1 x 60=60



BRAINWARE UNIVERSITY

Term End Examination 2021 - 22

Programme – Bachelor of Science in Medical Radiology & Imaging Technology Course Name – Physics of Newer Imaging Modalities Course Code - BMRIT401

(Semester IV)

Time allotted: 1 Hrs.15 Min. Full Marks: 60

[The figure in the margin indicates full marks.]

Group-A

(Multiple Choice Type Question) Choose the correct alternative from the following: (1) Image reconstruction was evaluated Mathematically by? a) Wilhelm Cornard Roentgen b) Alan Cormack d) None of these c) Godfrey Hounsfield (2) Contrast resolution in Computed Tomography is? a) Less than conventional film b) Better than conventional films c) Same as conventional films d) None of these (3) CT number of water is? a) (+)1b) (-)1 c) 0 d) (+)200(4) Coefficient of Bone is? b) 0 a) 0.38 c) 0.19 d) 0.91 (5) 3rd & 4th generation CT Scan uses?

c) Pencil beam of X-rays(6) 5th generation CT Scan uses?

a) Multiple X-ray beam

a) Multiple X-ray beam
b) Broad fan beam
c) Narrow Fan Beam
d) Pencil beam of X-rays

(7) In CT Scan the 3rd generation is?

a) Rotate-rotate typeb) Translate-rotate typec) Stationary-rotate typed) None of these

b) Narrow Fan Beam

d) Broad fan beam

(8) In CT Scan the 4th generation is?	
a) Rotate-rotate type	b) Stationary-rotate type
c) Translate-rotate type	d) None of these
(9) Pitch is?	
a) Couch movement each 360 degree added by slice thickness	b) Couch movement each 360 degree Multiplied by slice thickness
 c) Couch movement each 360 degree divided by slice thickness 	None of these
(10) The 1st CT Scan was developed in the year?	
a) 1939	b) 1905
c) 1972	d) 1927
(11) The internal structure of body attenuates the X	-ray beam according to their?
a) Size	b) FOV
c) Slice thickness	d) Atomic Number
(12) Number of detectors used in 1st generation is?	
a) 2	b) 64
c) 16	d) 126
(13) 1st generation CT Scanner head was enclosed	in?
a) Water	b) Air
c) Methanol	d) Chlorine
(14) What is EMI in EMI CT scanner?	
a) Electromagnetic Induction	b) Electric motion imaging
c) Easy magnetic imaging	d) Electrical Musical instrumentation
(15) Each square in the image matrix is known as	
a) Pixel	b) Voxel
c) Troxel	d) None of these
(16) Full form of NMR?	
a) Neutral Magnetic Resonance	b) Nuclear Magnetic Resonance
c) Nuclear Musical Resonance	d) Nuclear Magnetic Resources
(17) To establish a new transverse magnetization R to	F pulse causes longitudinal magnetization
a) Remain change	b) Increase
c) Decrease	d) None of these
(18) When T1 is approx of original longitude	dinal magnetization is reached.
a) 37%	b) 63%
c) 5%	d) 1%
(19) MRIs are made with	
a) Ultrasonic pulse	b) RF Pulse
c) High energy X-rays	d) Gamma pulse
(20) Why choose MRI?	
a) Because it provides excellent soft tissue contrast resolution	b) To demonstrate dense bone details
c) Because of higher special resolution	d) There is no chance of claustrophobia

(21) MRI drawback?	
a) Limited special resolution	b) Takes longer imaging time
c) Inability to demonstrate dense bone detail	d) All of these
(22) Atomic nuclei are made up of?	
a) Proton	b) Neutron
c) both (a) & (b)	d) Electron
(23) Contra indication for MRI technique?	
a) Patient on lithium	b) Intracranial metallic aneurysm
c) psychotic patient	d) Patient received radiotherapy
(24) Which magnets require the use of cryogens	
a) Bar	b) Resistive
c) Superconducting	d) Permanent
(25) 1 gauss =tesla	
a) 5*10^3 T	b) 10^-4 T
c) 10^-3 T	d) None of these
(26) Contrast media used for MRI?	
a) Iodinated CM	b) Barium Sulphate CM
c) Gadolinium	d) All of these
(27) MRI room shielding also called as ?	
a) Faraday's Cage	b) Bird's Cage
c) Newton's Cage	d) Einstein's Cage
(28) Piezoelectric material used in medical ultrasound	
a) Lead Zirconate Titanate	b) Calcium tungstate
c) Zinc Cadmium sulphate	d) None of these
(29) To sterilize the transducer, it should be	
a) Heated	b) Autoclaved
c) Clean with spirit	d) None of these
(30) These days, piezoelectric crystal material is	
a) Phosphor	b) Bismuth Zirconate
c) Lead Zirconate Titanate	d) All of these
(31) What has the greatest amount of attenuation?	
a) Water	b) Bone
c) Muscle	d) Fat
(32) Range of high frequency ultrasound?	
a) 4-5MHz	b) 5-7MHz
c) 1-5MHz	d) 8-10MHz
(33) Interaction of ultrasound with matter?	
a) Reflection	b) Refraction
c) Absorption	d) All of these
(34) Ultrasound is a reflection of	
a) Soft tissues only	b) Hard tissues only
c) Both hard and soft tissues	d) Hard muscles only

