorption (attachment) of enzyme molecules
   b) absorption of products of digestion
   c) transit acceleration
   d) transit reduction
   e) passing the content to the jejunum

134. The most predictive radiographic sign of colon (large bowel) obstruction is:
   a) increased amount of gas in the large intestine
   b) increased amount of gas in the small intestine
   c) collapsed distal colon
   d) central dilated loops containing wide and low air-fluid levels (the width of air pockets above the fluid level exceeding their height)
   e) peripheral dilated loops containing tall, but relatively narrow air-fluid levels (the height of air pockets above the fluid level exceeding their width)

135. The most predictive radiographic sign of small bowel obstruction is:
   a) increased amount of gas in the large intestine
   b) increased amount of gas in the small intestine
   c) collapsed distal colon
   d) central dilated loops containing wide and low air-fluid levels (the width of air pockets above the fluid level exceeding their height)
   e) peripheral dilated loops containing tall, but relatively narrow air-fluid levels (the height of air pockets above the fluid level exceeding their width)

136. Imaging modalities that are commonly used for detecting and evaluating pancreatic mass lesions are:
   a) abdominal ultrasonography
   b) computed tomography
   c) abdominal MRI
   d) fluoroscopy
   e) endoscopic retrograde cholangiopancreatography

137. The most sensitive modality for detecting biliary tract stones is:
   a) retrograde cholangiocholecystography
   b) ultrasonography
   c) endoscopic retrograde cholangiopancreatography
   d) intravenous cholangiocholecystography
   e) hepatobiliary scintigraphy

138. The most informative modality for evaluating splenic abnormalities is:
   a) plain abdominal X-ray
   b) retropneumoperitoneum
   c) abdominal ultrasonography
   d) selective angiography of splenic artery
   e) abdominal fluoroscopy

139. Patient preparation for radiological investigation of the large intestine includes:
   a) following a special diet the day before the exam, with no solid foods and no milk products
   b) administration of a laxative the day before the examination
   c) cleansing enema administered the evening before the exam
   d) fasting during the day of investigation
   e) cleansing enema administered 2 hours before the exam

140. In which portion of the gastrointestinal tract the haustra are most prominent?
   a) jejunum
   b) ileum
   c) ascending colon
   d) descending colon
   e) sigmoid colon

141. The appendix is located:
   a) adjacent to the junction of the small and the large intestines
   b) above the iliocecal valve
   c) below the ileocecal valve
   d) within the ileocecal valve
   e) adjacent to the angle of Treitz

142. The functions of ileocecal valve include:
   a) transit acceleration
   b) transit reduction
   c) prevention of passage of cecum content into the appendix
   d) prevention of early passage of small intestine content into the cecum
   e) limiting the reflux of colonic contents into the ileum

143. Which statements are true?
   a) distal part of the duodenum and pancreas are retroperitoneal
   b) the jejunum and the ileum are suspended by mesentery which gives them great mobility within the abdomen.
   c) while the cecum is usually intraperitoneal, the ascending colon is retroperitoneal
   d) while the transverse colon is usually intraperitoneal, the ascending and descending colon are retroperitoneal
   e) the stomach is retroperitoneal

144. Which statements are true?
   a) jejunal loops are suspended by mesentery in the left upper and central abdomen
   b) jejunal loops are suspended by mesentery in the central and right lower abdomen
   c) ileum loops are suspended by mesentery in the left upper and central abdomen
   d) ileum loops are suspended by mesentery in the central and right lower abdomen
   e) the cecum is located in the right lower quadrant of the abdominal cavity inferior and lateral to the ileum

145. Fluoroscopy indications include:
   a) assessment of pulmonary hilar structures
   b) assessment of pulmonary vascular pattern
   c) assessment of interlobar lung fissures
   d) assessment of diaphragm mobility
   e) assessment of esophageal swallowing

146. Lung segmentation is based on the ramification of the following structures:
   a) bronchi
   b) bronchial arteries
   c) pulmonary arteries
   d) pulmonary veins
   e) lymphatic vessels

147. Normal hilar shadows (i.e. lung hila) on radiographic images are produced mainly by:
   a) arteries and bronchi
   b) veins and bronchi
   c) arteries and veins
   d) arteries alone
   e) veins alone

148. In pneumothorax the collapsed lung is commonly displaced:
   a) superiorly
   b) anteriorly
   c) medially
   d) laterally
   e) posteriorly

149. The smallest functional autonomous unit of the lungs is:
   a) acinus
   b) primary pulmonary lobule
   c) secondary pulmonary lobule
   d) lung segment
   e) lung lobe

150. Localization of lung pathology is preferably indicated using:
   a) intercostal spaces
   b) pulmonary zones
   c) lung segments
   d) lung lobes
   e) thoracic vertebrae as reference levels

151. The intensity of an opacity is primarily determined by:
   a) anatomical substrate density
   b) substrate localization
   c) substrate shape
   d) substrate borders
   e) Substrate shape and localization

152. Tracheal bifurcation is located at the level of:
   a) 2nd thoracic vertebra
   b) 3rd thoracic vertebra
   c) 4th thoracic vertebra
   d) 5th-6th thoracic vertebrae
   e) 7th-8th thoracic vertebrae

153. Clarity of a chest X-ray is appreciated by the contour of:
   a) mediastinum
   b) diaphragm
   c) main vessels
   d) ribs
   e) stomach air bubble

154. Basic methods of investigation of respiratory system are:
   a) fluoroscopy
   b) radiography
   c) tomography
   d) bronhography
   e) MRI

155. Special methods of investigation of respiratory system are:
a) fluoroscopy
b) radiography
c) computed tomography without contrast enhancement
d) computed tomography with contrast enhancement
e) scintigraphy

156. Laterography is performed with the patient in:
a) dorsal decubitus
b) ventral decubitus (prone)
c) lateral decubitus
d) lateral orthostatism
e) postero-anterior

157. Which of the following statements about lung lobes are true?
a) the left lung has 3 lobes and the right lung has 2 lobes
b) the middle lobe of the left lung has 2 segments
c) the inferior lobe of the right lung has 5 segments
d) the inferior lobe of the left lung has 5 segments
e) the oblique fissure separates the middle and inferior lobes

158. A normal chest X-ray image shows:
a) pulmonary hila are situated between the 2nd - 4th ribs
b) right hemidiaphragm dome is located 1-1.5 cm lower than the left one
c) pulmonary vascular pattern appears more impoartant in the apical regions
d) the left hilum apears higher compared to the right one
e) pulmonary vascular pattern appears more impoartant in the basal regions

159. Hyperlucency of the pulmonary field may reflect:
a) absent or decreased lung pneumatization
b) densification of lung tissue
c) pleural effusion
d) increased lung pneumatization
e) decrese of pulmonary vascular pattern

160. Pulmonary opacity may reflect:
a) absent or decreased lung pneumatization
b) densification of lung tissue
c) pleural fluid
d) increased lung pneumatization
e) decrese of pulmonary vascular pattern

161. A total or subtotal homogeneous opacity with mediastinal shift towards the opacity is indicative of:
a) massive exudative pleural effusion
b) diaphragmatic hernia containing bowel loops
c) pulmonary atelectasis
d) pulmonary cirrhosis
e) hydropneumothorax

162. A total or subtotal opacity without mediastinal shift is most likely indicative of:
   a) massive exudative pleural effusion
   b) diaphragmatic hernia containing bowel loops
   c) pulmonary atelectasis
   d) acute inflammation of lung parenchyma (pneumonia)
   e) hydropneumothorax

163. A total or subtotal heterogeneous opacity with mediastinal shift from the opacity is likely indicative of:
   a) massive exudative pleural effusion
   b) diaphragmatic hernia containing bowel loops
   c) pulmonary atelectasis
   d) pulmonary cirrhosis
   e) acute inflammation of lung parenchyma (pneumonia)

164. Radiographic features of pulmonary atelectasis include:
   a) hyperlucency
   b) homogeneous opacity
   c) heterogeneous opacity
   d) mediastinal shift away from the opacity
   e) mediastinal shift towards the opacity

165. Radiographic features of massive exudative pleural effusion include:
   a) hyperlucency
   b) homogeneous opacity
   c) heterogeneous opacity
   d) mediastinal shift away from the opacity
   e) mediastinal shift towards the opacity

166. Radiographic features of large diaphragmatic hernias containing bowel loops include:
   a) hyperlucency
   b) homogeneous opacity
   c) heterogeneous opacity
   d) mediastinal shift away from the opacity
   e) mediastinal shift towards the opacity

167. A chest X-ray reveals a limited ill-defined opacity in the middle zone of the right lung, demonstrating a polygonal shape, irregular borders and costal intensity. The most likely diagnosis is: ??
   a) local emphysema
   b) an inflammatory process of lung parenchyma (pneumonia)
   c) free fluid in pleural cavity
   d) pnemothorax
   e) pulmonary cirrhosis

168. Common radiographic features of pulmonary opacity in pneumonia include:
   a) clear outline with distinct regular borders
   b) polygonal or triangular shape
   c) hazy irregular borders
   d) mediastinal shift towards the opacity
   e) mediastinal shift away from the opacity

169. Opacity displacement and reshaping after changing the position of the patient is usually encountered in:
   a) encapsulated fluid in pleural cavity
   b) lung cirrhosis
   c) free fluid in pleural cavity
   d) acute inflammation of lung parenchyma (pneumonia)
   e) lung atelectasis

170. Radiographic features of free fluid accumulation in pleural cavity commonly include:
   a) increased lung radiolucency
   b) an opacity with lateral upward sloping of a meniscus-shaped contour
   c) irregular borders
   d) blunting of the costophrenic angles
   e) opacity displacement and reshaping after changing the patient position due to dependent layering of the fluid

171. A well-defined nodular or round-shape lung opacity with clear regular borders is more likely to represent:
   a) a tuberculous cavern
   b) free fluid in pleural cavity
   c) eosinophilic inflammatory infiltration
   d) a hydatid (echinococcal) cyst
   e) a tumor

172. Radiographic features of a pulmonary hydatid (echinococcal) cyst commonly include:
   a) total or subtotal opacity with mediastinal shift towards the opacity
   b) a rounded opacity with irregular borders
   c) an ill-defined opacity demonstrating a polygonal shape, irregular borders and costal intensity
   d) a rounded region of increased radiolucency
   e) a well-defined nodular or rounded opacity with clear regular borders

173. Air-fluid levels on radiographic imaging are usually noted in:
   a) hydrothorax
   b) hydropneumothorax
   c) partially evacuated lung abscess
   d) small bowel obstruction
   e) large bowel obstruction

174. A ring-shaped lung opacity connected to a drainage bronchus is seen in:
   a) hydropneumothorax
   b) lung abscess
   c) necrotic phase of peripheral lung cancer
   d) air cyst
   e) regional lung emphysema in chronic smokers

175. Chest X-ray reveals a ring-shaped opacity with irregular internal borders and a “vascular path” towards the lung hilum. Adjacent hilar adenopathy is also noted. The most likely diagnosis is:
   a) hydatid echinococcal cyst
   b) lung abscess
   c) necrotic phase of peripheral lung cancer
   d) air cyst
   e) regional lung emphysema in chronic smokers

176. A solitary nodular lung opacity in commonly seen in:
   a) miliary tuberculosis
   b) pneumoconiosis
   c) bronchopneumonia
   d) peripheral lung cancer
   e) pulmonary air cyst

177. Diffuse disseminated nodular lung opacities are usually seen in:
   a) miliary tuberculosis
   b) pneumoconiosis
   c) pleuresy (pleuritis)
   d) hemosiderosis
   e) diaphragmatic hernia containing bowel loops

178. Radiographic features of pulmonary emphysema commonly include:
   a) increased radiolucency of the lungs
   b) widening of intercostal spaces
   c) flattened diaphragm
   d) increased antero-posterior diameter of the chest
   e) narrowing of intercostal spaces

179. A patient was found to have increased radiolucency over both lungs, widening of intercostal spaces and flattened diaphragm with limited respiratory excursion. The likely diagnosis is:
   a) pulmonary atelectasis
   b) pulmonary cirrhosis
   c) pulmonary emphysema
   d) miliary tuberculosis
   e) acute inflammation of lung parenchyma (pneumonia)

180. Pulmonary emphysema is commonly associated with:
   a) elevated and rounded (arch-shaped) diaphragm
   b) reduced pulmonary vascular pattern
   c) barrel-shaped chest
   d) decreased retrosternal airspace
   e) flattened diaphragm

181. Hyperlucency is noted in:
   a) partial bronchostenosis
   b) valvular bronchostenosis
   c) total bronchostenosis
   d) lung atelectasis
   e) pneumonia

182. Pulmonary opacity is noted in:
   a) valvular bronchostenosis
   b) total bronchostenosis
   c) bronchiectasis
   d) lung emphysema
   e) pulmonary hypovolemia

183. Paracostal hyperlucency with absence of pulmonary vascular pattern is noted in:
   a) pulmonary emphysema
   b) pneumothorax
   c) hydrothorax
   d) dysplasia of pulmonary vessels and/or bronchi
   e) tuberculous cavern

184. Increased pulmonary vascular pattern is noted in:
   a) pulmonary arterial hypervolemia
   b) pulmonary venous congestion
   c) pulmonary hypovolemia
   d) chronic bronchitis
   e) tension pneumothorax

185. Deformation of pulmonary vascular pattern is noted in:
   a) tension pneumothorax
   b) primary pulmonary hypertension
   c) bronchiectasis
   d) pneumoconiosis
   e) pulmonary hypovolemia

186. Pulmonary venous congestion is associated with:
   a) decreased pulmonary vascular pattern
   b) absent pulmonary vascular pattern
   c) increased pulmonary vascular pattern
   d) deformed pulmonary vascular pattern
   e) no changes in pulmonary vascular pattern

187. Pulmonary hypovolemia is associated with:
   a) decreased pulmonary vascular pattern
   b) absent pulmonary vascular pattern
   c) increased pulmonary vascular pattern
   d) deformed pulmonary vascular pattern
   e) no changes in pulmonary vascular pattern

188. Bronchiectasis is usually associated with:
   a) absent pulmonary vascular pattern
   b) increased pulmonary vascular pattern
   c) deformed pulmonary vascular pattern
   d) tram-track opacities
   e) tree-in-bud abnormalities, dilated bronchi, and cysts

189. Chronic bronchitis is usually associated with:
   a) absent pulmonary vascular pattern
   b) decreased pulmonary vascular pattern
   c) increased pulmonary vascular pattern
   d) deformed pulmonary vascular pattern
   e) small heart

190. Radiographic findings in hilar lymphadenopathy include:
   a) hilar hyperlucency
   b) hilar shrinkage
   c) hilar enlargement
   d) polycyclic contour of the pulmonary hilum
   e) absent lung hilum

191. The optimal chest X-ray projection for visualization of fluid in the oblique (major) fissure is:
   a) posteroanterior
   b) anterior oblique
   c) posterior oblique
   d) lateral
   e) ventral decubitus (prone)

192. The most sensitive imaging modality for detecting small amounts of pleural fluid is:
   a) radiography
   b) fluoroscopy
   c) tomography
   d) ultrasound
   e) scintigraphy

193. The most sensitive imaging modality for detecting small lung nodules (up to 2cm) is:
   a) radiography
   b) fluoroscopy
   c) computed tomography
   d) ultrasound
   e) scintigraphy

