



श्री चित्रा तिरुनाल आयुर्विज्ञान और प्रौद्योगिकी संस्थान, त्रिवेंद्रम , केरल- 695 011
(एक राष्ट्रीय महत्व का संस्थान, विज्ञान एवं प्रौद्योगिकी विभाग, भारत सरकार)
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Entrance Examination 2020 - Diploma _ in_ Advanced Medical Imaging Technology

Sl No	Question	Answer	OptionA	OptionB	OptionC	OptionD
1	Disadvantage of 3 phase compared to single phase is	B	Longer minimum exposure time	Higher electrical operating cost	Lower radiation output	Softer radiation
2	A moving grid has typically	C	10 line/mm	15 line/mm	5 lines/mm	Any number of lines/mm
3	MRI contrast agent gadolinium	A	Shortens T1 relaxation time	Shortens T2 relaxation time	Increases T1 relaxation time	Increases T2 relaxation time
4is the MR imaging technique for the reconstruction of fat and water images based on the Chemical shift between fat and water.	A	Dixon Technique	Faraday technique	Eddy Technique	Magic Technique
5is the mathematical space for storage of the measured raw data before the MR image is reconstructed by applying 2D or 3D Fourier transform.	C	F space	MR space	K space	D space
6	Which of the following will not affect subject contrast?	D	Patient thickness	KVp setting	Atomic number	Processor temperature
7	Which of the following components of an image intensifier converts light in to electrons	D	Anode	Filament	Input fluorescent screen	Photo cathode
8	The main component of radiographic noise is	B	Structure mottle	Quantum mottle	Random mottle	Graininess
9	The large filament is used during radiography	B	When the heat load is high & fine detail is necessary	When the heat load is high & fine detail is unnecessary	When heat load is low & fine detail is necessary	When heat load is low & fine detail is unnecessary
10	The addition of thorium to tungsten filament	A	Increases filament life	Decreases the space charge effect	Reduces the saturation current	Increases efficiency of thermionic emission
11	Most rotating anode X-ray tube	A	Have a tungsten target embedded in Cu anode	Have a larger focal spot than stationary anode X-ray tube	Have a Cu target embedded in tungsten anode	Incorporates the line focus principle
12	The voltage supplied to the X-ray machine is 220 V, the high voltage used in radiography is generated by	D	Rheostat	Auto transformer	Filament transformer	High voltage transformer
13	The quality of an X-ray beam is chiefly governed by its	B	mA	KVp	Field size	Target material
14	Adding filtration to an X-ray tube will	A	Increase the X-ray quality	Increase the X-ray quantity	Decrease the X-ray quantity	Decrease the X-ray quality
15	The free induction decay signal decays	D	Linearly	In T1	In T2	Exponentially
16	in a typical diagnostic X-ray tube operating at 100KVp most of the X-ray production is the result of	B	Characteristic X-ray from the tungsten target	Breaking radiation	Photoelectric effect	Compton effect
17	Which is coldest	D	Nitrogen	Liquid nitrogen	Helium	Liquid helium
18	Recommendations proposed for portable X-ray machines state that the exposure cord should be at least.....	A	2m	1.5m	1m	0.5m
19	In radiography of lumbar spine, which technique would provide the least radiation exposure?	D	84KVp, 100mAs	90KVp, 100mAs	100KVp, 50mAs	120KVp, 25mAs
20	All the following procedures help to reduce patient dose during X-ray examination except using	C	Cones	Fast screens	Grids	Filtration
21	Grid ratio means	A	Ratio of the height of the lead strip to the distance between the strips	Number of lead strips per cm	The ratio between the height and thickness of lead strips	The ratio between the thickness of lead strip to the distance between the lead strips
22	The efficiency of intensifying screen means.	C	Prevention of scatter	Sharpening of image	Higher percentage of conversion of X-ray to light energy	Intensify the X-ray beam
23	The following are rare earth except	D	Gadolinium	Lanthanum	Yttrium	Molybdenum
24	The regulatory board for radiation installations in India is	C	Bhabha Atomic Research Centre	Board of Radiation and Isotope Technology	Atomic Energy Regulatory Board	Indian Association of Medical Physicists
25	Following are properties of X-ray except	C	Highly penetrating invisible rays	Electrically neutral	Can be focused by lens	Ionize gases
26	The following statements are correct regarding automated film processing except	B	Shortens total processing time	It has all steps of manual processing	Improves quality control	The processing temperature is high
27	All the following is related to CT scan except	D	EMI laboratory	Godfrey Hounsfield	Dr. James Ambrose	Dr. Paul Lauterberg
28	A 0.5mm lead equivalent apron will provide..... % X-ray attenuation at 75 KVp	C	75	50	88	98

29	Which among the following represents an abnormal intensifying screen action?	D	Lag	Speed	Fluorescence	Luminescence
30	Beam hardening artifact is due to	A	Rapid absorption of low energy photons.	Rapid absorption of high-energy photons.	Miscalibration of detector.	None of these.
