Radiology Interview Questions And Answers Guide.

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Question # 1
Explain Radiology?

Answer:-
Radiology is a medical specialty that employs the use of imaging to both diagnose and treat disease visualised within the human body. Radiologists use an array of imaging technologies (such as X-ray radiography, ultrasound, computed tomography (CT), nuclear medicine, positron emission tomography (PET) and magnetic resonance imaging (MRI) to diagnose or treat diseases. Interventional radiology is the performance of (usually minimally invasive) medical procedures with the guidance of imaging technologies.

Question # 2
What are some hot new areas in radiology?

Answer:-
Combined imaging techniques, such as PET-CT offer exciting future opportunities for disease detection and monitoring
   - Functional MR imaging
   - Molecular imaging
   - Cardiac MR and CT
   - Breast MRI
   - Expanding interventional techniques

Question # 3
What conditions will you commonly see as a diagnostic radiologist?

Answer:-
There are far too many to list. Any disease or patient presentation that can possibly have a physical/imaging manifestation from the cranial vertex down to the tips of the toes is a possibility in the radiology department. There's a lot to know, but that's what makes it challenging and satisfying!

There will not be a day that goes by that you don't see at least one great or interesting case, no matter what your work setting!

Question # 4
What is the call frequency?

Answer:-
During residency: This varies from program to program depending on the number of sites covered and number of residents. At McMaster, we do call roughly 1 in 7 or 8 (averages out to 3-4 calls per month). We cover two sites on each call shift. Our hospitals have established a contrast policy whereby residents do not need to travel between sites, in order to cover contrast-enhanced examinations.

As a staff radiologist: Your call frequency will depend on the number of radiologists in your practice, as well as the imaging modalities and technologist/imaging hours your hospital offers. As a rough estimate, if there are 4 radiologists in your group, you will be on-call 1 in 4; if there are 13 of you, then it's 1 in 13, etc. This may change if you have specialized skills, such as in interventional radiology. The other determinant of call depends on whether you are working at an academic centre (with resident and fellow call-coverage) or a community setting. For the latter, another factor which influences the busyness of your call is whether or not your centre provides 24/7 CT, US or MRI imaging.

Question # 5
What are future challenges for the specialty of radiology?

Answer:-
“Turf wars.” As radiology explodes into a massive field with many new types of imaging studies and applications, specialists from other fields seek to read and interpret the studies that pertain to their field. This is already happening in interventional radiology, where specialists from other fields seek to do minimally invasive procedures, for instance vascular surgery. Other examples include cardiology and their interest to do cardiac CT and MRI. It will be a challenge to prevent the fragmentation of radiology and the assimilation of its parts into other specialties; however, the sheer volume of imaging studies in radiology has increased drastically in recent years and it is doubtful that other specialists will be able to take on a CT work list while also meeting their clinical demands. As a specialty, we need to
provide excellent service and interpretation - that's our challenge. "Outsourcing." Given the portable nature of radiology and high bandwidth network connections, it is possible to have a radiologist on the other side of the world report the same studies we are doing here. There is concern that work for radiologists here will be exported to markets where labour is cheaper. This is happening in the US far more than in Canada. Also, one must consider that radiology training worldwide is not necessarily equivalent. A radiologist in another country may not necessarily be able to provide the same quality of interpretation/consultation that radiologists here may be able to. Secondly, liability becomes an issue. If a radiologist in another country is consistently making misses, who takes responsibility? How is litigation pursued? These are some reasons why outsourcing outside of Canada has not been a major factor here so far. It is more likely that teleradiology partnerships will develop where one group may cover on-call overnight or in smaller groups or practice settings covering vacation or conference leaves. This can also assist with remote centres having difficulty recruiting radiologists or delivering some specialty expertise.

Radiology Training: With the expansion of the specialty comes a massive expansion in the knowledge requirements for graduates from radiology residency. As the specialty continues to grow, the training will evolve to help residents cope with the large amount of knowledge and training required. Future options may be to subdivide radiology residency early on into subspecialties as they do in internal medicine. In Canada, this isn't happening yet, but could evolve to this in the future.
a. nerve cells
b. muscle cells
c. small lymphocytes
d. cardiac cells

**Answer:**
c. small lymphocytes

**Question # 13**
The standard film size used for adult bitwings and posterior periapicals is number:
a. 1 
b. 2 
c. 4 
d. 0 

**Answer:**
b. 2

**Question # 14**
which component of the tubehead aims and shapes the x-ray?
a. metal housing 
b. tubehead seal 
c. aluminum disks 
d. position-indicating device 