194. The shadows forming normal pulmonary vascular pattern on radiographic images are produced mainly by:
   a) arteries and bronchi
   b) veins and bronchi
   c) arteries and veins
   d) arteries alone
   e) bronchi alone

195. How many segments are there in the right lung?
   a) 3
   b) 7
   c) 9
   d) 10
   e) 12

196. In the posteroanterior projection, the inferior edge of the right middle lobe is at the level of:
   a) anterior arch of the 2nd rib
   b) posterior arch of the 3rd rib
   c) anterior arch of the 4th rib
   d) posterior arch of the 5th rib
   e) anterior arch of the 6th rib

197. Radiological signs indicative of intrapulmonary location of a parietal lung lesion include:
a) round shape lesion
b) clear well-demarcated borders
c) obtuse angles between the lesion and the chest wall
d) opacity displacement and reshaping after changing the patient position
e) acute angles between the lesion and the chest wall

198. In total or subtotal lung opacity, the first sign of volume reduction is:
a) reduced vertical lung dimensions
b) intercostal space narrowing
c) mediastinal shift towards the opacity
d) mediastinal shift away from the opacity
e) diaphragm flattening

199. Radiographic findings of hilar metastases commonly include:
a) hilar hyperlucency
b) hilar shrinkage
c) hilar enlargement
d) cranial displacement of the lung hilum
e) caudal displacement of the lung hilum

200. The contour of a lobar or segmental opacity caused by atelectasis is usually:
a) straight
b) concave
c) convex
d) irregular
e) changing its shape depending on patient position

201. The left lower pulmonary lobe contains:
a) 2 segments
b) 3 segments
c) 4 segments
d) 5 segments
e) 6 segments

202. The main radiological method for evaluating bones and joints is:
a) radioscopy
b) ultrasonography
c) linear tomography
d) radiography
e) arthrography

203. The radiological manifestations of tubular bone osteosclerosis are:
a) bone thickening
b) narrowing of the medullary canal
c) thickening of the compact layer
d) bone thinning
e) bone elongation

204. Bone changes due to osteoporosis include:
   a) changes in bone contours
   b) changes in bone density
   c) changes in bone dimensions
   d) changes in bone shape
   e) line of fracture

205. Bone destruction is a process that can be best described as:
   a) osseous destruction with no substitution
   b) osseous destruction with pathologic substrate substitution
   c) bone rarefaction
   d) bone densification
   e) bone compression

206. Osteolysis can be best described as:
   a) total bone resorption without pathological substitution
   b) total bone resorption with fibrous tissue substitution
   c) total bone resorption with pathological fractures
   d) total bone resorption accompanied by sequestration
   e) patological fracture

207. Linear periostitis is predominantly encountered in the following phases of a pathological bone process:
   a) incipient
   b) acutization
   c) chronic
   d) remission
   e) bone sequestration

208. A spiculated periosteal reaction signifies:
   a) progression
   b) remission
   c) a chronic process
   d) bone sequestration
   e) a rapid underlying process that prevents formation of new bone under the raised periosteum

209. The spiculated patterns of periostitis (hair-on-end and sunburst subtypes) are commonly encountered in:
   a) benign tumors
   b) malignant tumors
   c) bone fractures
   d) bone sequestration
   e) intramedullary haemorrhage

210. Which statement(s) about Codman triangle periosteal reaction is/are true?
   a) is a type of periosteal reaction commonly seen with malignant bone tumors
   b) is a type of periosteal reaction commonly seen with benign bone tumors
   c) is a type of periosteal reaction commonly seen with malalignment of fracture segments
   d) is a type of periosteal reaction commonly seen with inflammative bone lesions
   e) the periosteum does not have time to ossify with shells of new bone in rapidly growin lesions, so only the edge of the raised periosteum will ossify

211. Radiological signs of ankylosis include:
   a) articular space widening
   b) sequestrated cavities within the articular space
   c) intraarticular sequestra
   d) absence of articular space
   e) bone trabeculae extending between adjacent bones

212. Potential causes of osteonecrosis include:
   a) thrombosis
   b) embolism
   c) intramedullary hemorrhage
   d) osteosclerosis
   e) artritis

213. Common radiological signs of osteitis in the acute phase include:
   a) local osteoporosis
   b) periostitis
   c) osteosclerosis
   d) hyperostosis
   e) sequestration

214. Common radiological signs of osteitis in the remission phase include:
   a) local osteoporosis
   b) assimilation of the periosteal reaction
   c) trabecular (spongious) bone osteosclerosis
   d) delimitation of the foci of bone destruction
   e) line of fracture

215. Common radiological signs of osteitis in the chronic phase include:
   a) hyperostosis
   b) sequestration
   c) osteosclerosis
   d) local osteoporosis
   e) line of fracture

216. The specific radiographic signs of fracture include:
   a) hyperostosis
   b) atrophy
   c) line of fracture
   d) displacement of bone fragments
   e) local osteoporosis

217. During radiological investigation of trauma is mandatory to include the following projections:
   a) lateral
   b) anterior oblique
   c) posterior oblique
   d) anterior
   e) with the patient in erect and supine positions

218. The fracture line of most intraarticular fractures is:
a) T-shaped
b) V-shaped
c) oblique metaepiphyseal
d) transversal
e) spiral

219. Longitudinal displacement of fragments in bony fracture can be:
a) by sliding
b) by interlocking
c) by elongation
d) angular
e) spiral

220. The region responsible for longitudinal growth of tubular bones in children is:
a) articular cartilage
b) periosteum
c) diaphysis
d) metaepiphyseal area
e) bone marrow

221. The potential ability for bone growth in children and adolescents is evaluated by studying:
a) diaphysis
b) periosteum
c) metaepiphyseal area
d) endosteum
e) bone marrow

222. Age particularities of tubular bone fractures in children are commonly related to:
a) multifragmented fractures
b) linear fractures
c) subperiosteal fractures
d) intra-articular fractures
e) comminuted fractures

223. Age particularities of metaepiphyseal fractures in children are commonly related to:
a) subperiosteal fractures
b) epiphysiolysis
c) apophysiolysis
d) multifragmented fractures
e) comminuted fractures

224. Bone healing by callus formation can be divided into the following stages:
a) inflammation
b) avascular necrosis
c) soft callus formation
d) hard callus formation
e) remodeling

225. The earliest term a bony callus can normally be detected radiologically is:
a) 1-3 days post fracture
b) 7-10 days post fracture
c) 25-30 days post fracture
d) 2-3 months post fracture
e) after 3 months

226. Which projection allows the most effective radiographic evaluation of joint space?
a) lateral
b) anterior
c) anterior oblique
d) posterior oblique
e) decubitus position

227. Radiological features of osteonecrosis include:
a) bone rarefaction
b) ill-defined mottling of the trabecular pattern (in early stages)
c) dense, serpiginous calcification in the medullary bone space
d) microfractures and subchondral fractures
e) discontinuity of bone trabeculae

228. The most sensitive modalities for early diagnosis of acute osteomyelitis are:
a) radiography
b) computed tomography
c) scintigraphy
d) MRI
e) ultrasonography

229. The most sensitive modalities for early diagnosis of tubular bone osteonecrosis are:
a) radiography
b) linear tomography
c) scintigraphy
d) MRI
e) radioscopy

230. Intraarticular space narrowing is most frequently caused by the predominant destruction of:
a) articular bone surface
b) articular cartilage
c) ligament apparatus
d) synovium
e) endosteum

231. Skeletal scintigraphy for detecting primary and secondary tumors is usually performed with:
a) 67 Ga (Gallium-67 citrate)
b) 99mTc MDP (Technetium 99m-methyl diphosphonate)
c) 198 Au (Aurum-198)
d) 32 P (Phosphorus-32)
e) 111 In (Indium-111)

232. Increased radiopharmaceutical accumulation on bone scintigraphy usually provides diagnostic information related to:
a) process activity
b) localization
c) specificity
d) local extension
e) distant spread throughout the skeleton

233. Kidney location is commonly assessed using the following reference points:
a) adjacent soft tissues
b) ribs
c) vertebral bodies
d) stomach
e) pancreas

234. The kidneys are located:
a) in the abdominal cavity
b) in the thoracic cavity
c) retroperitoneal
d) in the peritoneal cavity
e) in the greater omentum

235. Which level of renal pelvis is considered as nephroptosis?
a) 1st lumbar vertebra and below
b) 2nd lumbar vertebra and below
c) 3rd lumbar vertebra and below
d) 4th lumbar vertebra and below
e) 5th lumbar vertebra and below

236. The superior pole of the right kidney is normally situated:
a) 1-2 cm lower compared to the left
b) 1-2 cm higher compared to the left
c) 3-4 cm lower compared to the left
d) 3-4 cm higher compared to the left
e) 5-6 cm lower compared to the left

237. The kidneys are normally located at the level of:
a) Th8 – Th10 vertebrae
b) Th10 – L1 vertebrae
c) Th12 – L2 vertebrae
d) L2 – L4 vertebrae
e) L1 – S1 vertebrae

238. The normal renal contour is:
a) regular, concave on the lateral and convex on the medial side
b) regular, convex on the lateral and concave on the medial side
c) irregular, bosselated
d) polycyclic
e) stellate

239. The long axes of the kidneys:
   a) are parallel to the vertebral column
   b) are parallel to the diaphragm
   c) are parallel to the lateral border of the psoas muscles
   d) intersect each other at an angle opened downwards
   e) intersect each other at an angle opened upwards

240. Which of the following statements about renal parenchyma are true?
   a) the renal cortex lies peripherally under the capsule
   b) the renal cortex consists of 10-14 renal pyramids
   c) renal pyramids (or Malpighi's pyramids) are separated from each other by an extension of renal cortex called renal columns
   d) the renal column (or column of Bertin) is a medullary extension of the renal cortex in between the renal pyramids.
   e) the renal medulla consists of 10-14 renal pyramids

241. Which statements about renal parenchyma are true?
   a) a renal lobe consists of a renal pyramid with associated overlying renal cortex and adjacent renal columns
   b) each renal lobe drains at a papilla into a major calyx
   c) four or five minor papilla unite to form a major calyx
   d) each kidney normally has two or three major calyxes
   e) major calyxes unite to form the renal pelvis

242. The renal opacification on intravenous urography reveals:
   a) relatively homogeneous renal shadows
   b) heterogenous renal shadows with hyperdense inclusions
   c) heterogenous renal shadows with transparent inclusions
   d) the calyces are usually visualized in up to 2 minutes following contrast administration
   e) the kidneys are usually not visualized

243. The renal parenchyma can be visualized using the following imaging modalities:
   a) retrograde pyelography
   b) computed tomography
   c) ultrasonography
   d) MRI
   e) color Doppler

244. The following imaging modalities are used for investigating the ureters:
   a) retrograde cystography
   b) retrograde pyelography
   c) intravenous urography
   d) color Doppler
   e) contrast enhancement with barium sulfate

245. The imaging modalities used for urinary bladder investigation include:
   a) cystography
   b) computed tomography
   c) ultrasonography
   d) intravenous urography
   e) color Doppler

246. On simple abdominal radiography the opacity of the urinary bladder is visualized:
a) always
b) never
c) rarely
d) in most patients in decubitus position
e) in most patients in erect position

247. Contrast agents that are used for radiographic study of kindneys and urinary tract are:
a) barium sulphate
b) iodinated contrast agents
c) nonionic contrast agents
d) gaseous contrast agents
e) paramagnetic contrast agents

248. A pyelogram usually displays:
a) minor calices
b) major calices
c) renal pelvis
d) urinary bladder
e) superior portion of the urethra

249. Kidney enlargement is commonly encountered in:
a) renal tumor
b) renal cysts
c) diffuse renal scarring
d) renal sclerosis
e) chronic pyelonephritis

250. The urinary tract that is usually visualized and assessed during intravenous urography includes:
a) kidneys
b) renal pelvis
c) ureters
d) urinary bladder
e) urethra

251. In most patients contrast filling of the ureters during intravenous urography has the following pattern:
a) complete filling throughout their entire length in both erect and supine positions
b) complete filling throughout their entire length only in supine position
c) contrast filling of separate segments
d) no contrast filling
e) contrast filling only on compression

252. Absence of contrast filling of one kidney during intravenous urography is most likely to be related to:
a) changes in renal excretory function
b) administration of a large amount of contrast causing renal toxicity
c) acute obstructive uropathy caused by a ureteral stone
d) acute allergic reaction to contrast material
e) inadequate patient hydration before the study

253. Radiological signs of pelvic renal dystopia (pelvic kidney) include:
   a) caudal displacement of the dystopic kidney
   b) short ureter
   c) elongated ureter with tortuous proximal segment
   d) elongated ureter with tortuous distal segment
   e) hydronephrosis

254. The effects of elevated pressure in the renal pelvis include:
   a) shrinkage of renal pelvis
   b) delayed contrast filling of renal artery
   c) absence of nephrogram (i.e. non-visualization of calyces within the first 2 minutes following contrast administration)
   d) decreased renal volume
   e) renal pelvis dilatation

255. Radiological signs of polycystic kidney disease include:
   a) reduced kidney volume
   b) normal-sized kidneys
   c) renal enlargement
   d) renal deformation
   e) enlarged, multilobulated renal outlines

256. Imaging features that are useful for differentiating nephroptosis from renal dystopia include:
   a) level of renal pelvis in relation to vertebral bodies
   b) ureter length
   c) level of origin of renal artery
   d) kidney size
   e) topographical relations of the ureter and renal vessels within the renal pelvis

257. Increased muscular tone of the urinary tract is usually encountered in:
   a) older individuals
   b) side effects of certain medications
   c) inflammatory diseases of the urinary tract
   d) obstruction of the upper urinary tract
   e) overactive bladder syndrome (hypertonic bladder)

258. The term “absent renal function” can be used based on the following:
   a) absence of contrast in the urinary bladder at the end of intravenous urography
   b) absence of contrast in the urinary bladder at the end of retrograde pyelography
   c) non-visualization of ureters on intravenous urography
   d) absence of contrast enhancement of renal calices and pelvis
   e) absence of nephrogram (i.e. non-visualization of calyces within the first 2 minutes following contrast administration)

259. The imaging modality with the highest sensitivity for detecting renal stones in patients with hydronephrosis is:
   a) excretory urography
   b) angiography
   c) retrograde pyelography
   d) ultrasonography
   e) renal scintigraphy

260. A diffusely scarred and atrophic kidney with deformed calyces and renal pelvis, unclear contours of minor calyces and cortical vascular obliteration is most likely to be found in:
a) renal tuberculosis
b) contracted kidney
c) renal hypoplasia
d) polycystic kidney disease
e) renal tumor

261. Dilated renal pelvis and calyces with atrophic renal parenchyma and prominently decreased renal function are most likely to be found in:
a) solitary renal cyst
b) renal hypoplasia
c) hydronephrosis
d) polycystic kidney disease
e) chronic pyelonephritis

262. An avascular anechoic defect in renal parenchyma with well-defined contours that is compressing the calyces and displacing the ureter and renal pelvis is most likely to represent:
a) renal tumor
b) chronic pyelonephritis
c) renal tuberculosis
d) a solitary renal cyst
e) hydronephrosis

263. Normal-sized kidneys with a relatively homogeneous appearance, well defined contours, normal calyces and moderately dilated renal pelvis are most likely to be found in:
a) renal hypoplasia
b) chronic pyelonephritis
c) pyeloectasia
d) renal tumors
e) polycystic kidney disease