31	Ring artifact is due to	B	Rapid absorption of low energy photons.	Miscalibration of detector.	Due to patient motion	None of above
32	Most predominant interaction in diagnostic Radiology	A	Compton effect	Thomson's scattering	Photo electric effect	Pair production
33	X-ray tube glass envelope is made up of	A	Borosilicate	Silica	cadmium oxalate	None
34	The Caldwell projection of skull requires that central ray be angled	A	15-20° caudal	25-35° caudal	15° cephalic	25° cephalic
35	Focusing cup in a x-ray tube is made up of	D	Aluminium	Copper	Tungsten	Molybdenum
36	In mammography most predominant interaction is	C	Compton effect	Pair production	Photoelectric effect	pair production
37	In spiral CT high voltage supply from the H.T generator to the x- ray tube is given through electrically conducting	B	Cables	Slip rings	Both	Independent remote charges
38	In spiral CT as pitch increases longitudinal resolution	A	Decreases	Increases	does not change	Sometimes increases & sometimes decreases
39	In spiral CT as pitch increases total exposure time	B	Increases	decreases	does not change	increases and decreases
40	The focal spot size of an x-ray tube is best measured by	B	Exposure with step-wedge device	Pin-hole camera	Spinning top	Wire mesh exposure
41	Which of the following is most usually done investigation for lump in breast	A	Soft tissue mammography	Xeroradiography	Contrast media injected into duct	Ultrasonography.
42	PA View with ulnar deviation is useful in	A	Scaphoid	Carpal Tunnel	Carpal bones	All of the above.
43	High KV technique is useful in	D	Hystero – salpingography	Lateral views of LS Spine	Barium examinations	All of the above.
44	Regarding piezo electric effect all are true except	C	Used in ultrasound	Change in thickness by applying electric voltage.	Barium platinocyanate is used	Ceramic.
45	Iopromide is a	A	Nonionic monomer	Ionic Monomer	Ionic dimer	Nonionic dimmer
46	The umbilicus is at the level of	B	L1	L3-L4	L5	L2.
47	One Gray (Gy) equals	D	1/100 of rad	1/110 of rad	10 rads	100 rads
48	RPO and LPO projections for barium enema are used to demonstrate.	B	Sigmoid	Right and left colic flexures	Ileocaecal Junction	Rectosigmoid junction.
49	'Pig-tail' catheter is used for	B	Cerebral angiography	Aortography	Iliac angioplasty	None of the above
50	The MRI equipment is characterised by all except	C	Magnet	Gradient Coils	Charge coupled devices	Field homogeneity improved by shim coils.