**Answer:**
d. position-indicating device

**Question # 15**
Identify the angulation of the central ray when using the bisecting angle technique:
a. 90 degrees to the imaginary bisector 
b. 90 degrees to the film 
c. 90 degrees to the long axis of the tooth 
d. 90 degrees to the contact area 

**Answer:**
a. 90 degrees to the imaginary bisector

**Question # 16**
Identify the x-rays that are most likely absorbed by the skin, thus causing x-ray injury:
a. deep, penetrating x-rays 
b. aluminum-filtered x-rays 
c. long-wavelength x-rays 
d. short-wavelength x-rays 

**Answer:**
c. long-wavelength x-rays

**Question # 17**
The dental x-ray beam consists of photon of many different wavelengths, with the shortest wavelength (quality) photons determined by:
a. milliamperage (mA) 
b. kilovoltage (kVp) 
c. the timer 
d. Coefficient of attenuation 

**Answer:**
b. kilovoltage (kVp)

**Question # 18**
identify which of the following is true concerning radiation injury:
a. all radiation injuries are evident immediately 
b. x-ray radiation only injures somatic cells 
c. acute injury due to dental x-ray exposure is common 
d. cumulative effects of x-radiation exposure lead to health problems 

**Answer:**
d. cumulative effects of x-radiation exposure lead to health problems
Question # 19
If the distance from the source to the object is tripled, the intensity of the x-ray beam at the new distance would be:
- a. one ninth the original distance
- b. one sixth the original distance
- c. one third the original distance
- d. one half the original distance
Answer:-
- a. one ninth the original distance

Question # 20
The paralleling technique using the extension cone, compared with the bisecting angle technique, involves
- a. greater vertical angulation
- b. greater object-to-film distance
- c. shorter developing time
- d. shorter anode-to-film distance
- e. all the above
Answer:-
- b. greater object-to-film distance

Question # 21
If the operator wants to change from the long-scale (low contrast) film technique to a short-scale (high contrast) film technique and maintain the same density of the film, what should be done?
- a. decrease kVp and the mA
- b. decrease the kVp and increase the mA
- c. increase the kVp and the mA
- d. increase the kVp and decrease the mA
- e. increase the kVp and use the same mA
Answer:-
- b. decrease the kVp and increase the mA

Question # 22
When using the bisecting angle technique, directing the x-ray beam perpendicular to the long axis of the teeth causes
- a. an overlapping of tooth images
- b. a reduction of tooth images
- c. a foreshortening of tooth images
- d. an elongation of tooth images
- e. a decrease in the penumbra formation
Answer:-
- d. an elongation of tooth images

Question # 23
Image magnification may be mineralized by
- a. using a long cone
- b. using a short cone
- c. placing the film as far away from the tooth as possible
- d. shortening the exposure time
Answer:-
- a. using a long cone

Question # 24
When changing from a beam indicating device (BID) of 6° with an exposure time of 0.5 seconds to a BID of 12°, the new exposure time would be how many seconds
- a. 1
- b. 1.5
- c. 2
- d. 2.5
- e. 4.0
Answer:-
- c. 2

Question # 25
Which of the following structure is radiolucent
- a. genial tubercles
b. external oblique ridge
c. hamular process
d. nasal septum
e. submandibular fossa

**Answer:**
e. submandibular fossa

**Question # 26**
Dental x-rays are
a. electromagnetic radiations
b. particulate radiations
c. subatomic radiations
d. ultrasonic radiations
e. microwave radiations

**Answer:**
a. electromagnetic radiations

**Question # 27**
The largest source of ionizing radiation exposure to a population is
a. consumer products
b. medical and dental examinations
c. atmospheric weapons tests
d. nuclear energy production
e. naturally occurring radionuclides

**Answer:**
e. naturally occurring radionuclides

**Question # 28**
Which of the following would increase the number of electrons flowing through the dental x-ray electrical circuit
a. an increase in the milliamperage
b. an increase in the kilovoltage
c. an increase in the PID length

**Answer:**
a. an increase in the milliamperage

**Question # 29**
A setting of 85 kVp is equal to how many volts?
 a. 850
 b. 8500
 c. 85,000
 d. 850,000
 e. 8,500,000

**Answer:**
c. 85,000

**Question # 30**
True / False. True / False
Voltage is the measurement of the number of electrons flowing in an electrical circuit. Decreasing the voltage decreases the force that moves the electrons along an electrical conductor.