264. The most informative imaging modality for detecting nephroptosis is:
a) ultrasonography with the patient in erect position
b) excretory urography (intravenous urography)
c) retrograde pyelography
d) planar abdominal radiography
e) radioscopy

265. The most informative imaging modality for evaluating renal hypoplasia is:
a) ultrasonography
b) retrograde pyelography
c) planar abdominal radiography
d) radioscopy
e) arteriography

266. The most informative imaging modality for evaluating renal aplasia is:
a) ultrasonography
b) retrograde pyelography
c) planar abdominal radiography
d) radioscopy
e) arteriography

267. Radiological signs of nephroptosis include:
   a) caudal displacement of the affected kidney
   b) cranial displacement of the affected kidney
   c) short ureter
   d) tortuous ureter
   e) hydronephrosis

268. Radiological signs of hydronephrosis include:
   a) caudal displacement of the affected kidney
   b) enlarged renal pelvis
   c) dilated calyces
   d) short ureter
   e) shrunken renal pelvis and atrophic calyces

269. Abdominal X-ray shows an enlarged heterogeneous right kidney with irregular contours. Retrograde pyelography reveals dilated right renal calyces and a filling defect with poorly defined borders in adjacent renal parenchyma. The most likely diagnosis is:
   a) solitary renal cyst
   b) hydronephrosis
   c) renal tumor
   d) renal tuberculosis
   e) chronic pyelonephritis

270. The most informative imaging modality for evaluating a “mute kidney” in a patient with hydronephrosis is:
   a) intravenous urography
   b) radioscopy
   c) planar abdominal radiography
   d) double contrast study
   e) computed tomography

271. Intravenous urography in suspected nephroptosis should include the following projections:
   a) lateral projection
   b) oblique projections
   c) with the patient in erect (vertical) position
   d) with the patient in decubitus (horizontal) position
   e) with the patient in Trendelenburg position

272. Radiological signs of hydronephrosis on intravenous urography include:
   a) kidney enlargement
   b) normal appearing calyces and renal pelvis
   c) homogeneous renal opacity in parenchymal phase
   d) decreased size of the affected kidney (shrunken kidney)
   e) enlarged deformed renal pelvis and calyces

273. The most informative imaging modality for detecting radionegative renal concrements is:
   a) excretory urography
   b) planar abdominal X-ray
   c) linear tomography
   d) ultrasonography
   e) renal scintigraphy

274. Liver scintigraphy is performed after administration of:
   a) a paramagnetic contrast agent
   b) a soluble iodinated contrast agent
   c) a negative contrast agent
   d) a radiopharmaceutical
   e) barium sulfate

275. Liver ultrasonography is an imaging modality that can be best described as:
   a) palliative
   b) invasive
   c) radioactive
   d) noninvasive
   e) heterogeneous

276. The ultrasonographic appearance of normal liver parenchyma is:
   a) homogeneous
   b) heterogeneous
   c) micronodular with smooth echotexture
   d) anechoic
   e) mixed

277. The 12th rib shadow crosses the right kidney at the level of:
   a) renal hilum
   b) the border between its upper and middle third
   c) the border between its middle and lower third
   d) superior pole
   e) the right kidney is normally located below the 12th rib shadow

278. The smallest size of urinary tract stones that can be detected by ultrasonography in most patients is:
   a) 1 mm
   b) [x] 4 mm
   c) 6 mm
   d) 8 mm
   e) 10 mm

279. Which of the following are imaging modalities?

   a) Fluoroscopy
   b) Ecography
   c) Endoscopy
   d) Scintigraphy
   e) Laparoscopy

280. Which of the following are electromagnetic waves?
   a) X-rays
   b) Gamma-rays
   c) Ultrasound
   d) Radio waves
   e) Infrared rays

281. Which of the following represent ionizing radiation?
   a) X-rays
   b) Gamma-rays
   c) Ultrasound
   d) Radio waves
   e) Infrared rays

282. Which of the following imaging modalities use X-rays?
   a) Scintigraphy
   b) Barium enema
   c) Echo Doppler
   d) Computed tomography
   e) Thermography

283. Which of the following imaging modalities uses Gamma-rays?
   a) Scintigraphy
   b) Barium enema
   c) Echo Doppler
   d) Computed tomography
   e) Thermography

284. Which of the following imaging modalities uses radio waves?
   a) Magnetic Resonance Imaging
   b) Fluoroscopy
   c) Echo Doppler
   d) Computed tomography
   e) Thermography

285. Which of the following imaging modalities uses ultrasound?
   a) Ecography M-mode
   b) Barium enema
   c) Echo Doppler
   d) Computed tomography
   e) Thermography

286. Which of the following imaging modalities uses infrared waves?
   a) Ultrasonography
   b) Barium enema
   c) Echo Doppler
   d) Computed tomography
   e) Thermography

287. Which of the following represents a source of X-rays in medical imaging?
   a) Piezoelectric crystal
   b) X-ray tube
   c) Radionuclide
   d) Magnet
   e) Human body

288. Which of the following represents a source of gamma rays in medical imaging?
   a) Piezoelectric crystal
   b) X-ray tube
   c) Radionuclide
   d) Magnet
   e) Human body

289. Which of the following represents a source of ultrasound waves in medical imaging?
   a) Piezoelectric crystal
   b) X-ray tube
   c) Radionuclide
   d) Magnet
   e) Human body

290. Which of the following represents a source of radio waves (radiofrequency pulse) in medical imaging?
   a) Piezoelectric crystal
   b) X-ray tube
   c) Radionuclide
   d) Radio frequency coils / antenna (in magnetic resonance imaging)
   e) Human body

291. Which of the following represents a source of infrared waves?
   a) Piezoelectric crystal
   b) X-ray tube
   c) Radionuclide
   d) Radio frequency antenna
   e) Human body

292. Which of the following are radionegative contrast media?
   a) Barium sulfate
   b) Air
   c) Radiopharmaceutical
   d) Carbon dioxide
   e) Iodinated contrast media

293. Which of the following are radiopositive contrast media?
   a) Barium sulfate
   b) Air
   c) Radiopharmaceutical
   d) Carbon dioxide
   e) Iodinated contrast media

294. X-ray absorption depends on:
   a) Structure elasticity
   b) Structure density
   c) Structure localization
   d) Structure thickness
   e) The quantity of hydrogen protons in the tissue

295. Tomography is:
a) An image of a section
b) A 3-dimensional reconstruction of an organ
c) A planar summary image of an anatomical region of the body
d) A 3-dimensional reconstruction of the whole body
e) A planar summary image of the whole body

296. High-density structures on X-ray (radiographic) imaging are called:
a) Opaque
b) Hyperdense
c) Hyperechogenic
d) Hyperintense
e) Hyperlucent

297. Low-density structures on X-ray (radiographic) imaging are called:
a) Lucent
b) Hypodense
c) Hypoechogenic
d) Hypointense
e) Opaque

298. High-density structures in computed tomography are called:
a) Opaque
b) Hyperdense
c) Hyperechogenic
d) Hyperintense
e) Hyperlucent

299. Low-density structures in computed comography are called :
a) Lucent
b) Hypodense
c) Hypoechogenic
d) Hypointense
e) Opaque

300. Structures associated with strong wave reflections in ultrasonography are called:
a) Opaque
b) Hyperdense
c) Hyperechogenic
d) Hyperintense
e) Hyperlucent

301. Structures associated with weak wave reflections in ultrasonography are called:
a) Lucent
b) Hypodense
c) Hypoechogenic
d) Hypointense
e) Opaque

302. Contraindication for radiological investigation include:
   a) Lactation period
   b) Pregnancy
   c) The presence of metallic foreign bodies in the human body
   d) The presence of skin lesions in the area of investigation
   e) Claustrophobia

303. Contraindication(s) for MRI (Magnetic Resonance Imaging) investigation include:
   a) Lactation period
   b) Pregnancy
   c) The presence of metallic foreign bodies in the human body
   d) The presence of skin lesions in the area of investigation
   e) The presense of pacemaker

304. Contraindication(s) for computed tomography include:
   a) Lactation period
   b) Pregnancy
   c) The presence of metallic foreign bodies in the human body
   d) The presence of skin lesions in the area of investigation
   e) Claustrophobia

305. Contraindication(s) for Ultrasonography investigation include:
   a) Lactation period
   b) Pregnancy
   c) The presence of metallic foreign bodies in the human body
   d) The presence of pacemaker
   e) There are no contraindications for USG

306. Angiography is performed using the following contrast medium:
   a) Barium sulfate
   b) Radionegative
   c) Radiopositive hydrosoluble
   d) Radiopositive liposoluble
   e) Radiopharmaceutical agent

307. Radiological investigation of the colon with barium sulphate is called:
   a) Colonoscopy
   b) Barium enema
   c) Endoscopy
   d) Fluoroscopy
   e) Celioscopy

308. Arthrography represents:
   a) Ultrasound investigation of the arteries
   b) Radiological investigation of the arteries with contrast media
   c) Endoscopic investigation of the joints
   d) Radiological investigation of the joints with contrast media
   e) Ecographic investigation of the atria

309. The principles of computed tomography include:
a) Linear movement of the X-ray tube along the patient's body
b) Circular movement of the X-ray tube around the patient's body
c) Image acquisition by summing up the plans
d) Image acquisition of a body section
e) Reception of the Gamma rays emitted by the radionuclide

310. Indicate the types of nuclear radiation:
a) Infrared rays
b) Alpha particles
c) Beta particles
d) Gamma rays
e) Radio waves

311. A radionuclide represents:
a) A radiopositive contrast agent
b) A radionegative contrast agent
c) A radiopharmaceutical
d) A radioactive isotope
e) A paramagnetic contrast agent

312. A radiopharmaceutical represents:
a) A radiopositive contrast media
b) A radionegative contrast media
c) Complex molecules that have tropism to a particular tissue, marked with a radionuclide
d) A paramagnetic contrast agent
e) A gamma camera

313. The greatest speed of ultrasound propagation is in the:
a) Air
b) Water
c) Soft tissues
d) Metal
e) Fat tissue

314. Echocardiographical examination of the moving cardiac structures is performed by the following mode:
a) A mode
b) B mode
c) M mode
d) Color Doppler
e) Pulsatile Doppler

315. The method of choice for investigation of the lungs is:
a) Radiography
b) Ultrasonography
c) Scintigraphy
d) Computed Tomography
e) Magnetic Resonance Imaging

316. The method of choice for investigation of the heart is:
a) Radiography
b) Ultrasonography
c) Scintigraphy
d) Computed Tomography
e) Magnetic Resonance Imaging

317. The method of choice for investigation of the liver is:
a) Radiography
b) Ultrasonography
c) Scintigraphy
d) Computed Tomography
e) Magnetic Resonance Imaging

318. The method of choice for investigation of the kidneys is:
a) Radiography
b) Ultrasonography
c) Scintigraphy
d) Computed Tomography
e) Magnetic Resonance Imaging

319. Fluoroscopy allows investigation of:
a) Pulmonary hilum structure
b) Pulmonary vascular pattern
c) Interlobe fissures
d) Diaphragm mobility
e) Ribs

320. The technique of pulmonary ventilation scintigraphy involves:
a) Intrabronchial introduction of contrast medium
b) Intravenous introduction of contrast medium
c) Intravenous introduction of a radiopharmaceutical
d) Inhalation of a radiopharmaceutical
e) Intraarterial introduction of contrast medium

321. The technique of pulmonary perfusion scintigraphy involves:
a) Intrabronchial introduction of contrast medium
b) Intravenous introduction of contrast medium
c) Intravenous introduction of radiopharmaceutical
d) Inhalation of radiopharmaceutical
e) Intraarterial introduction of contrast medium

322. Bronchography allows assessment of:
a) Pulmonary parenchyma
b) Bronchi
c) Pulmonary parenchyma and bronchi
d) Pulmonary parenchyma, bronchi and pleura
e) Bronchial arteries

323. Bronchial arteries that supply the lung tissue originate from:
   a) Intercostal arteries and thoracic aorta
   b) Abdominal aorta
   c) Pulmonary arteries
   d) Pulmonary veins
   e) Acsending aorta

324. Anatomical substrate of the normal pulmonary hilum on the radiological image is:
   a) Lymphatic nodes
   b) Lymphatic vessels
   c) Bronchi
   d) Pulmonary arteries and veins
   e) Bronchial arteries

325. Anatomical substrate of the normal pulmonary vascular pattern consists of:
   a) Bronchi
   b) Lymphatic vessels
   c) Bronchi, lymphatic vessels and arteries
   d) Arteries and veins
   e) Connective tissue

326. In pneumothorax, the collapsed lung is displaced:
   a) superiorly
   b) anteriorly
   c) inferiorly and medially
   d) superiorly and laterally
   e) is not displaced

327. How many anatomical zones has a lung?
   a) Three
   b) Four
   c) Five
   d) Six
   e) Seven

328. The smallest autonomous unit of the lungs is:
   a) Acinus
   b) Sublobule
   c) Lobule
   d) Segment
   e) Lobe

329. Localization of lung pathology should be preferably indicated by:
   a) Intercostal spaces
   b) Pulmonary zones
   c) Segments
   d) Lobes
   e) Ribs

330. Intensity of the opacity depends on the following criteria of the morphological substrate:
a) Density and dimensions
b) Localization
c) Dimension
d) Dimensioni and localization
e) Density and localization

331. Tracheal bifurcation is located at the level of the following thoracic vertebrae:
a) Third
b) Fourth
c) Fifth-sixth
d) Seventh
e) Eighth

332. Basic radiological methods of investigation of the respiratory system are:
a) fluoroscopy
b) radiography
c) tomography
d) bronchography
e) angiopulmonography

333. Special radiological methods of investigation of the respiratory system are:
a) fluoroscopy
b) radiography
c) cystography
d) bronchography
e) angiopulmonography

334. For general angiopulmonography, the contrast agent is injected:
a) by catheter into the left ventricle
b) by catheter into one of the pulmonary atery branches
c) into one of the peripheral veins
d) by catheter into aorta
e) by catheter into one of bronchial arteries

335. In selective angiopulmonography, the contrast agent is injected:
a) by catheter into the left ventricle
b) by catheter into one of the pulmonary atery branches
c) into one of the peripheral veins
d) by catheter into aorta
e) by catheter into one of bronchial arteries

336. In bronchography, the contrast agent is introduced into:
a) A peripheral vein
b) Pulmonary artery
c) Ascending aorta
d) Bronchi
e) Trachea

337. Which of the following statements are true?
   a) The left lung has three lobes and the right has two lobes
   b) Middle lobe of the left lung has 2 segments
   c) Inferior lobe of the right lung has 5 segments
   d) Horizontal fissure separates the superior and inferior lobes
   e) Oblique fissure separates the middle lobe and inferior lobe

338. Which of the following statements correspond to a normal chest X-ray image:
   a) Pulmonory hilum is situated between the ahterior arches of the second and the fourth ribs
   b) The right hemidiaphragm is located lower than the left one
   c) The pulmonary vascular pattern is reacher in the apical region
   d) The pulmonary vascular pattern is reacher in the basal region
   e) The right hemidiaphragm is located higher than the left hemidiaphragm

339. Hyperlucency of lung field occurs due to:
   a) Densification of lung tissue
   b) Presence of fluid in the pleural cavity
   c) Absence of lung tissue pneumatization
   d) Increased air content in the lung
   e) Pneumothorax

340. Opacity symptom of lung field occurs due to:
   a) Densification of lung tissue
   b) Presence of air in the pleural cavity
   c) Absence of lung tissue pneumatization
   d) Increased air content in the lung
   e) Presence of fluid in the pleural cavity