form of radiation?	y other than ultrasound does not use any
a) PET Scan	b) SPECT
c) MRI	d) CT Scan
(36) For which of these areas can the ultrasound be tal	ken for an infant but not for an adult?
a) Cranium	b) chest
c) Arm	d) Legs
(37) Image receptor in CR is ?	
a) PMT	b) Silicon TFT
c) Amorphous	d) Photostimulable phosphor
(38) Fading of latent image on photostimulable phosp	hor occur by ?
a) Fluorescence	b) Photostimulable luminescence
c) Phosphorescence	d) Light exposure
(39) First DR system appeared in?	
a) 1983	b) 1975
c) 1990	d) 2000
(40) Following are used in direct DR, except?	
a) Amorphous selenium	b) Lead iodine
c) Mercury iodide	d) Barium fluorohalide
(41) Thalium doped cesium iodide is a ?	
a) photoscintillator	b) Photo-conductor
c) Photostimulable phosphor	d) Protective layer
(42) DICOM is	
a) Digital Imaging and computation in Medicine	b) Digital Imaging and communication in Mammography
 c) Diagnostic Imaging and communication in Musculoskeletal Imaging 	d) Diagnostic Imaging and communication in Medicine
(43) An artifact is	
a) Unnecessary clinical features in an image	b) Useful but less important clinical features in an image
 c) Feature which masks important clinical information in an image 	d) Annotation used in an image
(44) PACS	
a) Pocket Adopter Computer System	b) Picture Archiving and Computer System
c) Picture Archiving and Communication System	d) Printing and Copying system
(45) Digital radiography differs from computed radiog	graphy in
a) Reduced radiation exposure	b) Digitization of image
 c) Combined image capture and readout capability 	d) Reduced retakes
(46) Which of these is not a direct DR system	
a) Flat panel detector	b) Charged coupled device
c) Slot scanning type	d) Photon counting type
(47) First DR system appeared in the year?	

a) 1990	b) 1983	
c) 2000	d) 1975	
(48) Advantages of digital radiography system is?		
a) Quality control of the images are good so less repetition.	b) Work flow increased, thus saving time and labour	
c) Radiation dose is less	d) All of these	
(49) Amorphous selenium substance is used in detector	or in	
a) Flat Panel Detector (FPD) based system (direct X-ray conversion type)	b) Flat Panel Detector (FPD) based system (indirect X-ray convertion type)	
c) Both (a) and (b)	d) None of these	
(50) Tomosynthesis is possible with		
a) D.R System	b) C.R System	
c) Scattering	d) None of these	
(51) Disadvantages of the PET are		
a) No anatomical details	b) Large number of false positive and false negative results	
 c) Difficult to differentiate lesions from areas of normal physiological uptake 	d) All of these	
(52) PET-MRI has advantages		
a) Almost no radiation	b) Specific molecular, enzymes and gene supression	
c) High sensitivity	d) All of these	
(53) The benefit of the PACS include		
a) Security of the image storage	b) Elimination of the film stores	
c) Better availability of the images	d) All of these	
(54) 99mTc is obtained from		
a) 99Mo	b) 67Ga	
c) 111In	d) 125I	
(55) Which radionuclide is an ideal radionuclide and accounts for over 70% in nuclear imaging ?		
a) 131I	b) 99Mo	
c) 99mTc	d) 201Ti	
(56) 99mTc has a half-life of		
a) 128 days	b) 2.5 hr	
c) 6 hr	d) 2 days	
(57) Which of the following is used in PET?		
a) Na:I	b) Bi4Ge3O12	
c) CaWO4	d) Xenon	
(58) Iodine has a half life of		
a) 6 hr	b) 8.06 days	
c) 128 days	d) 23 hr	
(59) The atomic number of Bismuth is		
a) 83	b) 4	

- c) 74
- (60) Radioiodine is used for
 - a) Liver scanning
 - c) Bone scanning

- d) 131
- b) Thyroid scanning
- d) Lung scanning