**Answer:**
False / True
*Voltage is the electrical pressure (sometimes called potential difference) between two electrical charges

**Question # 31**
True / False. True / False
The cathode is the electrically negative portion of the vacuum tube, and it is composed of a focusing cup and filament.

**Answer:**
True / True

**Question # 32**
the kVp control regulates all of the following EXCEPT which one?
   a. accelerating potential  
   b. attraction between anode and cathode  
   c. penetrating power of the x-ray beam  
   d. heating of the filament  
   **Answer:**
   d. heating of the filament

**Question # 33**
which of the following PID lengths BEST decreases radiation exposure to the patient and improves image resolution?
   a. 8 inches  
   b. 4 inches  
   c. 12 inches  
   d. 16 inches  
   **Answer:**
   d. 16 inches

**Question # 34**
X-radiation was discovered by ________
   **Answer:**
   Ruentgen

**Question # 35**
A quality radiograph is obtained using a 4 inch PID and an exposure time of 3 impulses. The PID was removed and replaced with a 16 inch PID. What should the new exposure time be to maintain image density?
   **Answer:**
   48 impulses

**Question # 36**
In which of the following conditions would vertical bitewing radiographs be recommended over horizontal bitewing radiograph?
   a. child with rampant caries  
   b. adolescent with suspected third molar impactions  
   c. adult with mal-aligned teeth  
   d. adult with periodontal diseases (bone loss)  
   **Answer:**
   d. adult with periodontal diseases (bone loss)

**Question # 37**
When a patient's head is in the correct position, a _______ vertical angulation is used when exposing maxillary periapicals and a _______ vertical angulation is used when exposing mandibular periapicals
   a. positive, positive  
   b. negative, negative  
   c. positive, negative  
   d. negative, positive  
   **Answer:**
   c. positive, negative

**Question # 38**
cutting off the root apex portion of the image on a periapical radiograph results from
   a. excessive horizontal angulation  
   b. inadequate horizontal angulation  
   c. excessive vertical angulation  
   d. inadequate vertical angulation  
   **Answer:**
   d. inadequate vertical angulation

**Question # 39**
Identify an early clinical sign of excessive acute exposure to radiation:
   a. jaundice
c. erythema
d. bleeding
e. loss of hair
d. all the above

Answer:-
c. erythema

Question # 40
Identify the purpose of the radiation film badge
a. to reduce the radiation exposure to the patient
b. to protect the radiographer from radiation exposure
c. to protect the radiology cubicle from overheating
d. to monitor the radiation exposure to the radiographer

Answer:-
d. to monitor the radiation exposure to the radiographer

Question # 41
A diagnostic film is produced using 10mA and .45 second. What exposure time is needed to produce the same film at 15 mA?
a. 0.25 second
b. 0.30 second
c. 0.45 second
d. 0.50 second

Answer:-
b. 0.30 second

Question # 42
During pregnancy a patient:
a. should be advised of her legal rights before being irradiated
b. should be warned about possible miscarriage.
c. should never be irradiated for dental radiographs
d. may be irradiated for dental radiographs by taking the necessary precautions

Answer:-
d. may be irradiated for dental radiographs by taking the necessary precautions

Question # 43
Identify the reduction in exposure time when changing from D-speed film to E-speed film:
a. reduce by 1/8
b. reduce by 1/4
c. reduce by 1/3
d. reduce by 1/2

Answer:-
d. reduce by 1/2

Question # 44
Identify the recommended distance between the safelight and work surface:
a. minimum of 1 foot
b. minimum of 2 feet
c. minimum of 7 feet
d. minimum of 4 feet

Answer:-
d. minimum of 4 feet

Question # 45
The latent effect in radiology is:
a. a short-term effect
b. is a direct effect
c. is the time between exposure to radiation and the finding of clinical signs
d. is the accumulative effect

Answer:-
c. is the time between exposure to radiation and the finding of clinical signs
Question # 46
The inverse square law is a mathematical theory about
a. the production of x-rays and filtration
b. the collimation of x-rays
c. the length and quality of x-rays
d. the distance from the x-ray tube to the object being exposed

Answer:-
d. the distance from the x-ray tube to the object being exposed

Question # 47
the size of the x-ray focal spot influences radiographic:
a. density
b. contrast
c. definition
d. distortion

Answer:-
d. distortion

Question # 48
the first step in film processing is:
a. development
b. rinsing
c. fixation
d. washing
e. drying