341. A total or subtotal homogeneous opacity with mediastinal shift towards the opacity is characteristic for:
   a) Massive exudative pleural effusion
   b) Diaphragmatic hernia which contains bowel loops
   c) Pulmonary atelectasis
   d) Pulmonary cirrhosis
   e) Acute inflammation of the lung parenchyma

342. A total or subtotal opacity without mediastinal shift is characteristic for:
   a) Massive exudative pleural effusion
   b) Diaphragmatic hernia which contains bowel loops
   c) Pulmonary atelectasis
   d) Pulmonary cirrhosis
   e) Acute inflammation of the lung parenchyma

343. A total or subtotal heterogeneous opacity with mediastinal shift away from the opacity is characteristic for:
   a) Massive exudative pleural effusion
   b) Diaphragmatic hernia which contains bowel loops
   c) Pulmonary atelectasis
   d) Pulmonary cirrhosis
   e) Acute inflammation of the lung parenchyma

344. A total or subtotal homogeneous opacity with mediastinal shift away from opacity is characteristic for:
   a) Massive exudative pleural effusion
   b) Diaphragmatic hernia which contains bowel loops
   c) Pulmonary atelectasis
   d) Pulmonary cirrhosis
   e) Acute inflammation of the lung parenchyma

345. A total or subtotal heterogeneous opacity with mediastinal shift towards the opacity is characteristic for:
   a) Massive exudative pleural effusion
   b) Diaphragmatic hernia which contains bowel loops
   c) Pulmonary alelectasis
   d) Pulmonary cirrhosis
   e) Acute inflammation of the lung parenchyma

346. Which of the following are characteristic for total or subtotal opacity symptom in pulmonary atelectasis?
   a) Homogeneous opacity
   b) Heterogeneous opacity
   c) Mediastinal shift away from the opacity
   d) Mediastinal shift towards the opacity
   e) Without mediastinal shift

347. Which of the following are characteristic for total or subtotal opacity symptom in pulmonary cirrhosis?
   a) Homogeneous opacity
   b) Heterogeneous opacity
   c) Mediastinal shift away from the opacity
   d) Mediastinal shift towards the opacity
   e) Without mediastinal shift

348. Which of the following are characteristic for total or subtotal opacity symptom in exudative pleural effusion?
   a) Homogeneous opacity
   b) Heterogeneous opacity
   c) Mediastinal shift away from the opacity
   d) Mediastinal shift towards the opacity
   e) Without mediastinal shift

349. Which of the following are characteristic for total or subtotal opacity symptom in diaphragmatic hernia containing bowel loops?
   a) Homogeneous opacity
   b) Heterogeneous opacity
   c) Mediastinal shift away from the opacity
   d) Mediastinal shift towards the opacity
   e) Without mediastinal shift

350. A limited opacity in the middle zone of the lung field with fuzzy (ill-defined) borders, polygonal shape (triangular), costal intensity is characteristic for:
   a) Tumor
   b) Inflammatory process of lung parenchyma
   c) Free fluid in the pleural cavity
   d) Pnemothorax
   e) Hydatic cyst

351. In acute inflammatory process of pulmonary parenchyma, the opacity has the following characteristics:
   a) well-defined borders
   b) polygonal shape (triangular)
   c) ill-defined borders
   d) mediastinal shift towards the affected side
   e) changes its shape with changing of the patient position

352. Opacity displacement and changing of its shape after changing of the patient position is characteristic for:
   a) Encapsulated fluid in the pleural cavity
   b) Free fluid in the pleural cavity
   c) Inflammatory process of lung parenchyma
   d) Atelectasis
   e) Tumor

353. For free fluid accumulation in the pleural cavity is characteristic:
   a) Opacity shape and location modify with changing of the patient position
   b) Oblique superior border
   c) Hyperlucency of the lung field
   d) Heterogenous structure
   e) Horizontal superior border

354. Rounded opacity in the lung field with clear well-defined outline is characteristic for:
   a) Tuberculous cavern
   b) Free fluid in the pleural cavity
   c) Eosinophilic (inflammatory) infiltration
   d) Hydatid cyst
   e) Benign tumor

355. Radiographic characteristics of peripheral non-necrotizing lung cancer include:
   a) Total opacity with mediastinal shift towards the opacity
   b) Round opacity with clear regular borders
   c) Rounded opacity with irregular borders
   d) Single nodular opacity
   e) Ring-shaped opacity

356. Radiographic characteristics of hydatid cyst of the lung include:
   a) Total opacity with mediastinal shift towards the opacity
   b) Round opacity with clear regular outline
   c) Round opacity with irregular outline
   d) Increased transparency of the lung field
   e) Ring-shaped opacity

357. Radiographic characteristics of the necrotic phase of peripheral lung cancer include:
   a) Round opacity with clear irregular outline
   b) Ring-shaped opacity with thick walls and irregular internal outline
   c) Round opacity with blurred outline
   d) Ring-shaped opacity with adjacent nodular opacities
   e) Nodular pulmonary opacity

358. Hydro-aeric level can be usually noted in:
a) Hydrothorax
b) Pneumothorax
c) Hydropneumothorax
d) Partly evacuated lung abcess
e) Peripheral lung cancer

359. Ring-shaped opacity symptom with bronchial drainage and adjacent nodular opacities is characteristic for:
a) Pulmonary abscess
b) Peripheral lung cancer
c) Air cyst
d) Tuberculous cavern
e) Hydatic cyst

360. Ring-shaped opacity symptom with thick walls, disrupted irregular internal outline, presence of "vascular route" to hilum and hilar lymphatic nodes enlargement are characteristic for:
a) Pulmonary abscess
b) Necrotic phase of the peripheral lung cancer
c) Air cyst
d) Tuberculous cavern
e) Hydatic cyst

361. Multiple ring-shaped opacities of various size, round or oval in appearance, thin walled, with clear regular outline and no fluid content are characteristic for:
a) Multiple air cysts (policystosis)
b) Hydatid cyst
c) Tuberculous cavern
d) Necrotic phase of the peripheral lung cancer
e) Lung abscesses

362. A tendency for confluence of nodular opacities is observed in:
a) Acute bronchopneumonia
b) Peripheral lung cancer
c) Bronchogenic dissemination of tuberculosis origin
d) Pulmonary metastases
e) Pneumoconiosis

363. A single nodular opacity in the lung field is commonly noted in:
a) Miliary tuberculosis
b) Pneumoconiosis
c) Bronchopneumonia
d) Haemosiderosis
e) Peripheral lung cancer

364. Diffuse disseminated nodular opacities are usually seen in:
a) Miliary tuberculosis
b) Pneumoconiosis
c) Pleural effusion
d) Haemosiderosis
e) Lung abscess

365. For pulmonary emphysema is characteristic the following:
   a) Total opacity of the lung field
   b) Hyperlucency of the lung field
   c) Intercostal space widening
   d) Intercostal space narrowing
   e) Enhanced vascular pattern

366. For pulmonary emphysema is characteristic the following:
   a) Flattening of the diaphragm
   b) Diaphragm ascending
   c) Reduced vascular pattern
   d) Barrel-shaped chest
   e) Prominent difference between transparency of lung fields on inspiration and expiration

367. Hyperlucency of the lung field, intercostal space widening, flattening of the diaphragm, limited respiratory excursion of the diaphragm are characteristic for:
   a) Pulmonary atelectasis
   b) Diaphragm ascending
   c) Pulmonary emphysema
   d) Miliary tuberculosis
   e) Pneimonia

368. Hyperlucency of the lung field commonly appears in:
   a) Partial bronchostenosis
   b) Valvular bronchostenosis
   c) Total bronchostenosis
   d) Pneumonia
   e) Atelectasis

369. Hypotranslucency (decreased lucency) of the lung field commonly appears in:
   a) Partial bronchostenosis
   b) Valvular bronchostenosis
   c) Total bronchostenosis
   d) Atelectasis
   e) Pneumonia

370. Opacification of the lung field commonly appears in:
   a) Partial bronchostenosis
   b) Valvular bronchostenosis
   c) Total bronchostenosis
   d) Pneumotorax
   e) Pulmonary emphisema

371. Paracostal hyperlucency with no vascular pattern (disappearance of bronchovascular markings) is characteristic for:
   a) Pulmonary emphysema
   b) Pneumothorax
   c) Dysplasia of the pulmonary vessels and bronchi
   d) Tuberculous cavern
   e) Hydrothorax

372. Enhanced pulmonary vascular pattern occurs in:
   a) Pulmonary venous congestion
   b) Valvular bronchial obturation
   c) Pulmonary arterial hypovolemia
   d) Bronchiectasis
   e) Pulmonary arterial hypervolemia

373. Deformation of the pulmonary vascular pattern (deformed bronchovascular markings) is usually noted in:
   a) Valvular bronchial obturation
   b) Pulmonary hypertension
   c) Bronchiectasis
   d) Pneumoconiosis
   e) Pulmonary venous congestion

374. Radiographic characteristics of pulmonary venous congestion include:
   a) Reduced pulmonary vascular pattern
   b) Enhanced pulmonary vascular pattern
   c) Deformation of the pulmonary vascular pattern
   d) Dilatation of pulmonary hilum
   e) Narrowing of pulmonary hilum

375. Radiographic characteristics of pulmonary arterial hypovolemia include:
   a) Reduced pulmonary vascular pattern
   b) Enhanced pulmonary vascular pattern
   c) Deformation of the pulmonary vascular pattern
   d) Dilatation of pulmonary hilum
   e) Pulmonary vascular pattern becomes more evident in apical regions

376. Radiographic characteristics of bronchiectasis include:
   a) Reduced pulmonary vascular pattern
   b) Enhanced pulmonary vascular pattern
   c) Deformation of the pulmonary vascular pattern
   d) Total opacification of the affected hemithorax
   e) Multiple ring-shaped opacities with air fluid levels

377. Radiographic characteristics of chronic bronchitis include:
   a) reduced pulmonary vascular pattern
   b) enhanced pulmonary vascular pattern
   c) deformation of the pulmonary vascular pattern
   d) dilatation of pulmonary hilum
   e) narrowing of pulmonary hilum

378. Radiographic characteristics of pulmonary hilum lymph nodes enlargement include:
   a) ill-defined outline of the pulmonary hilum
   b) irregular outline of the pulmonary hilum
   c) polycyclic outline of the pulmonary hilum
   d) narrowing of pulmonary hilum
   e) dilatation of pulmonary hilum

379. Radiographic characteristics of pulmonary hilum inflammatory infiltration include:
a) ill-defined outline of the pulmonary hilum
b) irregular outline of the pulmonary hilum
c) polycyclic outline of the pulmonary hilum
d) narrowing of pulmonary hilum
e) reduced pulmonary vascular pattern

380. Direction of the opacity displacement during inspiration depends on:
a) Anatomic substrate of the opacity
b) Opacity localization
c) Dimensions
d) Relations with pulmonary hilum
e) Number of opacities

381. Fluid in the oblique fissure is better assessed on X-ray in the following projection:
a) Posteroanterior
b) Left anterior oblique
c) Lateral
d) Supine
e) Right anterior oblique

382. Which radiological method is more effective for determination of small quantity of fluid in the pleural cavity:
a) Fluoroscopy
b) Radiography
c) Tomography
d) Laterography
e) Diagnostic pneumoperitoneum

383. The correct order of left heart border convexities in postero-anterior projection is:
a) Aortic knob, descending aorta, left atrial auricula, left ventricle
b) Aortic knob, left atrial auricula, pulmonary artery, left ventricle
c) Aortic knob, main pulmonary artery, left atrial auricula, left ventricle
d) Aortic knob, pulmonary artery cone, left atrium, left ventricle
e) Ascending aorta, pulmonary artery, left atrial auricula, left ventricle

384. The correct order of right heart border convexities in postero-anterior projection is:
a) Right ventricle, ascending aorta, superior vena cava
b) Right atrium, ascending aorta, superior vena cava
c) Right ventricle, ascending aorta, superior vena cava
d) Right ventricle, right atrium, superior vena cava
e) Right ventricle, right atrium, ascending aorta

385. The cardiac axis orientation in normosthenic constitution is usually:
a) Oblique
b) Horizontal
c) Vertical
d) it does not depend on constitution type
e) it depends on the age of the patient

386. The cardiac axis orientation in hypersthenic constitution is usually:
a) Oblique
b) Horizontal
c) Vertical
d) It does not depend on constitution type
e) It depends on the age of the patient

387. The cardiac axis orientation in asthenic constitution is usually:
a) Oblique
b) Horizontal
c) Vertical
d) it does nott depend on constitution type
e) it depends on the age of the patient

388. The inferior convexity of the right heart border on postero-anterior chest radiograph is formed by:
a) Right ventricle
b) Right atrium
c) Right ventricle and right atrium
d) Left ventricle
e) Left atrium

389. Aortic heart configuration is usually noted in:
a) Patent ductus arteriosus
b) Tetralogy of Fallot
c) Pulmonary artery stenosis
d) Coarctation of aorta
e) Mitral stenosis

390. Mitral heart configuration is usually noted in:
a) Patent ductus arteriosus
b) Tetralogy of Fallot
c) Aortic stenosis
d) Coarctation of aorta
e) Mitral stenosis

391. The right atriovasal angle on the frontal view of cardiac silhouette is usually displaced upwards in:
a) Mitral stenosis
b) Aortic stenosis
c) Mitral insufficiency
d) Aortic insufficiency
e) Atrial septal defect

392. Pulmonary transparency (lucency) in patients with pulmonary venous congestion:
a) Increases at the periphery
b) Increases over the entire lung surface
c) Decreases over the entire lung surface
d) Decreases at the periphery
e) Does not change

393. Mitral insufficiency is characterized by enlargement of:
   a) Right atrium
   b) Right ventricle
   c) Left atrium
   d) Left ventricle
   e) Aorta

394. Trapezoidal heart configuration is usually noted in:
   a) Abnormal pulmonary venous drainage
   b) Tetralogy of Fallot
   c) Mitral stenosis
   d) Myocarditis
   e) Pericardial effusion

395. Basic imaging methods for investigation of gastrointestinal (GI) tract are:
   a) Fluoroscopy
   b) Radiography
   c) Fibrogastroscopy
   d) Laparoscopy
   e) Scintigrapfy

396. Radiological exploration of the digestive tract without contrast administration is usefull for detecting:
   a) Metallic foreign bodies and stones
   b) Gastric ulcer
   c) Esophageal diverticulum
   d) Free gas in the abdominal cavity
   e) Achalazia of cardia

397. Patient preparation for radiological examination of the stomach consists of:
   a) Application of a cleansing enema in the evening before the day of investigation
   b) Fasting in the morning before the investigation (empty stomach examination)
   c) Administration of a laxative
   d) Abstaining from smoking in the morning before the investigation
   e) Application of a cleaning enema in the morning

398. Barium enema is related to:
   a) Radiological examination of the small intestine
   b) Radiological examination of the large intestine
   c) Radiological examination of the duodenum
   d) Radiological examination of the stomach
   e) Radiological examination of the esophagus

399. Oral administration of cold fluids:
   a) Accelerates intestinal transit
   b) Slows intestinal transit
   c) Does not influence the rate of intestinal transit
   d) Is indicated in suspected perforation of gastric ulcer
   e) Is indicated in suspected penetration of gastric ulcer

