

**CHAPTER ONE: ETHICAL AND LEGAL ASPECTS**

1. ——— involve(s) the interpretation of statutes and various regulations in decisions involving individuals.  
A The Constitution                      B Court decisions                      C Statutory law                      D Regulations and judgments
2. For negligent tort liability, four elements must be present: breach, injury sustained, cause, and:  
A criminal liability                      B intention                      C loss                      D duty
3. Negligent/unintentional torts can include:  
A ordering unnecessary imaging                      B delays in procedure                      C imaging the wrong patient                      D errors in referral orders
4. The radiographer must remember that failure to disclose a conviction is a violation of Ethical Rules ——— and involves falsification of ARRT information.  
A #2 and #20                      B #1 and #19                      C #3 and #18                      D #1 and #30
5. If patient injury results from misperformance of duty in the routine scope of practice of the radiographer, most courts will apply respondeat superior, that is, "the thing speaks for itself."  
A True                      B False
6. The mission of the American Registry of Radiologic Technologists (ARRT) is to promote high standards of patient care by recognizing qualified individuals in medical imaging, interventional procedures and radiation therapy.  
A True                      B False
7. The 10-part Code of Ethics is aspirational; the ——— of Ethics are enforceable and any violation can result in sanction/injunction.  
A 10 Rules                      B 5 Rules                      C 22 Rules                      D 30 Rules
8. The ——— implies an effective regard for the standards of one's profession, a refusal to lie or deceive, an uprightness of character or action, trustworthiness, and incorruptibility.  
A employee attestation                      B code of ethics                      C statement of purpose                      D word honor
9. A radiographer (or student radiographer) convicted of a misdemeanor or felony must report that to the:  
A government                      B ARRT                      C radiology board                      D radiology department
10. ——— are those that regulate the relationship between individuals and government.  
A Private laws                      B Litigation systems                      C Statutory laws                      D Public laws

**CHAPTER TWO: INTERPERSONAL COMMUNICATION**

11. ——— while speaking is generally considered polite and respectful in the United States, whereas it can be considered just the opposite in other cultures.  
A Making eye contact                      B Physical contact                      C Looking down                      D Fidgeting
12. The acquisition of pertinent clinical history from the patient is one of the least valuable contributions to the diagnostic process.  
A True                      B False
13. ——— require privacy and modesty. Establish rapport by striking up conversation about hobbies or other interests.  
A Toddlers                      B Infants                      C Adolescents                      D Preschoolers
14. The middle adult is described as ——— years old.  
A 30-55                      B 40-50                      C 65-76                      D 46-64
15. Geriatric patients are also more sensitive to hyperthermia because of the breakdown of the sweat glands.  
A True                      B False

16. A patient, aged 40 years, is most accurately described as a(n):  
 A middle adult                      B older adult                      C elderly adult                      D young adult
17. All of the following are useful resources for non-English-speaking patients, except:  
 A a family member or friend    B a certified interpreter            C special-dual headset phones    D automated language lines
18. ——— has the primary responsibility for verifying patient identity prior to the radiologic examination.  
 A A medical assistant              B A radiology technician            C The radiographer              D The receptionist
19. Which of the following statements is not a verbal communication message?  
 A spoken word                      B appearance of work              C tone                                  D rate of speech
20. ——— patients require more time to think and to move, a radiographer who takes the time to explain the procedure, explain unfamiliar terminology, and answer a patient's questions, will be long remembered and appreciated by that patient.  
 A Elderly                                B Young                                C Anxious                              D Dementia