Answer:-
a. development

Question # 49
The optimal temperature for the developer solution in a manual film processing set up is:
a. 70 degrees F
b. 68 degrees F
c. 80 degrees F
d. 90 degrees F
e. 55 degrees F

Answer:-
b. 68 degrees F

Question # 50
Identify the film that is used to detect both interproximal caries and crestal bone levels:
a. occlusal
b. bite-wing
c. panoramic
d. periapical

Answer:-
b. bite-wing

Question # 51
The purpose of the lead foil sheet in the film packet is:
a. to protect the film from primary radiation
b. to protect the film from saliva
c. to protect the film from back-scattered radiation
d. to distinguish between the patients right and left side

Answer:-
c. to protect the film from the back-scattered radiation

Question # 52
The GBX-2 safelight filter by Kodak is recommended for:
a. intraoral films only
b. extraoral screen films only
c. extraoral nonscreen films only
d. intraoral and extraoral films
Question # 53
A fixing agent found in the fixer is:
  a. potassium alum
  b. acetic acid
  c. sodium thiosulfate
  
  Answer:-
  c. sodium thiosulfate

Question # 54
Which of the following is the recommended size of the beam at the patients face?
  a. 2.75 inches
  b. 3.25 inches
  c. 3.50 inches
  d. 4.00 inches
  
  Answer:-
  a. 2.75 inches

Question # 55
Any leaks of white light into the darkroom will cause:
  a. film fog
  b. film reticulation
  c. overdeveloped films
  d. underexposed films
  
  Answer:-
  c. overdeveloped films

Question # 56
The following must be disclosed to the patient prior to obtaining informed consent:
  a. the purpose of the procedure and who will perform it
  b. the potential benefits of receiving the procedure
  c. the possible risks involved in having the procedure performed, including the risk of not having the procedure performed
  d. all the above
  
  Answer:-
  d. all the above

Question # 57
Which of the following represents how soon radiation dissipates in a treatment room following a 5 impulse exposure?
  a. immediately
  b. within 5 seconds
  c. within 30 seconds
  d. within 2 minutes
  e. never totally
  
  Answer:-
  a. immediately

Question # 58
If kilovoltage is decreased with no other variations in exposure factors, the resultant film will
  a. appear lighter
  b. appear darker
  c. remain the same
  d. either a or b
  
  Answer:-
  a. appear lighter

Question # 59
The overall blackness of a film is termed
  a. contrast
b. density
c. overexposure
d. polychromatic

**Answer:**
b. density

**Question # 60**
Identify which of the following is true concerning labial mounting:
a. the patient's left is on your left
b. the patient's left is on your right
c. the teeth are mounted in reverse anatomic order
d. the radiographs are viewed as if the operator were inside the patient's mouth looking out

**Answer:**
b. the patient's left is on your right

**Question # 61**
Ionization occurs:
a. when atoms lose electrons; they become deficient in negative charges and therefore behave as positively charged atoms.
b. when atoms gain electrons; they become positively charged
c. when an atom loses its nucleus
d. only when K-orbit electron is ejected and replaced by an L-orbit

**Answer:**
a. when atoms lose electrons; they become deficient in negative charges and therefore behave as positively charged atoms

**Question # 62**
Greater beam limitation is achieved when the PID is _______ and the diameter of the opening is ________.
a. shorter; smaller
b. longer; bigger
c. shorter; bigger
d. longer; smaller

**Answer:**
d. longer; smaller

**Question # 63**
Which of the following is the location in which thermionic emission occurs?
a. positive cathode
b. positive anode
c. negative cathode
d. negative anode

**Answer:**
c. negative cathode

**Question # 64**
The difference in degrees of blackness between adjacent areas on a dental radiograph is termed
a. density
b. contrast
c. subject thickness
d. diagnostic quality

**Answer:**
b. contrast

**Question # 65**
A variation in the true size and shape of the object being radiographed is termed
a. magnification
b. distortion
c. sharpness
d. resolution

**Answer:**
b. distortion
Question # 66
True/False; True/True
Radiation is the emission and propagation of energy through space or a substance in the form of waves or particles. Radioactivity can be defined as the process by which certain unstable atoms or elements undergo spontaneous disintegration, or decay, in an effort to attain a more balanced nuclear state
Answer:-
True / True
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Question # 67
Which of the following statements is true of general radiation?
a. it is also known as braking (bremsstrahlung) radiation
b. it is also known as characteristic radiation
c. it is the source of the majority of x-rays that are produced
d. both a and c
Answer:-
d. both a and c
Read More Answers.

Question # 68
What does ALARA stand for?
Answer:-
As Low As Reasonably Achievable
Read More Answers.