400. Oral administration of warm fluids:
a) Accelerates intestinal transit
b) Slows intestinal transit
c) Does not influence the rate of intestinal transit
d) Is indicated in suspected perforation of gastric ulcer
e) Is indicated in suspected penetration of gastric ulcer

401. Gastric content evacuation is most expressed in the following position:
a) Right lateral position
b) Left lateral position
c) Dorsal decubitus position
d) Ventral decubitus position
e) Not influenced by position

402. Patient preparation for barium enema includes:
a) Application of a cleansing enema
b) Fasting (no food intake) for 24 hours
c) Administration of hypotonic medication
d) Does not require any special preparation
e) Abstaining from smoking after the investigation

403. The modality of choice for detection of swallowed metallic foreign bodies is:
a) Stomach fluoroscopy with barium sulfate
b) Hypotonic duodenography
c) Barium enema
d) Plain (simple) abdominal radiography
e) Laparoscopy

404. Which of the following are functional modifications of the digestive tract:
a) Atonia
b) Stenosis
c) Spasm
d) Hypersecretion
e) Atrophy

405. Which of the following are morphological modifications of the digestive tract:
a) Atonia
b) Stenosis
c) Spasm
d) Hypersecretion
e) Atrophy

406. Radiographic characteristics of achalasia include:
a) Stenotic middle third of the thoracic part of esophagus
b) Narrowing of the cardia
c) Diffuse suprastenotic dilatation of the esophagus
d) Stomach dilatation
e) Niche

407. Diverticulum complications include:
a) Diverticulitis
b) Hemorrhage
c) Diverticulosis
d) Perforation
e) Disappearance of the diverticulum

408. Esophageal stenosis in chemical esophageal combustions (caustic injuries) commonly occurs at the level
of:
a) Superior third of thoracic part
b) Middle third of thoracic part
c) Distal part (abdominal)
d) Physiological narrowings
e) Cervical part

409. The stomach region with the strongest fixation to adjacent anatomical structures is:
a) Fornix
b) Body
c) Gastric angle
d) Antrum
e) Pyloric canal

410. Morphological radiological signs of stomach ulcer include:
a) Niche
b) Lacuna
c) Oedematous margin (marginal oedema)
d) Convergence of gastric mucosal/submucosal folds
e) „Index finger" sign

411. Radiographic characteristics of a gastric polyp on barium studies include:
a) Niche
b) Lacuna
c) Oedematous margin (marginal oedema)
d) Convergence of gastric folds
e) „Index finger" sign

412. Deviation of gastric folds on barium studies is usually seen in:
a) Chronic gastric ulcers
b) Benign tumors
c) Malignant tumors
d) Gastric polyps
e) Gastric ulcers

413. Interruption of gastric folds on barium studies is usually seen in:
a) Chronic gastric ulcers
b) Benign tumors
c) Malignant tumors
d) Gastric polyps
e) Gastric ulcers

414. Convergence of gastric folds on barium studies is usually seen in:
   a) Chronic gastric ulcers
   b) Benign tumors
   c) Malignant tumors
   d) Gastric polyps
   e) Gastric ulcers

415. Functional change(s) of gastric mucosa include:
   a) Atonia
   b) Hipersecretion
   c) Hypertonia
   d) Spasm
   e) Atrophy

416. In suspected perforation of gastric or duodenal ulcer, the investigation modality of choice is:
   a) Plain (simple) abdominal radiography
   b) Primary double-contrast examination of the stomach
   c) Hypotonic duodenography
   d) Examination of the stomach with barium sulfate
   e) Barium enema

417. A relevant radiological sign of perforated gastric ulcers is:
   a) Niche
   b) Pneumoperitoneum
   c) Oedematous margin (marginal oedema)
   d) Convergence of gastric folds
   e) Pneumothorax

418. A relevant radiological sign of small bowel obstruction is:
   a) Hydro-aeric levels localized in the central abdominal region
   b) Hydro-aeric levels localized at the periphery of the abdominal region
   c) Pneumoperitoneum
   d) Pneumothorax
   e) Lacuna

419. A relevant radiological sign of large bowel obstruction is:
   a) Hydro-aeric levels localized in the central abdominal region
   b) Hydro-aeric levels localized at the periphery of the abdominal region
   c) Pneumoperitoneum
   d) Pneumothorax
   e) Lacuna

420. Hydro-aeric levels localized in the central abdominal region on abdominal radiography are usually indicative of:
   a) Perforation of gastric ulcer
   b) Penetration of gastric ulcer
   c) Small bowel obstruction
   d) Large bowel obstruction
   e) Duodenal diverticulum

421. Hydro-aeric levels localized at the periphery of the abdominal region on abdominal radiography are usually indicative of:
a) Perforation of gastric ulcer
b) Penetration of gastric ulcer
c) Small bowel obstruction
d) Large bowel obstruction
e) Duodenal diverticulum

422. Radiological characteristics of colon cancer include:
a) Concentric stenosis with irregular contour
b) Diffuse stenosis
c) Niche
d) Lack of the peristalsis in the affected segment
e) Elongation of the affected segment

423. Oral cholecystography:
a) Allows visualization of the gallbladder
b) Allows visualization of the gallbladder and bile ducts
c) Is performed 15 minutes after the contrast administration
d) Is performed 12 hours after the contrast administration
e) Is performed 2 hours after the administration of a radiopharmaceutical

424. Intravenous cholangio-cholecystography:
a) Allows visualization of the gallbladder
b) Allows visualization of the gallbladder and bile ducts
c) Is performed 15 minutes after the contrast administration
d) Is performed 12 hours after the contrast administration
e) Is performed 2 hours after the administration of a radiopharmaceutical

425. For hepatic scintigraphy:
a) The contrast agent is administered per os
b) The contrast agent is administered intravenously
c) The radiopharmaceutical is administered per os
d) The radiopharmaceutical is administered intravenously
e) The contrast agent is administered directly through a liver puncture

426. On intravenous cholangio-cholecystography, a cholesterol gallstone usually presents as:
a) A niche
b) A lacuna
c) Dilatation of bile ducts
d) Stenosis of bile ducts
e) An opacity

427. Ultrasonographic investigation of the liver permits evaluation of:
a) Morphology
b) Function
c) Morphogy and function
d) Function of the hepatocytes
e) Function of the Kupffer cells

428. Hepatic scintigraphy permits evaluation of:
   a) Morphology
   b) Function
   c) Morphogy and function
   d) Stones in the gallbladder
   e) Stones in the bile ducts

429. Computed tomography of the liver allows evaluation of:
   a) Morphology
   b) Function
   c) Morphogy and function
   d) Function of the hepatocytes
   e) Function of the Kupffer cells

430. Which of the following are focal liver diseases?
   a) Hepatitis
   b) Liver cancer
   c) Liver abscess
   d) Liver cirrhosis
   e) Liver cyst

431. Which of the following are diffuse liver diseases:
   a) Hepatitis
   b) Liver cancer
   c) Liver abscess
   d) Liver cirrhosis
   e) Liver cyst

432. On ultrasonographic examination, a gallbladder stone appears:
   a) Opaque
   b) Hyperdense
   c) Hyperechogenic
   d) Hyperintense
   e) Lucent

433. On a computed tomography image, a stone in the gallbladder appears:
   a) Opaque
   b) Hyperdense
   c) Hyperechogenic
   d) Hyperintense
   e) Lucent

434. Liver consists of:
   a) 2 lobes
   b) 3 lobes
   c) 4 lobes
   d) 5 lobes
   e) 6 lobes

435. The main radiological method for evaluation of osteoarticular system is:
a) Medical radiophotography
b) Linear tomography
c) Radiography
d) Arthrography
e) Angiography

436. Skeletal scintigraphy is most frequently indicated for detection of:
a) Fractures
b) Bone metastases
c) Osteomyelitis
d) Developmental skeletal anomalies
e) Biological age of the patient

437. Which of the following methods allow better visualization of bone structures:
a) Bone scintigraphy
b) Ultrasonography
c) Computed tomography
d) Magnetic Resonance Imaging
e) Termography

438. Normal radiological articular space is presented by:
a) Anatomical articular space
b) The thickness of articular cartilage
c) The thickness of articular liquid layer
d) The thickness of meta-epiphyseal growth cartilage
e) The thickness of epiphysis

439. Tubular bone ends are called:
a) Epiphysis
b) Diaphysis
c) Metaphysis
d) Apofisis
e) Hypofisis

440. Tubular bone central part is called:
a) Epiphysis
b) Diaphysis
c) Metaphysis
d) Apofisis
e) Hypofisis

441. Which structure provides tubular bone growth in length?
a) Articular cartilage
b) Epiphyseal plate (meta-epiphyseal cartilage)
c) Periosteum
d) Diaphyseal cartilage
e) Diafisis

442. Basic radiological signs of fractures include:
   a) Periostitis
   b) Fracture line
   c) Displacement of bone fragments
   d) Bony sequestrum
   e) Soft tissue alterations

443. The fracture line may be:
   a) Longitudinal
   b) Lateral
   c) Transversal
   d) Angular
   e) Oblique

444. Greenstick fractures represent:
   a) A feature of fractures in children
   b) A feature of fractures in the elderly
   c) A feature of fracture localization in the tubular bones
   d) A feature of fractures in athletes
   e) A type of pathological fractures

445. Which of the following statements are true?
   a) Bone callus formation precedes the appearance of conjunctive (fibrocartilage) callus
   b) Bone callus formation follows the appearance of conjunctive (fibrocartilage) callus
   c) Bone callus is radiographically visible after 15 days
   d) Bone callus is radiographically visible after 25-30 days
   e) Pseudoarthrosis is a normal stage in the process of fracture healing

446. Scoliostosis refers to:
   a) Curvatures of the vertebral column in the frontal plane
   b) Curvatures of the vertebral column in the sagittal plane
   c) Flattening of vertebral column curvatures
   d) Curvatures of tubular bones
   e) Shortening of tubular bones

447. Osteoporosis refers to:
   a) Demineralization of bone matrix
   b) Increase in bone matrix mineralization
   c) Bone deformation
   d) Bone resorption
   e) Abnormal bone curvatures

448. Osteosclerosis refers to:
   a) Demineralization of bone matrix
   b) Increase of bone matrix mineralization
   c) Bone deformation
   d) Bone resorption
   e) Abnormal bone curvatures

449. Osteodestruction refers to:
a) Demineralization of bone matrix
b) Bone resorption and its replacement by fibrous tissue
c) Bone resorption and its replacement by pathological tissue
d) The process of bone sequestrum formation
e) Bone deformation

450. Osteolysis refers to:
a) Demineralization of bone matrix
b) Bone resorption and its replacement by fibrous tissue
c) Bone resorption and its replacement by pathological tissue
d) The process of bone sequestrum formation
e) Bone deformation

451. Osteonecrosis refers to:
a) Demineralization of bone matrix
b) Increase of bone matrix mineralization
c) Bone resorption and its replacement by fibrous tissue
d) Bone destruction and its replacement by pathological tissue
e) None of the listed

452. Bone sequestration usually represents the result of:
a) Osteoporosis
b) Osteosclerosis
c) Aseptic (avascular) osteonecrosis
d) Septic osteonecrosis
e) Osteolysis

453. Which of the following is more likely to represent a cause of osteolysis?
a) Inflammatory processes
b) Tumors
c) Trophic bone disorders
d) Joint luxations
e) Decrease of mineral salts in bone matrix

454. Lamellar periostitis is more likely to be encountered in:
a) Osteomyelitis
b) Malignant tumors
c) Arthrosis
d) Rheumatoid arthritis
e) Osteoporosis

455. Acicular (spiculated) periostitis is usually seen in:
a) Osteomyelitis
b) Malignant tumors
c) Arthrosis
d) Rheumatoid arthritis
e) Benign tumors

456. A relevant radiological sign of ankylosis is:
a) Narrowing of articular space
b) Widening of articular space
c) Absence of articular space
d) Deformation of articular surfaces
e) Asymmetric articular space

457. Articular surface erosion is usually encountered in:
a) Arthritis
b) Osteoporosis
c) Ankylosis
d) Osteomyelitis
e) Luxation

458. Absence of articular space represents a component part of:
a) Arthritis
b) Arthrosis
c) Ankylosis
d) Osteomyelitis
e) Osteolisis

459. Common radiological signs of rheumatoid arthritis include:
a) Monoarticular involvement
b) Polyarticular involvement
c) Large joints (knee, shoulder) involvement
d) Small joints (interphalangeal) involvement
e) Involvement of intervertebral articulations

460. Spondylitis predominantly relates to:
a) A vertebral inflammatory process
b) A vertebral degenerative process
c) A tubular bone tumor
d) An inflammatory process of tubular bones
e) A degenerative process of large joints

461. Common radiological signs of bone tumors include:
a) Periostitis
b) Periostosis
c) Osteodestruction
d) Osteonecrosis
e) Fracture line

462. Radiological signs of arthrosis include:
a) Widening of the articular space
b) Narrowing of the articular space
c) Deformation of the articular surfaces
d) Osteodestruction
e) Absence of the articular space

463. Which of the following modalities is the most sensitive for detection of bone metastases?
a) Radiography
b) Liniear tomography
c) Computed Tomography
d) Bony Scitigraphy
e) Angiography

464. For intravenous (excretory) urography we use the following contrast media:
a) Radiopositive liposoluble
b) Radiopositive hydrosoluble
c) Radionegative
d) Barium sulfate
e) Radiopharmaceutical agent

465. Which of the following is the best modality to assess renal function?
a) Intravenous (excretory) urography
b) Renal ultrasonography
c) Static renal scintigraph
d) Dynamic renal scintigraphy
e) Computed Tomography with contrast medium

466. Which of the following are congenital renal pathologies?
a) Hydronephrosis
b) Ectopic kidney
c) Nephroptosis
d) Double ureter
e) Horseshoe kidney

467. Which of the following are acquired renal pathologies?
a) Hydronephrosis
b) Ectopic kidney
c) Nephroptosis
d) Double ureter
e) Horseshoe kidney

468. Which of the following affirmations are correct?
a) Piezoelectric crystal emits ultrasound waves
b) Ultrasound transducer receives reflected ultrasound waves
c) Ultrasound transducer receives absorbed ultrasound waves
d) Piezoelectric crystal receives absorbed ultrasound waves
e) All anatomical structures reflect ultrasound waves

469. A renal stone may be detected by:
a) Ultrasonography
b) Simple abdominal radiograph
c) Computed Tomography
d) Static renal scintigraphy
e) Dynamic renal scintigraphy

470. For retrograde pieloureterography:
   a) A contrast medium is administered intravenously
   b) A radiopharmaceutical agent is administered intravenously
   c) A contrast medium is introduced retrogradely into the renal pelvis
   d) A radiopharmaceutical agent is introduced retrogradely into the renal pelvis
   e) A contrast medium is administered per os

471. Which imaging modality is the most sensitive for detecting traumatic renal lesions?
   a) Simple abdominal radiography
   b) Intravenous urography
   c) Renal angiography
   d) Computed Tomography
   e) Renal scintigraphy

472. Horseshoe kidney represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) Not a congenital pathology

473. Ectopic kidney represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) Not a congenital pathology

474. Polycystic kidney represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) A congenital anomaly of number

475. Hypoplastic kidney represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) Not a congenital pathology

476. Nephroptosis represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) Not a congenital pathology

477. Hydronephrosis represents:
   a) A congenital anomaly of dimensions
   b) A congenital anomaly of shape
   c) A congenital anomaly of location
   d) A congenital anomaly of structure
   e) Not a congenital pathology