### CHAPTER THREE: ERGONOMICS, MONITORING, AND MEDICAL EMERGENCIES

21. The ——— belt, or transfer belt, can be used for transferring a patient from the bed to the wheelchair and vice versa.  
 A main                                B cross                                C latch                                D gait
22. Patients with IV infusions in place required added attention. The IV bag should be ——— inches above the level of the vein.  
 A 18-24                                B 10-20                                C 30-40                                D 5-17
23. Difficulty in communication can be encountered with a patient having a ——— tube in place.  
 A gastronomy                      B tracheostomy                      C endopleural                      D nasogastric
24. One of the human being's most basic physiologic needs is an adequate supply of:  
 A arginine                              B oxygen                              C glycine                              D aspartic acid
25. Diminished oxygen supply (——) can result from an airway obstructed.  
 A hypocapnia                      B anoxia                              C acidosis                              D hypoxia
26. The airway might become obstructed by a pathologic process such as:  
 A aspirated material              B laryngeal edema                      C emphysema                      D anaphylaxis
27. ——— may be required in cases of severe anemia, pneumonia, pulmonary edema, and shock.  
 A Transfusion                      B Oxygen supplementation            C Tracheostomy                      D Immediate surgery
28. Symptoms of inadequate oxygen supply include dyspnea, cyanosis, diaphoresis and:  
 A distention of the veins of the neck    B bradycardia                      C vomiting                              D dizziness
29. In areas that the patients will occupy for extended periods, oxygen is available through wall outlets at a pressure of 40-50 psi equipped with an easily adjustable flowmeter to regulate the administration of oxygen.  
 A True                                B False
30. ——— is the most frequently used device and is used to supplement the oxygen in room air; its short prongs extend approximately 1 cm into the nares.  
 A The simple face mask            B Mechanical ventilators            C The nasal cannula              D The partial rebreathing mask
31. Which of the following oxygen therapies is not low flow?  
 A nonrebreathing mask            B simple face mask                      C partial rebreathing mask            D mechanical ventilators

32. **No one should ever smoke in an area where oxygen is in use.**  
 A True B False
33. **———— may be indicated when the patient is unconscious, when secretions have high volume or viscosity, when coughing is ineffective, or when the individual is otherwise unable to clear his or her airway.**  
 A Intubation B Suctioning C Thoracotomy D Oxygen therapy
34. **———— usually has three compartments: suction control chamber; collection chamber; and water seal chamber, which prevents atmospheric air from entering the chest cavity.**  
 A The chest drainage system B The nasogastric tube C The single-lumen NG D The Sengstaken Blakemore tube
35. **Plastic and rubber catheters are generally used for short-term use, whereas PVC or silicone catheters can be in place for up to:**  
 A 1 month B 6 months C 3 months D 9 months
36. **Which of the following measurements is not a vital sign?**  
 A body temperature B respiratory rate C pulse rate D glycemia
37. **Which of the following symptoms is not a symptom of fever?**  
 A general malaise B anhidrosis C increased pulse D change in respiratory rates
38. **Children aged ——— years have a normal body temperature range of 97.8°F to 98.6°F.**  
 A 2-4 B 14-16 C 5-13 D 1-3
39. **———— pulse is the most frequently used pulse.**  
 A The carotid B The radial C The temporal pulse D The popliteal pulse
40. **The pulse rate should be counted for ——— and multiplied by 2.**  
 A 20 seconds B 40 seconds C 15 seconds D 30 seconds
41. **———— means difficulty breathing while recumbent.**  
 A tachypnea B orthopnea C dyspnea D stertor
42. **The normal adult respiratory rate is ——— breaths/min.**  
 A 20-30 B 10-15 C 12-18 D 30
43. **Hypotension is characterized by a systolic pressure of less than ——— mmHg.**  
 A 80 B 90 C 100 D 110
44. **The most common reaction to latex products is:**  
 A allergic contact dermatitis B hives C irritant contact dermatitis D anaphylaxis
45. **———— may be associated with lung trauma.**  
 A Rib fractures B Pelvic fractures C Sternum fractures D Spinal fractures
46. **The condition of feeling dizzy or faint is called:**  
 A epistaxis B vertigo C syncope D inner-ear syndrome

## CHAPTER FOUR: INFECTION PREVENTION AND CONTROL

47. **Pathogenic microorganisms inhibit the growth of pathogens in their natural sites.**  
 A True B False
48. **———— refers to the removal of all microorganisms and their spores and is practiced in the surgical suite.**  
 A Antisepsis B Destruction C Disinfection D Sterilization

49. Alcohol-based hand antiseptic sanitizers have been recommended as an alternative to hand washing with soap and water, except when there is visible soiling or after caring for a patient with:
- A streptococcus                      B escherichia coli                      C clostridium difficile                      D klebsiella pneumonia
50. Which of the following pathogens is not commonly bloodborne?
- A pseudomonas                      B hepatitis C virus                      C hepatitis B virus                      D HIV
51. ——— is any environment where pathogens can survive and reproduce, and ultimately pose a risk of transmission to a susceptible host.
- A The portal of exit                      B The reservoir of infection                      C The portal of entry                      D A vector
52. Hospital personnel can't be susceptible hosts.
- A True                      B False
53. A(n) ——— is an insect or animal carrier of infectious organisms, such as a rabid animal, a mosquito that carries malaria, or a tick that carries Lyme disease.
- A fomite                      B intermediary                      C conduit                      D vector
54. ——— is implemented in patients suspected or known to be infected with the tubercle bacillus, chickenpox and measles.
- A Contact precaution                      B Airborne precaution                      C Droplet precaution                      D Disinfection
55. Diseases that can be transmitted by direct contact include:
- A malaria                      B HIV                      C skin infections                      D Lyme disease
56. Which of the following diseases require droplet precaution?
- A rubella                      B clostridium difficile                      C HIV                      D escherichia coli