Question # 69
Which premolar usually has two roots?
a. maxillary first
b. maxillary second
c. mandibular first
d. mandibular second
Answer:-
a. maxillary first
Read More Answers.

Question # 70
When the mouth is opened widely, the articular disk moves
a. medially
b. laterally
c. anteriorly
d. none of the above, it does not move
Answer:-
c. anteriorly
Read More Answers.

Question # 71
Which tooth has the longest root?
a. mandibular canine
b. maxillary first premolar
c. maxillary canine
d. maxillary central
Answer:-
c. maxillary canine
Read More Answers.

Question # 72
What is the lymph drainage for the tip of the tongue?
a. submandibular to facial to deep cervical
b. submental to parotid to deep cervical
c. submental to submandibular to deep cervical
d. submandibular to parotid to deep cervical
Answer:-
c. submental to submandibular to deep cervical
Read More Answers.

Question # 73
Where does Stensens duct open?
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a. opposite the maxillary second molars
b. opposite the mandibular second molars
c. under the tongue
d. at the lingual foramen

Answer:-

Question # 74
The most common artery used for determining pulse rate in the conscious adult is
a. radial
b. brachial
c. femoral
d. external carotid
e. superficial temporal

Answer:-
a. radial

Question # 75
the mitral valve separates the
a. left atrium from the aorta
b. left atrium from the ventricle
c. left atrium from the pulmonary vein
d. right atrium from the right ventricle

Answer:-
b. left atrium from the ventricle

Question # 76
which gland secretes serous saliva ONLY?
 a. parotid
b. sublingual
c. submandibular

Answer:-
a. parotid

Question # 77
the suture between the premaxilla and the palatine process of the maxilla lies between
a. central incisors
b. central and lateral incisors
c. laterla incisor and canine
d. canine and first premolar

Answer:-
c. lateral incisors and canine

Question # 78
the nasopalatine nerve enters the oral cavity by way of the
a. mental foramen
b. incisive foramen
c. pterygopalatine foramen
d. lesser palate

Answer:-
b. incisive foramen

Question # 79
Pain impulses from the periodontal ligament are carried by which of the following cranial nerves?
a. I
b. III
c. V
d. VII

Answer:-
C. V
Question # 80
Which of the following premolars often has three cusps?
  a. maxillary first
  b. maxillary second
  c. mandibular first
  d. mandibular second

Answer:-
  d. mandibular second

Question # 81
Histologically, gingival epithelium most closely resembles epithelium of the:
  a. hard palate
  b. soft palate
  c. vestibular mucosa
  d. transitional zone of the lips

Answer:-
  a. hard palate

Question # 82
which nerve innervates the mandibular posterior teeth?
  a. mental
  b. buccal
  c. incisive
  d. inferior alveolar

Answer:-
  d. inferior alveolar

Question # 83
Name 4 bones of the skull:

Answer:-
  Frontal,
  occipital,
  parietal,
  sphenoid,
  temporal,
  ethmoid

Question # 84
the temporalis muscle inserts into the
  a. zygomatic arch
  b. medial side of the angle of the mandible
  c. mandibular molars
  d. sphenoid bone
  e. coronoid process of the mandible

Answer:-
  e. coronoid process of the mandible

Question # 85
Which papilla have no taste buds?
  a. foliate
  b. circumvallate
  c. fungiform
  d. filiform

Answer:-
  d. filiform

Question # 86
which bone contains the superior orbital fissure?
  a. maxilla
  b. temporal
  c. occipital
  d. sphenoid
Answer:-
d. sphenoid
Read More Answers.

Question # 87
the nasopalatine nerve is a branch of which division of the trigeminal nerve?
a. ophthalmic division
b. maxillary division
c. mandibular division
d. occipital division
Answer:-
b. maxillary division
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Question # 88
The hypoglossal nerve supplies the
a. sublingual gland
b. muscles of the tongue
c. mucous membrane of the floor of the oral cavity
d. mucous membrane of the anterior two-thirds of the tongue
Answer:-
b. muscles of the tongue
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Question # 89
Energy production for the cell is accomplished through oxidation of nutrients in the
a. cell membrane
b. lysosomes
c. mitochondria
d. endoplasmic reticulum
Answer:-
c. mitochondria
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Question # 90
Which of the following is NOT a muscle of facial expression?
a. levator labii superioris
b. depressor anguli oris
c. buccinator
d. mentalis
e. medial pterygoid
Answer:-
e. medial pterygoid
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