478. Differential diagnosis of ectopic kidney should consider:
   a) Nephroptosis
   b) Hydronephrosis
   c) Nephrosclerosis
   d) Pyelonephritis
   e) Glomerulonephritis

479. Differential diagnosis of a hypoplastic kidney usually includes:
   a) Nephroptosis
   b) Hydronephrosis
   c) Nephrosclerosis
   d) Pyelonephritis
   e) Glomerulonephritis

480. The kidneys are located:
   a) in the abdominal cavity
   b) in the thoracic cavity
   c) in the retroperitoneal space
   d) in the peritoneal cavity
   e) in the pelvis

481. Location of the kidneys is commonly determined in relation to the following structures:
   a) soft tissues
   b) ribs
   c) vertebral bodies
   d) gastric body
   e) diaphragm

482. The anatomical structures commonly visualized on intravenous (excretory) urography include:
   a) kidneys
   b) renal pelvis
   c) ureters
   d) urinary bladder
   e) urethra

483. The imaging modality of choice for evaluation of nephroptosis is:
   a) ultrasonography
   b) intravenous (excretory) urography
   c) retrograde pyelography
   d) plain abdominal radiography
   e) renal scintigraphy

484. The imaging modality of choice for evaluation of renal aplasia is:
a) ultrasonography
b) intravenous (excretory) urography
c) retrograde pyelography
d) renal angiography
e) renal scintigraphy

485. The imaging modality of choice for diagnosis of hydronephrosis is:
a) plain abdominal radiography
b) linear tomography
c) ultrasonography
d) renal scintigraphy
e) magnetic resonance imaging

486. The imaging modality of choice for evaluation of renal agenesia is:
a) plain abdominal radiography
b) excretory (intravenous) urography
c) renal angiography
d) ultrasonography
e) renal scintigraphy

487. The imaging features of hydronephrosis include:
a) renal pelvis is enlarged
b) renal pelvis is decreased in volume
c) renal calices are dilated
d) renal calices are decreased in volume
e) renal pelvis and calices are of normal size

488. Radiological investigation of a fracture includes the following standard projections:
a) lateral
b) oblique
c) anterior and lateral
d) anterior
e) depending of the localization of the fracture

489. Particularities of tubular bone fractures in children include:
a) Comminuted fractures
b) Linear fractures
c) Subperiosteal fractures
d) intraarticular fractures
e) multifragmentar fractures

490. What are the advantages of MRI (Magnetic Resonance Imaging) investigation?
a) Better visualization of soft tissue structures
b) Better visualization of bony structures
c) Pregnant women can be investigated
d) Patients with metallic foreign bodies can be investigated
e) Short duration of the scan

491. What are the advantages of CT (Computed Tomography) investigation?
   a) Better visualization of soft tissue structures
   b) Better visualization of bony structures
   c) Pregnant women can be investigated
   d) Patients with metallic foreign bodies can be investigated
   e) Short duration of the scan

492. What are the disadvantages of MRI (Magnetic Resonance Imaging) investigation?
   a) High radiation dose
   b) Patients with metallic foreign bodies cannot be investigated
   c) Pregnant women cannot be investigated
   d) Long duration of the scan
   e) Absence of ionizing radiation

493. What are the disadvantages of CT (Computed Tomography) investigation?
   a) High radiation dose
   b) Patients with metallic foreign bodies cannot be investigated
   c) Pregnant women cannot be investigated
   d) Short duration of the scan
   e) Absence of ionizing radiation

494. The imaging modality of choice for visualizing soft tissue brain structures is:
   a) Ultrasonography
   b) CT (Computed Tomography)
   c) MRI (Magnetic Resonance Imaging)
   d) Cerebral angiography
   e) Brain scintigraphy

495. The imaging modality of choice for visualizing cranial bone fractures is:
   a) Ultrasonography
   b) CT (Computed Tomography)
   c) MRI (Magnetic Resonance Imaging)
   d) Cerebral angiography
   e) Brain scintigraphy

496. The imaging modality of choice for investigating spinal cord pathology is:
   a) Ultrasonography
   b) CT (Computed Tomography)
   c) MRI (Magnetic Resonance Imaging)
   d) Angiography
   e) Myelography

497. Cerebral angiography (conventional angiography, CT angiography, MRI angiography) is most useful for evaluation of:
   a) Brain malformations
   b) Aneurysms
   c) Arterio-venous malformations
   d) Brain trauma
   e) Brain abscess

498. Functional changes of the gastrointestinal tract include:
   a) hypertonia (increased muscle tone)
   b) spasm
   c) ptosis
   d) traction
   e) hypokinesia

499. Functional changes of the gastrointestinal tract include:
   a) atonia
   b) akinesia
   c) hypersecretion
   d) external compression
   e) abutting (touching) adjacent structures

500. Functional changes of the gastrointestinal tract reflected radiologically include:
   a) hypotonia
   b) hypertonia
   c) hyperkinesia
   d) niche
   e) lacuna

501. Morphological changes of the gastrointestinal tract reflected radiologically include:
   a) hypertonia
   b) ptosis
   c) torsion
   d) niche
   e) hypersecretion

502. Morphological changes of the gastrointestinal tract reflected radiologically include:
   a) niche
   b) lacuna
   c) spenosis
   d) spasm
   e) achinesia

503. Morphological changes of the gastrointestinal tract reflected radiologically include:
   a) ascension (elevation)
   b) traction
   c) atrophy of mucosal/submucosal folds
   d) hypokinesia
   e) atonia

504. Morphological changes of the gastrointestinal tract reflected radiologically include:
   a) diverticula
   b) spasm
   c) spicules and polyps
   d) atonia
   e) amputation

505. Morphological changes of the gastrointestinal tract reflected radiologically include:
a) ptosis
b) hyposecretion
c) lacuna
d) hypersecretion
e) wall rigidity (fibrosis, calcification etc)

506. Changes in the tonus of gastrointestinal tract include:
a) hypertonia
b) hypotonia
c) hypokinesia
d) akinesia
e) spasm

507. Changes in the tonus of gastrointestinal tract include:
a) hypersecretion
b) traction
c) atonia
d) hypotonia
e) hyperkinesia

508. Changes in gastrointestinal peristalsis include:
a) hypersecretion
b) hyperkinesia
c) hypokinesia
d) amputation
e) akinesia

509. Secretion abnormalities of gastrointestinal tract include:
a) hypersecretion
b) hypertonia
c) hypertrophy
d) hyperkinesia
e) accelerated gastric emptying

510. Position (location) abnormalities of gastrointestinal tract include:
a) spasm
b) ptosis
c) ascension (elevation)
d) impingement (displacement)
e) hypotonia

511. Position (location) abnormalities of gastrointestinal tract include:
a) traction
b) akinesia
c) torsion
d) ptosis
e) stenosis

512. Transit abnormalities of gastrointestinal tract include:
   a) accelerated emptying
   b) akinesia
   c) delayed emptying
   d) hypokinesia
   e) hyperkinesia

513. Size abnormalities of gastrointestinal segments (compartments) include:
   a) dolichosegments
   b) megasegments
   c) hypotonic segments
   d) brachysegments
   e) hypokinetic segments

514. Length abnormalities of gastrointestinal segments (presenting as longer or shorter segments) are called:
   a) amputated segments
   b) dolichosegments
   c) brachysegments
   d) atonic segments
   e) stenotic segments

515. Size abnormalities of gastrointestinal segments presenting with larger or smaller diameter (i.e. enlarged or narrowed compartments) are called:
   a) spasm
   b) stenosis (stenotic segments)
   c) megasegments
   d) dolichosegments
   e) brachysegments

516. Gastrointestinal segments that are longer than normal are called:
   a) dolichosegments
   b) brachysegments
   c) oligosegments
   d) megasegments
   e) hypertonic segments

517. Gastrointestinal segments that are abnormally short (shorter than normal) are called:
   a) dolichosegments
   b) brachysegments
   c) oligosegments
   d) megasegments
   e) atonic segments

518. Gastrointestinal segments that are abnormally enlarged or dilated (with a larger than normal diameter) are called:
   a) dolichosegments
   b) brachysegments
   c) oligosegments
   d) megasegments
   e) stenotic segments

519. Contour changes presenting as regions of abnormal extraluminal filling (“plus” filling) during a barium study include:
a) niche
b) diverticulum
c) lacuna
d) incisure
e) stenosis

520. Contour changes presenting as regions of abnormal extraluminal filling (“plus” filling) during a barium study include:
a) hypertonia
b) diverticulum
c) spicules
d) hyperkinesia
e) lacuna

521. Contour changes presenting as defects of filling (regions of “minus” filling) during a barium study include:
a) niche
b) lacuna
c) incisure
d) spasm
e) sacculation

522. Contour changes presenting as defects of filling (regions of “minus” filling) during a barium study include:
a) diverticulum
b) incisure
c) impression
d) lacuna
e) amputation

523. Contour changes presenting as defects of filling (regions of “minus” filling) during a barium study include:
a) spicules
b) rigidity
c) niche
d) diverticulum
e) lacuna

524. Contour changes presenting as defects of filling (regions of “minus” filling) during a barium study include:
a) impression
b) amputation
c) spicules
d) stenosis
e) incisure

525. The inner surface relief changes of the gastrointestinal tract that can be detected radiologically include:
a) accelerated peristalsis
b) changes in the size of mucosal/submucosal folds
c) changes in organ (or segment) length
d) changes in organ (or segment) diameter
e) orientation (direction) abnormalities of mucosal/submucosal folds

526. Changes in the size of mucosal/submucosal folds of gastrointestinal tract that can be detected radiologically include:
a) hypertonia
b) hypertrophy
c) hyperkinesia
d) atrophy
e) normotrophy

527. Orientation (direction) abnormalities of mucosal/submucosal folds of gastrointestinal tract that can be detected radiologically include:
a) hypertrophy
b) deviation
c) atrophy
d) convergence
e) interruption

528. Orientation (direction) abnormalities of mucosal/submucosal folds of gastrointestinal tract that can be detected radiologically include:
a) stenosis
b) convergence
c) disordered pattern
d) atrophy
e) interruption

529. What anatomical structures can be normally visualized on planar abdominal radiography without contrast enhancement?
a) duodenum
b) liver
c) pancreas
d) kidneys
e) psoas muscles

530. In suspected perforation of a hollow organ, when the amount of free gaz in the abdominal cavity is too small to be detected on planar abdominal radiograph, the modality of investigation of choice is:
a) primary double contrast study of the stomach
b) stomach examination using barium sulfate
c) stomach examination using an iodinated contrast agent
d) computed tomography of the abdominal cavity
e) ultrasonography of the abdominal cavity

531. Which of the following statements about the jejunum (as opposed to the ileum) are true?
a) it is located predominantly in the left part of the abdominal cavity
b) it is located predominantly in the superior abdominal cavity
c) it is located predominantly in the central part of the pelvis
d) has more circular folds compared to the ileum
e) has fewer circular folds (valvulae conniventes or plicae circularis) that are less pronounced compared to the ileum

532. Which of the following statements about the ileum (as opposed to jejunum) are true?
   a) is located predominantly in the left part of the abdominal cavity
   b) is located predominantly in the superior abdominal cavity
   c) is located predominantly in the center of the pelvis
   d) has more circular folds (valvulae conniventes or plicae circularis) compared to the jejunum
   e) has fewer circular folds that are less pronounced compared to the jejunum

533. Which of the following statements related to the malignant (as opposed to benign) stenosis of the gastrointestinal tract are true?
   a) the stenosis usually extends over a long region / distance
   b) the stenosis is usually limited to a short region
   c) size/caliber changes of the affected region are abrupt, uneven
   d) size/caliber changes of the affected region are more gradual, with a relatively steady progression / regression
   e) mucosal folds are usually not interrupted

534. Which of the following statements related to the benign (as opposed to malignant) stenosis of the gastrointestinal tract are true?
   a) the stenosis usually extends over a longer region / distance
   b) the stenosis is usually limited to a short region
   c) size/caliber changes of the affected region are more gradual, with a relatively steady progression / regression
   d) size/caliber changes of the affected region are abrupt, uneven
   e) mucosal folds are usually not interrupted

535. On abdominal ultrasonography, a fluid-containing hepatic cyst generally appears:
   a) opaque
   b) translucent
   c) hyperechoic (hyperechogenic)
   d) anechoic
   e) hypodense

536. For percutaneous transhepatic cholangiography, the contrast agent is administered:
   a) per os (orally)
   b) intravenously
   c) in the biliary ducts via a catheter introduced through the duodenum using a special endoscope
   d) in the biliary ducts via a special needle used to puncture the ducts through the skin surface
   e) via a Kehr's T tube placed in the cystic duct

537. For intra- and post-operative cholangiography, the contrast agent is administered:
   a) per os (orally)
   b) intravenously
   c) in the biliary ducts via a catheter introduced through the duodenum using a special endoscope
   d) in the biliary ducts via a special needle used to puncture the ducts through the skin surface
   e) via a Kehr's T tube placed in the cystic duct

538. For endoscopic retrograde cholangiopancreatography (ERCP), the contrast agent is administered:
   a) per os (orally)
   b) intravenously
   c) in the biliary ducts via a catheter introduced through the duodenum and the sphincter of Oddi using a special endoscope
   d) in the biliary ducts via a special needle used to puncture the ducts through the skin surface
   e) via a Kehr's T tube placed in the cystic duct

539. Percutaneous transhepatic cholangiography is usually indicated in patients with:
a) acutization of chronic cholecystitis
b) hepatic cirrhosis
c) mechanic jaundice caused by biliary duct obstruction
d) post cholecystectomy procedure to check for residual stones
e) calculous cholecystitis

540. Intra- and post-operative cholangiography is usually indicated in:
a) acute cholecystitis
b) during cholecystectomy procedure to identify or confirm the location of the gallbladder
c) jaundice and biliary duct obstruction
d) post cholecystectomy procedure, for detecting residual stones in the biliary ducts
e) gastric ulcer penetrating into the liver parenchyma

541. What is the most common complication of endoscopic retrograde cholangiopancreatography (ERCP)?
a) calculous cholecystitis
b) obstruction of biliary ducts
c) acute hepatitis
d) acute pancreatitis
e) endoscopic retrograde cholangiopancreatography is not associated with any complications

542. Imaging findings in diffuse hepatic pathology include:
a) increased or decreased liver size
b) unaffected liver size
c) homogeneous structure
d) heterogeneous structure
e) signs of portal hypertension

543. The modality that is commonly used to differentiate an intrahepatic blood vessel from an intrahepatic bile duct is:
a) angiography
b) 3D mode ultrasonography
c) color Doppler ultrasonography
d) liver scintigraphy
e) computed tomography angiography

544. The “snake's mouth” radiological sign is encountered in:
a) gastric ulcer
b) gastric cancer
c) colon cancer
d) volvulus
e) common bile duct obstruction by a biliary stone

545. Magnetic resonance imaging of the abdomen is expected to be most useful in a patient with:
a) acute cholecystitis
b) acute viral hepatitis
c) a suspicious hepatic mass
d) calculous cholecystitis
e) postoperative state following gastric resection

546. Anchylosis represents:
a) an intraarticular fracture
b) deformation of bone surfaces
c) absence of articular space with fusion of the joint-ends of the bones
d) narrowing of intra-articular space
e) accumulation of fluid in the intra-articular space