## CHAPTER FIVE: PHARMACOLOGY

57. The radiology technician is always alert to the patient's appearance and condition.
- A True                      B False
58. Which is not a method of parenteral administration?
- A topical                      B intrathecal                      C intramuscular                      D sublingual
59. ——— is the most commonly used venipuncture site for contrast medium administration.
- A The cubital veins                      B The cephalic vein                      C The antecubital vein                      D The basilic vein
60. Intravenous injection, the needle is inserted into the vein at a ——— angle; blood will flow back into the tubing when the needle is correctly positioned.
- A 15°                      B 45°                      C 90°                      D 60°
61. The antecubital vein is not used for infusions that take longer than ——— because of its location at the bend of the elbow.
- A 5 hours                      B 3 hours                      C 1 hour                      D 24 hours
62. Examinations that frequently use double-contrast technique are contrast enema (BE), upper GI (UGI) series, and:
- A fistulography                      B arthrography                      C cholangiography                      D angiography
63. Contrast media or contrast agents can be described as either positive (radiolucent) or negative (radiopaque).
- A True                      B False
64. A contrast enema/BE (lower GI) requires that the large bowel be very clean prior to the administration of barium; this requires a low-residue diet ——— before the procedure and only clear liquids 24 hours prior administration of cathartics.
- A 36 hours                      B 5-6 days                      C 4-5 days                      D 2-3 days





99. Which of the following is the ridge of the bone between anterior clinoid processes; anterior boundary of sella turcica?  
 A lesser (minor) wings      B tuberculum sellae      C dorsum sellae      D optic groove
100. The lengths of intestine usually quoted are those present at autopsy and can be up to ——— longer than the actual size because of loss of muscle tone following death.  
 A 30%      B 60%      C 50%      D 40%

## CHAPTER EIGHT: RADIATION PHYSICS AND RADIOBIOLOGY

101. ——— refers to the distance between two consecutive wave crests.  
 A Frequency      B Wavelength      C Spectrum      D Amplitude
102. Ionizing radiation has the energetic potential to break apart electrical protons, resulting in the production of negative and positive ions.  
 A True      B False
103. Space radiation accounts for ——— of natural background radiation.  
 A 37%      B 3%      C 4%      D 5%
104. Nuclear medicine accounts for ——— of medical radiation.  
 A 24%      B 7%      C 12%      D <1%
105. Diagnostic x-rays are produced within the x-ray tube as high-speed ——— are suddenly decelerated by the tungsten target.  
 A electrons      B protons      C neutrons      D atoms
106. Brems radiation comprises ——— of the primary x-ray beam.  
 A 30-60%      B 70-90%      C 80-90%      D 90-100%
107. In ———, a high-speed electron encounters a tungsten atom and ejects a K-shell electron, thereby leaving a vacancy in the K shell.  
 A braking radiation      B the photoelectric effect      C characteristic radiation      D Compton scatter
108. Dose-response curves are used to illustrate the relationship between exposure to ionizing radiation and possible resultant biologic response.  
 A True      B False
109. The term “———” refers to the dose below which no harmful effects are likely to occur, or the point/dose at which a response first begins.  
 A nonthreshold      B LD50      C recommended dose      D threshold
110. The fetus is particularly radiosensitive during the:  
 A second trimester      B third trimester      C first trimester      D perinatal period
111. GI syndrome generally occurs at doses between:  
 A 1 and 9 Gy      B 6 and 10 Gy      C 200-300 Gy      D 120 Gy
112. In the ——— stage of ARS, symptoms depend on the specific syndrome and last up to several months, depending on severity. Medical attention is required.  
 A prodromal      B recovery or death      C manifest illness stage      D latent stage

## CHAPTER NINE: PATIENT PROTECTION

113. The ——— are the most elementary of the three types and are occasionally used in dedicated chest units, dental x-ray units, and trauma imaging equipment.  
 A cones      B cylinders      C collimators      D aperture diaphragms





