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## Student Bounty Com RADIOGRAPHIC TECHNIQUES HSSC-II

SECTION - A (Marks 20)

Time allowed: 25 Minutes

Q.

Section-A is compulsory and comprises pages 1-2. All parts of this section are to be answered on the question paper itself. It should be completed in the first 25 minutes and handed over to the Centre Superintendent. Deleting/overwriting is not allowed. Do not use lead pencil.

Circle	the co	rrect option i.e. A / B / C / D.	Each par	t carries one mark.				
(i)	The p	penetrating ability of an X-ray b	eam is go	verned by				
	A.	Time	В.	Milliampere				
	C.	Kilovoltage	D.	Source to film distance				
(ii)	Who discovered X-rays?							
	A.	Henri Becquerel	B.	Wilhelm Roentgen				
	C.	Marie Curie	D.	Pierre Curie				
(iii)	The small area in the X-ray tube from which the X-radiation eminates is called							
	A.	Cathode	В.	Focal spot				
	C.	Focusing cup	D.	None of these				
(iv)	Multislice CT improves the utilization of the							
	A.	Analog to digital converters	B.	Collimators				
	C.	X-ray detector	D.	X-ray tube output				
(v)	The	factor that indicates how	much	attenuation will take place per centimeter				
	know	n as						
	A.	Mass attenuation coefficient	t B.	Linear attenuation coefficient				
	C.	Exponential decay	D.	Atomic mass				
( <b>v</b> i)	The added filtration of a diagnostic X-ray tube typically consists of							
	A.	Copper or tin	В.	Aluminum or beryllium				
	C.	Aluminum or copper	D.	Tin or lead				
(vii)	Radiographic contrast describes							
	A.	The sharpness of lines in a	radiograpl	h				
	B. The difference in density between two different radiographs							
	C.	The average photographic of	density in a	a radiograph				
	D. The differences in photographic density in a radiograph							
(viii)	In order to increase the intensity of X-radiation							
	A.	The tube current should be	increased					
	B.	The tube current should be	decreased	d				
	C.	A lower kV should be applie	d to the tu	ibe				
	D.	Increase the source to film of	distance					
(ix)	The most commonly used material to provide protection against X-rays is							
	A.	High density bricks	В.	Tungsten				
	C.	Lead	D.	Iron				
(x)	A higher kilovoltage produces X-rays with							
	A.	Greater energy levels	B.	Shorter wavelengths				
	C.	More penetrating ability	D.	All of these				

## DO NOT WRITE ANYTHING HERE

(xi)	X-ray	ys and Gamma rays	<u>-</u>						
	A.	Always travel in a straight line							
	B.	Can be influenced by a magnetic field	ld						
	C.	Can be influenced by an electric field	d						
	D.	None of these							
(xii)	Expo	sure to ionizing radiation can be limited							
	A.	With the use of shielding	B.	By increasing distance from the source					
	C.	By limiting the time of exposure	D.	All of these					
(xiii)	The unit of radiation absorbed dose is								
	A.	Curie	В.	Gray					
	C.	Roentgen	D.	Becquerel					
(xiv)	Which of the following is ultraviolet radiation?								
	A.	Ultrasound	B.	Microwave					
	C.	X-ray	D.	Radiowave					
(xv)	Whic	th of the following statements is CORRE	CT?						
	A.	A. Transverse plane divides body into superior and inferior sections.							
	В.	Transverse plane divides body into a	anterior ar	nd posterior portions.					
	C. Transverse plane is also known as frontal plane.								
	D. Transverse plane divides the body into right and left halves.								
(xvi)	Which of the following is a pelvis bone?								
	A.	lliac bone	B.	Temporal bone					
	C.	Clavicle	D.	Ethmoid					
(xvii)	Which of the following is study of spinal cord?								
	A.	Angiography	В.	Arthrography					
	C.	Myelography	D.	Cystography					
(xviii)	Anoti	her name for the shoulder-blade is							
	A.	Sternum	B.	Clavicle					
	C.	Acromion	D.	Scapula					
(xix)	The I	arge bone in the thigh is							
	A.	Tibia	B.	Femur					
	C.	Fibula	D.	Ischium					
(xx)	X-ray	s are a form of							
	A.	Light	B.	Particle radiation					
	C.	Electromagnetic radiation	D.	Both A and B					
For Ex	amine	er's use only:							
			Tota	l Marks: 20					
				s Obtained:					
		2HA 14	50						



## RADIOGRAPHIC TECHNIQUES HSSC-II

Time allowed: 2:35 Hours

Total Marks Sections B and C: 80

NOTE: Sections B and

Sections B and C comprise pages 1-2. Answer any twenty-five parts from Section 'B' and any three questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet–B if required. Write your answers neatly and legibly.

## SECTION - B (Marks 50)

Q. 2	Answer any	/ TWENTY-FIVE nart	s. The answer to each part should not exceed 2 to 4 lines.	(25×2=50)
w	Alionel all	LIAAFIAIIIAF bair	s. The allower to each part should hot exceed 2 to 4 lines.	(AUXA-UU)

- (i) How can we determine or select a certain slice thickness in MRI?
- (ii) Differentiate between TR and TE.
- (iii) Describe briefly Superconducting magnets.
- (iv) Describe briefly the concept of RF Pulse.
- (v) Write a short note on Gradient Coils.
- (vi) Describe briefly the two types of collimators used in CT imaging.
- (vii) What is the formula for Spiral Pitch Ratio?
- (viii) Describe briefly the principal distinguishing features of multislice CT imaging systems.
- (ix) List the three main parts of radiographic film.
- (x) Name the parts of the bones that connect skull to the vertebral column.
- (xi) Where is the hyoid bone located and what does it do?
- (xii) Name the bones forming the vertebral column.
- (xiii) What are the three functions the anode performs in an X-ray tube?
- (xiv) Write down three causes of X-ray tube failure.
- (xv) Write down the characteristics of X-rays.
- (xvi) Write down the changes in image quality and patient dose in mammography as kVp is increased.
- (xvii) List any four major controls on the operator's console.
- (xviii) What determines the speed of radiographic film?
- (xix) Differentiate between Photoemission and Thermionic emissioin.
- (xx) What is the principal advantage of spiral CT over MRI?
- (xxi) What are the principal advantages of digital radiography over conventional radiography?
- (xxii) How does spatial resolution change with image matrix size and field of view?
- (xxiii) Distinguish between System software and Application programs.
- (xxiv) What is the effect of scatter radiation on contrast?
- (xxv) What is the grid ratio of the grid?
- (xxvi) Why is it important to keep exposure time as short as possible?
- (xxvii) List the three types of high-voltage generators.
- (xxviii) How does high-voltage generation influence X-ray beam quantity and quality?

SECTION - C (Marks 30) Attempt any THREE questions. All questions carry equal marks.  $(3 \times 10 = 30)$ Note: Q. 3 Discuss how an increase in kVp change X-ray quantity, X-ray quality, and contrast scale. Q. 4 a. How is soft tissue radiography different from conventional radiography? b. Write down the views for X-rays of elbow. Q. 5 Describe the major features of the skull as seen from different views. Q. 6 How do atomic number, thermal conductivity and melting point affect the anode target material? Q. 7 Define or otherwise identify the following five terms: Pixel CT number b. Spatial resolution a.

What are the three principal geometric factors that affect radiographic quality?

Describe briefly the composition of a typical radiographic intensifying screen.

Differentiate between Fluorescence and Phosphorescence.

Grid ratio

(xxix)

(xxx)

(xxxi)

d.

Angiography

e.