547. Dislocation of fracture segments can be:
a) lateral
b) longitudinal
c) medial
d) spiral
e) angular

548. Age particularities of tubular bone fractures in children are:
a) multifragmented fractures
b) transverse fractures
c) subperiosteal fractures
d) intra-articular fractures
e) oblique fractures

549. Common types of bone fractures in children related to their age particularities include:
a) subperiosteal fractures
b) epiphysiolysis
c) apophysiolysis
d) multifragmented fractures
e) compression fractures

550. Age particularities of metaepiphyseal bone fractures in children are:
a) transverse fractures
b) oblique fractures
c) spiral fractures
d) epiphysiolysis
e) multifragmented fractures

551. "Greenstick" fractures are usually encountered in:
a) older patients
b) children
c) athletes
d) patients with bone tumors
e) patients with osteomyelitis

552. "Greenstick" fractures represent:
a) complete fractures
b) incomplete fractures
c) subperiosteal fractures
d) spiral fractures
e) fractures with lateral displacement of affected bone segments

553. The relatively common sites of bone fractures in older individuals include:
a) neck of the femur
b) neck of the humerus
c) ulna
d) lumbar vertebrae
e) cervical vertebrae

554. In osteoarticular pathology, magnetic resonance imaging is most useful for investigating:
a) incomplete fractures
b) “greenstick” fractures
c) osteosclerosis
d) bone edema or early stages of bone inflammation
e) osteoporosis

555. Incomplete fractures include:
a) spiral fractures
b) “greenstick” fractures
c) subperiosteal fractures
d) intra-articular fractures
e) multifragmented fractures

556. Destructive changes of bone structure are:
a) osteosclerosis
b) osteoporosis
c) osteolysis
d) periostitis
e) osteodestruction

557. Constructive changes of bone structure are:
a) osteosclerosis
b) osteoporosis
c) osteolysis
d) periostitis
e) osteodestruction

558. In osteosclerosis, the affected bone segment appears on X-ray:
a) opaque
b) lucent
c) hyperdense
d) at the fracture line
e) associated with articular changes

559. In osteoporosis, the affected bone segment appears on X-ray:
a) opaque
b) lucent
c) hyperdense
d) at the fracture line
e) associated with articular changes

560. In osteolysis, the affected bone segment appears on X-ray:
a) opaque
b) lucent
c) hyperdense
d) at the fracture line
e) associated with articular changes

561. In osteodestruction, the affected bone segment appears on X-ray:
a) opaque
b) lucent
c) hyperdense
d) at the fracture line
e) associated with articular changes

562. In osteonecrosis, the affected bone region usually appears on X-ray as:
a) opacification of the affected bone segment
b) homogeneously hyperlucent bone
c) the bone sequestrum appears as relatively opaque compared to the unaffected bone, while the region of osteonecrosis surrounding the sequestrum appears more transparent
d) the bone sequestrum appears as relatively hyperlucent compared to the unaffected bone, while the region of osteonecrosis surrounding the sequestrum appears more opaque
e) relatively heterogeneous without distinct hyperlucent or radiopaque regions

563. Which bone changes are likely to appear relatively opaque on radiograph compared to adjacent unaffected bone?
a) osteosclerosis
b) osteoporosis
c) periostitis
d) osteolysis
e) osteodestruction

564. Which bone changes are likely to appear relatively radiolucent on X-ray compared to adjacent unaffected bone?
a) osteosclerosis
b) osteoporosis
c) periostitis
d) osteolysis
e) osteodestruction

565. Radiographic features of joint subluxation include:
a) total incongruence (absence of joint congruence) of articular surfaces of the affected joint
b) partial incongruence of articular surfaces of the affected joint
c) asymmetric, wedge-shaped intra-articular space
d) complete absence of intra-articular space
e) irregular, cogwheel intra-articular space

566. Related to osteoarticular system, ultrasonography is usually providing useful information for evaluating:
a) bone fractures
b) articular bone surface
c) ligaments and tendons
d) articular (synovial) bursae
e) synovial fluid

567. The imaging modality of choice for evaluation of bone metastases is:
a) radiography
b) computed tomography
c) linear tomography
d) magnetic resonance imaging
e) bone scintigraphy

568. Joint (articular) radiography allows visualization of:
a) intraarticular bone surfaces
b) articular cartilage
c) ligaments
d) intra-articular space
e) intra-articular fluid

569. During cystography, the contrast agent is usually administered:
a) per os
b) intravenously
c) rectally as an enema
d) via a catheter placed into the urinary bladder
e) via a needle after percutaneous puncture of the urinary bladder

570. Renal angiography is indicated in suspected:
a) chronic pyelonephritis
b) acute pyelonephritis
c) renal aplasia
d) hydronephrosis
e) nephrolithiasis

571. The renal scintigraphy curve (renogram) consists of:
a) 1 segment
b) 2 segments
c) 3 segments
d) 4 segments
e) 5 segments

572. Depending on the associated increased or decreased X-ray attenuation, the basic radiological signs are commonly divided into:
a) opacities
b) hyperlucencies
c) changes in contour
d) changes in dimension
e) changes in location

573. Basic radiological methods of investigation include:
a) radioscopy
b) radiography
c) computed tomography
d) linear tomography
e) angiography

574. Special radiological methods of investigation include:
a) radioscopy
b) radiography
c) irrigography (barium enema)
d) angiopulmonography
e) computed tomography

575. Which of the following statements related to radiographic opacities are true?
a) reflect regions of higher density compared to surrounding tissues
b) reflect regions of lower density compared to surrounding tissues
c) appear whiter (brighter) than surrounding tissues on radiographic films and darker on fluoroscopy screens
d) appear darker than surrounding tissues on radiographic films and whiter (brighter) on fluoroscopy screens
e) always have clear, well-defined borders

576. Which of the following statements related to hyperlucency are true?
a) reflects regions of higher density compared to surrounding tissues
b) reflects regions of lower density compared to surrounding tissues
c) appears whiter (brighter) than surrounding tissues on radiographic films and darker on fluoroscopy screens
d) appears darker than surrounding tissues on radiographic films and whiter (brighter) on fluoroscopy screens
e) appears gray on both radiographic films and fluoroscopy screens

577. Radiological report of a pulmonary opacity should include the following characteristics:
a) location of the opacity
b) dimensions
c) structure
d) intensity
e) the cause of the opacity

578. How many levels of "natural contrast" (i.e. gray-scale levels) can be distinguished on a simple radiograph?
a) 3
b) 5
c) 10
d) 100
e) 2000

579. Barium sulfate has limited or no side effects because:
a) it is hydrosoluble
b) it is liposoluble
c) it is insoluble
d) it is administered via gastrointestinal tract only
e) it is administered after a special preparation of the patient

580. Which of the following represent angiographic procedures?
a) aortography
b) bronchography
c) angiocoronarography
d) phlebography
e) irrigography

581. Which of the following statements about Doppler ultrasonography are true?
a) ultrasound waves are reflected by different tissues based on their tissue density
b) ultrasound waves are reflected by moving particles (such as red blood cells)
c) Doppler technology allows estimation of the velocity of blood flow
d) the frequency of the ultrasound waves reflected by the moving particles differs from the frequency of the originally emitted waves
e) the frequency of the ultrasound waves reflected by the moving particles is the same as the frequency of the originally emitted waves

582. How many units includes the Hounsfield scale?
a) 5
b) 10
c) 100
d) 1000
e) 2000

583. On the Hounsfield scale, the number 0 (zero) corresponds to the radiodensity of:
a) bone tissue
b) air
c) distilled water
d) muscular tissue
e) fat tissue

584. Which statements related to magnetic resonance imaging are true?
a) only the investigated region (area of interest) is affected by the external magnetic field
b) the entire body is usually affected by the external magnetic field
c) the patient must remouve all metallic objects before investigation
d) paramagnetic contrast agents may be injected intravenously to enhance the appearance of blood vessels, tumors or inflammation
e) during the action of radiofrequency pulse, the external magnetic field is switched off

585. Which statements related to normal pulmonary vascular pattern are true?
a) with the patient in orthostatic (vertical) position, pulmonary vascular pattern appear more prominent at the lung apex
b) with the patient in orthostatic (vertical) position, the pulmonary vascular pattern appear more prominent at the inferior lung regions
c) the diameter of a blood vessel is about 2 times smaller compared to the preceding vessel
d) the blood vessels are clearly visualized throughout the entire lung fields up to the lateral thoracic wall
e) the caliber of the pulmonary blood vessels decreases abruptly near the lung hilum

586. During intravenous urography, the first radiographic image is obtained:
a) before the administration of the intravenous contrast agent
b) during the administration of the intravenous contrast agent (simultaneously as the contrast is being injected)
c) 5 minutes following intravenous administration of the contrast agent
d) 15 minutes following intravenous administration of the contrast agent
e) 30 minutes following intravenous administration of the contrast agent

587. The pulmonary vascular pattern represents:
a) an anatomical term / notion
b) a physiological term / notion
c) a radiological term / notion
d) a morphological term / notion
e) a functional term / notion

588. Atrophic gastric folds are more likely to be encountered in patients with:
   a) a profound inflammatory process
   b) trophic abnormalities and deficiency states
   c) neoplastic infiltration of superficial layers of the stomach
   d) edema of the gastric folds
   e) external compression of the stomach

589. Radiological appearance of the gastric mucosa depends on:
   a) gastric tone
   b) abdominal wall muscle tone
   c) patient constitution
   d) gender
   e) height of the patient

Questions for exam tests with imagies in radiology

1. Abnormal finding displayed on the radiographic image include:
2. Abnormal finding displayed on the radiographic image include:
3. Based on its radiographic characteristics, the displayed fracture is likely to be
4. Based on its radiographic characteristics, the displayed fracture is likely to be:
5. Based on the radiographic characteristics, the displayed fracture are likely to be:
6. Based on their radiographic characteristics, the displayed fractures are likely to be:
7. Characteristics of the lung opacity / opacities displayed on the radiographic image include:
8. Characteristics of the lung opacity / opacities displayed on the radiographic image include:
9. Characteristics of the opacity displayed on the radiographic image include:
10. Characteristics of the opacity displayed on the radiographic image include:
11. Displacement of bony fragments on the displayed radiographic image can be best described as:
12. Fracture characteristics on the displayed radiographic image include:
13. Heart configuration abnormalities on the displayed radiographic image include:
14. Heart configuration abnormalities on the displayed radiographic image include:
15. Horizontal superior margin of the opacity on the displayed image is rather suggestive of:
16. In the provided axial computed tomography image, the abnormal finding pointed by the arrow is:
17. In the provided axial computed tomography image, the most likely abnormal finding is:
18. In the provided radiographic image, the anatomical structure numbered as 4 represents:
19. In the provided radiographic image, the anatomical structure numbered as 1 represents:
20. In the provided radiographic image, the anatomical structure numbered as 7 represents:
21. In the provided radiographic image, the anatomical structure numbered as 2 represents:
22. In the provided radiographic image, the anatomical structure numbered as 9 represents:
23. Mediastinal shift on the displayed image can be determined by:
24. Mediastinal shift on the displayed image can be determined by:
25. Mediastinal shift on the displayed image can be determined by:
26. Mediastinal shift on the displayed image can be determined by:
27. Mediastinal shift on the displayed image can be determined by:
28. Mediastinal shift on the displayed image can be determined by:
29. On the displayed chest radiograph, the right hemidiaphragm is located at the level of:
30. On the displayed image, radiographic findings include:
31. On the displayed image, the contrast agent was introduced:
32. On the displayed radiographic image, the abnormalities of the interphalangeal joints include:
33. On the displayed radiographic image, the arrow is pointing towards:
34. On the displayed radiographic image, the bone abnormalities pointed by thick white arrows most likely represent:
35. On the displayed radiographic image, the bone abnormalities pointed by thick white arrows are rather suggestive of:
36. On the displayed radiographic image, the bone demonstrating most prominent abnormalities is:
37. On the displayed radiographic image, the esophagus is:
38. On the displayed radiographic image, the fracture line can be best described as:
39. On the displayed radiographic image, the small thin black arrow is likely pointing towards:
40. On the displayed radiographic study, the contrast material most likely entered the colon after:
41. Please indicate the modality of contrastation on the displayed image:
42. Please indicate the type of barium study of the stomach on the displayed image:
43. Please indicate the type of barium study on the displayed image:
44. Please indicate the type of contrast enhancement on the displayed image:
45. Please indicate the type of contrast study of the colon on the displayed image:
46. Please indicate which letters are matching correctly the displayed fractures:

47. Post-traumatic abnormalities shown on the radiographic image include:
48. Radiographic features of the opacity displayed on the image include:
49. Radiographic features of the opacity displayed on the image include:
50. Radiographic features of the opacity displayed on the image include:
51. Radiological abnormalities in the provided image involve:

52. Technical errors that have been made during the acquisition and processing of the provided radiographic image include:
53. Technical errors that have been made during the acquisition and processing of the provided radiographic image include:
54. The abnormal finding(s) displayed of the radiographic image include:
55. The abnormal finding(s) displayed on the radiographic image include:
56. The abnormal finding(s) displayed on the radiographic image include:
57. The abnormal finding(s) displayed on the radiographic image include:
58. The abnormal finding(s) pointed by arrows are rather suggestive of:
59. The abnormal finding(s) pointed by arrows include:
60. The abnormal findings displayed of the radiographic image include:
61. The abnormalities displayed of the radiographic image most likely represent:
62. The abnormalities displayed on the axial computed tomography image likely represent:
63. The abnormalities displayed on the provided image are likely related to:
64. The abnormalities displayed on the radiographic image are likely related to:
65. The abnormalities displayed on the radiographic image are likely related to:
66. The abnormalities displayed on the radiographic image are likely related to:
67. The abnormalities displayed on the radiographic image are likely related to:
68. The abnormalities displayed on the radiographic image are likely related to:
69. The abnormalities displayed on the radiographic image are likely related to:
70. The abnormalities displayed on the radiographic image are predominantly related to:
71. The abnormalities displayed on the radiographic image can be best described as:
72. The abnormalities displayed on the radiographic image can be best described as:
73. The abnormalities displayed on the radiographic image include:
74. The abnormalities displayed on the radiographic image include:
75. The abnormalities displayed on the radiographic image include:
76. The abnormalities displayed on the radiographic image likely represent:
77. The abnormalities displayed on the radiographic image likely represent:
78. The abnormalities displayed on the radiographic image likely represent:
79. The abnormalities displayed on the radiographic image likely represent:
80. The abnormalities displayed on the radiographic image likely represent:
81. The abnormalities displayed on the radiographic image likely represent:
82. The abnormalities displayed on the radiographic image likely represent:
83. The abnormalities displayed on the radiographic image likely represent:
84. The abnormalities displayed on the radiographic image most likely represent:
85. The abnormalities displayed on the radiographic image most likely represent:
86. The abnormalities displayed on the radiographic image of this barium study are likely related to:
87. The abnormalities displayed on the ultrasonographic image most likely represent:
88. The abnormalities displayed on this cholangiocholecystography image include:
89. The abnormalities pointed by arrows include:
90. The abnormality displayed on the radiographic image can be best defined as:
91. The abnormality displayed on the radiographic image can be best defined as:
92. The administered contrast agent on the displayed radiographic image was most likely:
93. The administered contrast agent on the displayed radiographic image was most likely:
94. The affected bone displayed on the radiographic image is:
95. The affected bone on the radiographic image is:
96. The affected bone on the radiographic image is:
97. The anatomical structure numbered as 1 represents:
98. The anatomical structure numbered as 16 represents:
99. The anatomical structure numbered as 17 represents:

100. The anatomical structure numbered as 2 represents:
101. The anatomical structure numbered as 8 represents:
102. The anatomical structures that are contrast enhanced on the displayed radiographic image include:
103. The area pointed by arrow can be described as:
104. The arrow pointing towards the T12 vertebra is most likely indicating:
105. The asterisk on the displayed radiographic image is most likely over the:
106. The axial computed tomography image displays the following organ(s) or anatomical structure(s):
107. The axial computed tomography image displays the following organs:
108. The axial computed tomography image displays the following organs:
109. The axial computed tomography image displays the following structures:
110. The black arrow on the axial computed tomography image is most likely pointing towards:
111. The bone abnormalities displayed on the radiographic image can be best described as:
112. The bone abnormalities displayed on the radiographic image can be best described as:
113. The bone abnormalities displayed on the radiographic image can be best described as:
114. The bone abnormalities displayed on the radiographic image can be best described as:
115. The bone abnormalities displayed on the radiographic image include:
116. The bone abnormalities displayed on the radiographic image include:
117. The bone abnormalities displayed on the radiographic image include:
118. The bone abnormalities displayed on the radiographic image include:
119. The bone abnormalities displayed on the radiographic image include:
120. The bone abnormalities shown on the radiographic image can be best described as:
121. The bone changes displayed of the radiographic image can be best described as:
122. The bone changes displayed of the radiographic image can be best described as:
123. The bone region pointed by arrows can be best described as:
124. The bone region pointed by arrows most likely represents:
125. The chest radiograph displays:
126. The chest radiograph displays:
127. The contrast agent administered on the displayed image is:
128. The contrast agent administered on the displayed image is:
129. The contrast agent administered on the displayed image is:
130. The displacement of bony fragment on the radiographic image can be best described as:
131. The displacement of bony fragments on the radiographic image can be best described as:
132. The displacement of fracture segments on the radiographic image can be best described as:
133. The displayed radiographic image represents:
134. The equipment displayed in the figure is likely used for:
135. The equipment displayed in the figure is most likely used for:
136. The equipment displayed in the figure is used for:
137. The equipment displayed in the figure is used for:
138. The equipment shown in the figure is used for:
139. The equipment shown in the figure is used for:
140. The equipment shown in the figure is used for:
141. The figure displays a schematic representation of:
142. The figure displays a schematic representation of:
143. The figure displays a schematic representation of:
144. The figure displays the principle used in:
145. The figure displays:
146. The figure displays:
147. The figure illustrates the principle of:
148. The figure panels include:
149. The figure shows a schematic representation of:

150. The finding(s) displayed on the radiographic image include:
151. The finding(s) displayed on the radiographic image include:
152. The finding(s) displayed on the radiographic image include:
153. The finding(s) displayed on the radiographic image include:
154. The findings displayed on the radiographic image are related to:
155. The findings displayed on the radiographic image can be best described as:
156. The findings displayed on the radiographic image can be best described as:
157. The findings displayed on the radiographic image include:
158. The findings displayed on the radiographic image include:
159. The findings displayed on the radiographic image include:
160. The findings displayed on the radiographic image include:
161. The findings displayed on the radiographic image include:
162. The findings displayed on the radiographic image include:
163. The findings displayed on the radiographic image include:
164. The findings displayed on the radiographic image include:
165. The findings displayed on the radiographic image include:
166. The findings displayed on the radiographic image most likely represent:
167. The findings displayed on the radiographic image most likely represent:
168. The findings displayed on the radiographic image most likely represent:
169. The findings displayed on the radiographic image most likely represent:
170. The findings displayed on the radiographic image most likely represent:
171. The findings displayed on the radiographic image most likely represent:
172. The findings displayed on the radiographic image most likely represent:
173. The findings displayed on the radiographic image of this barium study include:
174. The findings displayed on the radiographic image of this barium study include:
175. The findings displayed on the radiographic image of this barium study include:
176. The findings displayed on the radiographic image of this barium study include:
177. The findings displayed on the radiographic image of this barium study include:
178. The following anatomical structures can be visualized at least partially on the displayed radiographic image:
179. The following statements about the schematic representations in figures (a) and (b) are true:
180. The fracture displayed on the radiographic image has the following characteristics:
181. The fracture displayed on the radiographic image has the following characteristics:
182. The fracture displayed on the radiographic image is most likely:
183. The fracture displayed on the radiographic image is:
184. The fracture displayed on the radiographic image is:
185. The fracture displayed on the radiographic image is:
186. The fracture displayed on the radiographic image is:
187. The fracture line on the displayed radiographic image can be best described as:
188. The fracture line on the displayed radiographic image can be best described as:
189. The fracture line on the displayed radiographic image can be best described as:
190. The fracture line on the displayed radiographic image can be best described as:
191. The fracture shown on the radiographic image has the following caracteristics:
192. The fractured bone on the displayed radiographic image is:
193. The fractured bone(s) on the radiographic image include:
194. The fractures displayed on the radiographic image have the following characteristics:
195. The graphical representation expressed in counts/sec as shown in the figure is commonly used in:
196. The heart configuration on the displayed radiographic image is rather suggestive of:
197. The heart configuration on the displayed radiographic image is usually encountered in the following pathology:

198. The heart configuration on the displayed radiographic image is usually encountered in the following pathology:
199. The heart configuration on the displayed radiographic image is usually encountered in the following pathology:
200. The heart configuration on the displayed radiographic image is:
201. The heart configuration on the displayed radiographic image is:
202. The heart configuration on the displayed radiographic image is:
203. The heart configuration on the displayed radiographic image is:
204. The heart configuration on the displayed radiographic image is:
205. The heart configuration on the displayed radiographic image is:
206. The heart configuration on the displayed radiographic image is:
207. The image displays:
208. The image displays:
209. The image displays:
210. The image displays:
211. The image displays:
212. The image displays:
213. The image displays:
214. The image displays:
215. The image displays:
216. The image displays:
217. The image displays:
218. The image displays:
219. The image displays:
220. The image displays:
221. The image displays:
222. The image represents:
223. The image represents:
224. The image represents:
225. The image shows:
226. The image shows:
227. The image was likely obtained using the following modality:
228. The image was likely obtained using the following modality:
229. The image was likely obtained using the following modality:
230. The image was likely obtained using the following modality:
231. The image was likely obtained using the following modality:
232. The image was likely obtained using the following modality:
233. The image was likely obtained using the following modality:
234. The image was likely obtained using the following modality:
235. The image was likely obtained using the following modality:
236. The image was likely obtained using the following modality:
237. The image was likely obtained using the following modality:
238. The image was likely obtained using the following modality:
239. The image was likely obtained using the following modality:
240. The image was most likely obtained using the following modality:

241. The image was most likely obtained using the following modality:
242. The image was most likely obtained using the following modality:
243. The image was obtained using the following modality:
244. The image was obtained using the following modality:
245. The image was obtained using the following modality:
246. The image was obtained using the following modality:
247. The image was obtained using the following modality:
248. The image was obtained using the following modality:
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251. The image was obtained using the following modality:
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253. The image was obtained using the following modality:
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263. The image was obtained using the following modality:
264. The image was obtained using the following modality:
265. The image was obtained using the following modality:
266. The image was obtained using the following modality:
267. The image was obtained using the following modality:
268. The image was obtained using the following modality:
269. The image was obtained using the following modality:
270. The image was obtained using the following modality:
271. The image was obtained using the following modality:
272. The image was obtained using the following modality:
273. The image was obtained using the following modality:
274. The image was obtained using the following modality:
275. The image was obtained using the following modality:
276. The image was obtained using the following modality:
277. The image was obtained using the following modality:
278. The left lung opacity displayed on the image can be best described as:
279. The left lung opacity displayed on the image can be best described as:
280. The left lung opacity displayed on the image can be described as:
281. The location of bone sequestra displayed on the radiographic image can be best described as:
282. The lung opacity displayed on the radiographic image presents the following characteristics:
283. The main abnormality displayed on the radiographic image is likely located:
284. The main radiological pathological sign displayed on the radiographic image can be best defined as:
285. The most likely abnormality displayed on the provided image is:

286. The most likely abnormality displayed on the provided image is:
287. The oblique superior border of the opacity on the displayed image is suggestive of:
288. The opacity displayed on the image most likely represents:
289. The opacity displayed on the radiographic image presents the following characteristics:
290. The opacity displayed on the radiographic image presents the following characteristics:
291. The opacity displayed on the radiographic image presents the following characteristics:
292. The opacity displayed on the radiographic image presents the following characteristics:
293. The organ(s) or anatomical structure(s) pointed by arrows include:
294. The pathological findings displayed on the radiographic image are likely related to:
295. The pathological findings displayed on the radiographic image are likely related to:
296. The pathological findings displayed on the radiographic image are likely related to:
297. The pathological findings displayed on the radiographic image are likely related to:
298. The pathological findings displayed on the radiographic image are most likely related to:
299. The pathological findings displayed on the radiographic image are likely related to:
300. The pathological findings displayed on the radiographic image are most likely related to:
301. The pathological findings displayed on the radiographic image likely represent:
302. The pathological findings displayed on the radiographic image likely represent:
303. The pathological findings pointed by an arrow on the displayed image are most likely related to:
304. The pathological findings represented in figure (b) include:
305. The pathological process pointed by an arrow on the displayed image is most likely involving:
306. The pathological process pointed by an arrow on the displayed image is usually called:
307. The patient whose image is shown in the figure, during the investigation likely underwent:
308. The patient whose image is shown in the figure, during the investigation likely underwent:
309. The patient whose image is shown in the figure, during the investigation likely underwent:
310. The patient whose image is shown in the figure, during the investigation likely underwent:
311. The patient whose image is shown in the figure, during the investigation likely underwent:
312. The patient whose image is shown in the figure, during the investigation likely underwent:
313. The presented radiographic investigation can be used for:
314. The presented radiographic investigation is commonly used for:
315. The provided endoscopic retrograde cholangiopancreatography image displays the following anatomical structures:
316. The provided image displays the following findings:
317. The provided image is displaying the following findings:
318. The provided intravenous urography image is most likely displaying:
319. The provided radiograph is most likely displaying:
320. The provided radiographic image is most likely displaying:
321. The pulmonary vascular pattern on the displayed image is rather suggestive of:
322. The pulmonary vascular pattern on the displayed image is rather suggestive of:
323. The radiographic abnormalities displayed on the image can be best described as:
324. The radiographic characteristics of the opacity displayed on the image include:
325. The radiographic characteristics of the opacity displayed on the image include:
326. The radiographic characteristics of the opacity displayed on the image include:
327. The radiographic characteristics of the opacity displayed on the image include:
328. The radiographic image displays the following anatomical structures:
329. The radiographic image displays the following anatomical structures:

330. The radiographic image displays the following findings:
331. The radiographic image displays the following organ(s) or anatomical structure(s):
332. The radiographic image displays the following organ(s):
333. The radiographic image displays the following organ:
334. The radiographic image displays the following organs or segments:
335. The radiographic image displays the following organs:
336. The radiographic image displays:
337. The radiographic image displays:
338. The radiographic image displays:
339. The radiographic image displays:
340. The radiographic image displays:
341. The radiographic image displays:
342. The radiographic image displays:
343. The radiographic image displays:
344. The radiographic image displays:
345. The radiographic image displays:
346. The radiographic image displays:
347. The radiographic image displays:
348. The radiographic image displays:
349. The radiographic image is displaying the following findings:
350. The radiographic image is displaying the following findings:
351. The radiographic image of this barium study displays the following organ:
352. The radiographic image of this barium study displays:
353. The radiographic image shows a joint dislocation (luxation) of the:
354. The radiographic image was likely obtained with the patient in:
355. The radiographic investigation on the displayed image was performed for the purpose of investigating:
356. The radiological sign displayed on the radiographic image of this barium study include:
357. The radiological sign on the displayed image is usually called:
358. The radiological sign(s) displayed on the radiographic image of this barium study include:
359. The red lines indicate:
360. The renal abnormalities on the displayed image are most likely:
361. The renal curve marked L on the displayed renal scintigraphic image indicates:
362. The renal curve marked R on the displayed renal scintigraphic image indicates:
363. The renal curves on the displayed renal scintigraphic image most likely indicate:
364. The renal curves on the displayed renal scintigraphic image most likely indicate:
365. The round dark structures shown in the figure are:
366. The segment numbered I on the displayed renal scintigraphic image can be described as:
367. The segment numbered II on the displayed renal scintigraphic image represents:
368. The segment numbered III on the displayed renal scintigraphic image indicates:
369. The segment numbered III on the displayed renal scintigraphic image represents:
370. The stone pointed by an arrow on the displayed radiographic image is most likely located in the:
371. The structure pointed by an arrow on the displayed radiographic image most likely represents:
372. The ultrasonographic image displays the following anatomical structures:
373. The ultrasonographic image displays the following organ:
374. The yellow lines indicate:

375. What anatomical structure is pointed by the arrow:
376. What is the main purpose of the contrast enhancement modality shown on the image:
377. What radiological pathological sign is displayed on the provided radiographic image:
378. What radiological pathological sign is displayed on the radiographic image:
379. What radiological pathological sign is displayed on the radiographic image:
380. What radiological sign is displayed on the radiographic image of this barium study:
381. What radiological simptom is pointed by arrows?
382. Which of the following arteries can be visualized on the displayed image:
383. Which of the following numbers in the provided figure are matching the indicated organ:
384. Which of the following numbers in the provided figure are matching the indicated vessel:
385. Which of the following numbers in the provided figure are matching the indicated organ:
386. Which of the following numbers in the provided figure are matching the indicated vessels or heart chambers:
387. Which of the following numbers in the provided figure are matching the indicated organ:
388. Which of the following numbers in the provided figure are matching the indicated vessels or heart chambers:
389. Which of the following numbers in the provided figure are matching the indicated organ:
390. Which of the following numbers on the axial computed tomography image are matching the indicated anatomical structures:
391. Which of the following vessels can be distinctly visualized on the displayed image:
392. Which organ on the displayed axial computed tomography image is showing distinct abnormalities:
393. The item displayed on the image is commonly used during the following procedures:
394. What type of radiation protection is providing the item displayed on the image?
395. Types of radiation protection include:
396. The use of lead aprons during a radiological investigation refers to the following type of radiation protection:
397. Physical methods of radiation protection include:
398. What procedures is likely to perform the radiologist on the displayed image?
399. Which statements about the presented image are correct?
400. The gloves presented on the image are commonly used for:
401. The gloves presented on the image are commonly used during the following investigations:
402. The presented sign is used to alert about:
403. A routine (non-emergency) diagnostic procedure scheduled to be performed in a room with the displayed sign on its entrance is generally contraindicated in:
404. Radiation protection can be best defined as:
405. Which statements about the structure of the atom are correct?
406. Which measures are intended to decrease the harmful effects of ionizing radiation?
407. The activity of a radioactive source is measured in:
408. Gray represents the international unit of measurement of the:
409. Sievert represents the international unit of measurement of the:
410. Which of the following materials are used for shielding in diagnostic investigations using Gamma rays?
411. The predominant effect that lead shielding has on a beam of gamma rays can be best described as:
412. Measures directed at radiation protection of patients include:
413. Which of the following statements about dosimetry are correct?
414. Which of the following statements about radiation dosimeters are correct?

RECOMMENDED BIBLIOGRAPHY

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