131. The effect of kilovoltage and milliamperage adjustment on fluoroscopic images is similar to that on:

- A ultrasound images      B radiographic images      C tomographic images      D resonance images

132. The ——— is deserving special consideration in protection from occupational exposure.

- A patient      B public      C technologist      D pregnant radiographer

## CHAPTER ELEVEN: RADIATION EXPOSURE AND MONITORING

133. Which unit measures ionization in air?

- A Sievert      B KV      C Roentgen      D air kerma

134. 1 J/kg equals:

- A 10 Gya      B 1 Gya      C 5 Gya      D 100 Gya

135. The SI unit of measurement to describe effective dose to biologic material is the:

- A Gray in air      B Gray      C KV      D Sievert

136. The term equivalent dose is used to describe the product of the average absorbed dose, the type of radiation delivered, and the radiosensitivity of the exposed tissue.

- A True      B False

137. Radiation monitoring is used to evaluate the effectiveness of the radiation safety policies and practices in place.

- A True      B False

138. Film badges are used for how many months?

- A 6 months      B 12 months      C 1 month      D 10 months

139. The use of a ——— is indicated when working with high exposures or large quantities of radiation for a short period of time, so that an immediate reading is available to the user.

- A thermoluminescent dosimeter      B pocket dosimeter      C film badge dosimeter      D direct ion storage dosimeter

140. The International Commission on Radiological protection, in accordance with the ALARA concept, has recommended that the annual whole-body dose limit be reduced to:

- A 30 mSv      B 15 mSv      C 20 mSv      D 50 mSv

141. Which of the following crystals are used in an optically luminescent dosimetry system?

- A silver bromide      B aluminum oxide      C lithium fluoride      D ferrous sulfate

142. The dose limits established for the OSL dosimeter, TLD, film badge, and pocket dosimeter are valid for:

- A alpha, beta, and x-radiations      B x- and gamma radiations      C beta, x-, and gamma radiations      D all ionizing radiations

143. The TLD is unaffected by heat or humidity, is reusable and can be worn up to ——— before processing.

- A 5 months      B 3 months      C 10 months      D 8 months

## CHAPTER TWELVE: IMAGE ACQUISITION AND TECHNICAL EVALUATION

144. Image quality is evaluated according to image brightness, grayscale, spatial resolution and:

- A distortion      B contrast resolution      C radiation level      D distance

145. KV affects contrast but not penetration.

- A True      B False

146. ——— determines dose/receptor exposure but not brightness.

- A R      B Sv      C mAs      D KV



163. Grid absorption of the useful beam is termed:

- A cleanup                      B cutoff                      C focusing                      D compensation

164. ——— is the term used to describe the IR's impact on image detail, and is receptor dependent.

- A Spatial resolution              B Contrast resolution              C DQE                      D Noise

165. Which of the following factors is not a spatial resolution factor?

- A focal spot size              B image contrast              C SID                      D OID

## CHAPTER THIRTEEN: EQUIPMENT OPERATION AND QUALITY ASSURANCE

166. All essential medicolegal information must be visible on each x-ray image: patient name or identification number, side marker, date, and:

- A direction                      B phone number                      C institution                      D occupation

167. The radiograph must include the anatomic areas of interest in the desired position and projection.

- A True                      B False

168. If the exposed PSL is not delivered to the reader/processor for 8 hours, PSL decreases by approximately:

- A 35%                      B 15%                      C 20%                      D 25%

169. If an IP and its PSP storage plate have been stored, unused, for 8 hours or more, the PSP storage plate should be erased prior to use.

- A True                      B False

170. CR Resolution increases as:

- A noise decreases              B noise increases              C brightness increases              D laser beam size decreases

171. ——— is used to remove the bright unexposed areas outside of the collimated field that contribute to veil glare.

- A Processing algorithm              B Shuttering                      C PSP analysis                      D Histogram analysis

172. What feature is used to display RIS information on current patients?

- A HIS                      B MWL                      C PACS                      D DICOM

173. Brems radiation comprises ——— of the x-ray beam.

- A 80-90%                      B 30-40%                      C 70-90%                      D 40-60%

174. In characteristic radiation, a high-speed electron having an energy of at least ——— encounters a tungsten atom within the anode and ejects a K shell electron.

- A 90 KeV                      B 60 KeV                      C 70 Kev                      D 80 KeV

175. Characteristic x-rays comprise ——— of the x-ray beam.

- A 10-30%                      B 20-60%                      C 80-90%                      D 30-45%

176. The gradual decrease in exposure rate as radiation passes through tissues is called:

- A exposure reduction              B degradation                      C ionization                      D attenuation

177. All radiations of the electromagnetic spectrum travel at the same velocity, ——— miles per second, but differ in wavelength.

- A 130,000                      B 186,000                      C 190,000                      D 200,000

178. A tilting tabletop is necessary for many types of x-ray examinations, especially fluoroscopy. Typically, the tabletop will move ——— Trendelenburg and ——— vertically.

- A 10°, 20°                      B 60°, 80°                      C 40°, 60°                      D 30°, 90°

179. ——— change mechanical energy to electrical energy.

- A Motors                      B Batteries                      C Generators                      D Chemicals

180. A ——— is a positive half-cycle peak in a wave.

- A crest                                      B trough                                      C amplitude                                      D wavelength

181. ——— are caused by the resistance to current flow that is characteristic of all conductors and are reduced by using larger diameter conductive wire.

- A Eddy current losses                      B Hysteresis losses                      C Copper losses                      D Transformers

182. A single, large, excessive exposure to a cold anode can be severe enough to crack the anode; the large dose of heat creates sudden expansion of the cold anode. This is describing:

- A a cracked anode                      B a pitted anode                      C a gassy tube                      D vaporized tungsten

183. Conventional tomography is referred to as axial tomography because the image plane parallels the body's long sagittal, providing axial and/or coronal images.

- A True                                      B False

184. The first commercial CT head scanner was available in:

- A 1980                                      B 1990                                      C 1971                                      D 1960

185. The acquisition and reconstruction process in a seventh generation CT unit can normally be accomplished in under:

- A 10 seconds                      B 30 seconds                      C 15 seconds                      D 20 seconds

186. To express the beam attenuation characteristics of various tissues, the Hounsfield Unit is used.

- A True                                      B False

187. The reconstruction is accomplished by resolving ——— computerized mathematical algorithms simultaneously.

- A 150,000                                      B 250,000                                      C 300,000                                      D 100,000

188. A CT imaging system has four component parts: a couch/table, gantry, computer and:

- A UPS                                      B controls                                      C operating consoles                      D reading station

189. A ——— provides positioning support for the patient.

- A Slip ring                                      B handle                                      C couch/table                                      D foam roller

190. The material of the couch is often a carbon fiber, capable of weight limits up to:

- A 350 lb                                      B 650 lb                                      C 300 lb                                      D 450 lb

191. The gantry component generally includes a gamma ray tube and detector array, and low-voltage.

- A True                                      B False

192. The CT computer must be capable of performing tens of thousands calculations, simultaneously, per slice for considerably more than ——— per second.

- A 10 slices                                      B 50 slices                                      C 100 slices                                      D 500 slices

(Page 1 of 2)

Fill in each blank. There are two options to submit the post-test.

(812) 250-9729

Option 1: Submit the post-test answers online at radunits.com on the course page for instant grading and emailed CE certificate. A password is required, which is found in your email receipt.

Option 2: Fax this answer sheet to us at 866-386-0472, or you may instead email a phone pic of the answer sheet to clark@radunits.com. Allow 2 days for grading, and we will email the CE certificate.

First name:

Last name:

Email:

ARRT license number:

Florida techs only - enter state license number. All others enter N/A.

Telephone:

Date:

When part of a group order or if the post-test is purchased under another name – enter the order number or purchasing name:

1		25		49		73		97	
2		26		50		74		98	
3		27		51		75		99	
4		28		52		76		100	
5		29		53		77		101	
6		30		54		78		102	
7		31		55		79		103	
8		32		56		80		104	
9		33		57		81		105	
10		34		58		82		106	
11		35		59		83		107	
12		36		60		84		108	
13		37		61		85		109	
14		38		62		86		110	
15		39		63		87		111	
16		40		64		88		112	
17		41		65		89		113	
18		42		66		90		114	
19		43		67		91		115	
20		44		68		92		116	
21		45		69		93		117	
22		46		70		94		118	
23		47		71		95		119	
24		48		72		96		120	

121		145		169					
122		146		170					
123		147		171					
124		148		172					
125		149		173					
126		150		174					
127		151		175					
128		152		176					
129		153		177					
130		154		178					
131		155		179					
132		156		180					
133		157		181					
134		158		182					
135		159		183					
136		160		184					
137		161		185					
138		162		186					
139		163		187					
140		164		188					
141		165		189					
142		166		190					
143		167		191					
144		168		192					