51	In ultrasound attenuation means	A	Absorption	Reflection	Refraction	All of the above.
52	Which of the following is not the reason for making vacuum inside the X-ray tube	D	Eliminate the chance of ionization	Increase the speed of cathode stream electrons	Proper control over tube current	Improve anode cooling
53	What will be the approximate magnetic field of a permanent magnet?	B	10T	0.3T	5T	2T
54	Which among the following shows paramagnetism?	D	Nickel	Cobalt	Copper	Manganese
55	Which of the following is measured in millimeters?	B	Energy resolution	Spatial resolution	Field uniformity	Temporal resolution
56	SI unit of magnetic field is	A	Tesla	Volt	Decibel	Joules/Kg
57	During the magnetic resonance relaxation process after a 90 degree pulse	A	Longitudinal magnetization increases	Transverse magnetization increases	Proton density increases	All the above
58	Tissue characteristics which can produce a relative and increased intensity (brightness) contrast in a magnetic resonance image include	A	Short T1 value	Long T1 value	Short T2 value	All the above
59	When using a magnification technique in radiography it is essential to have	A	A small focal point	Low mAS	A short exposure time	Low KV
60	Selective tin filter is used in	C	High KVP technique	Grid controlled x-ray tubes	Dual energy CT	Mammography
61	Which standard is used for handling, storing, printing, and transmitting information in medical imaging?	A	DICOM	HL7	IHE	SNOMED
62	Bremsstrahlung radiation	C	Is emitted when an incoming electron interacts with a bound electron	Is responsible for the line spectrum of X-rays emitted from the target	Has a minimum photon energy in keV numerically equal to the applied kVp	Has a maximum photon energy in keV numerically equal to the applied kVp
63	Which of the following is associated with MR contrast agents made of gadolinium?	B	Contrast induced nephropathy	Nephrogenic systemic fibrosis	Pulmonary fibrosis	All of the above
64	The SAR in MRI depends on	D	Weight of patient	Flip angle	Strength of field	All of the above
65	In a tungsten target the characteristic X-rays useful for making radiograph is from	A	K shell	L shell	M shell	N shell
66	The characteristic curve is obtained by plotting log of relative exposure to	C	Speed	Sensitivity	Optical density	D space
67	Which of the following will not affect subject contrast?	D	Patient thickness	KVp setting	Atomic number	Processor temperature
68	Which of the following is a fat suppression technique in MRI	B	TRICKS	mDIXON	MEDIC	TOF
69	Which of the following radiographic technique should result in the greatest latitude?	C	High KVp, screen film, high grid ratio	Low KVp, screen film low grid ratio	Low KVp, screen film, high grid ratio	High KVp, direct exposure, high grid ratio

70	'Image gently 'is related with	B	Reducing contrast drug reaction	Reducing radiation dose in CT	Reducing metal artifacts in MRI	Reducing the Mechanical index of ultrasound in imaging
71	Newtons Inverse Square Law is useful in radiography because it indicates how the radiation intensity is affected by	B	Radioactive decay	Distance from the source	The size of the source	None of the above
72	Exposure to ionizing radiation can be limited by	A	Use of shielding	Decreasing distance from source	Increasing exposure time	All of the above
73	Collimators are used to	A	Reduce the radiation beam spread	Filter the radiation beam	Increase the film latitude	Decrease the film latitude
74	TLD is used for	D	Exposure control	Improving image latitude	Radiation protection	Radiation monitoring
75	Attenuation of radiation is due to	D	Absorption	Scattering	Radioactive decay	Both A and B
76	Usual Kvp used in x-ray for DR system is	D	50 kVp	80 kVp	100 kVp	120 Kvp
77	Grid controlled X-ray tubes are preferable used in	D	Mammography	Scanommetry	CT scam	Fluoroscopy
78	Swimmers view is used in radiography of	A	Cervical spine	Hip joint	Pelvis	Knee joint
79	A fast spin echo sequence is modification of Spin echo by	C	Adding successive 90 degree pulses	Adding successive frequency-encoding gradients	Adding successive 180 degree pulses	Adding successive spoiler gradients
80	In MR imaging, Matrix size determines	C	Field of view	Aliasing	Resolution	Bandwidth
81	DWI measures indirectly	A	Motion of water molecules	Motion of cells	Chemical composition of tissue	Ratio of water to fat
82	Which of the following men was awarded the first Nobel Prize in Physics in 1901?	C	Geoffrey Newton	Godfrey Newbold Hounsfield	Wilhelm Conrad Rontgen	Albert von Kolliker
83	CT scan is commonly referred to as all, EXCEPT	A	Digital subtraction Angiography	Computed Tomography	CAT scan	Computerized axial tomography
84	Blood products are best detected on MRI by	A	GRE sequence	Spin Echo Sequence	Fast spin echo sequence	None of the above
85	MR Spectroscopy works on the principle of	B	Susceptibility	Chemical shift	Flow velocity	Diffusion
86	CT angiography is used commonly to diagnose	D	Vascular Trauma	Vessel stenosis	Aneurysms	All of the above
87	Covid 19 infection can produce	D	Stroke	Vessel thrombosis	Pneumonia	All the above
88	Most commonly used modality to diagnose lower limb venous thrombosis is	A	Doppler ultrasound	CT angiography	CT venography	MR venography
89	'CISS' sequence in MRI is used for imaging	A	Cranial nerves	Stroke	Glioma	None of the above
90	Perfusion CT can be useful in	C	Stroke evaluation	Brain Tumor grading	Both A and B	None of the above
91	Skull radiograph lateral is used for	D	Multiple myeloma evaluation	Skull fracture detection	Pituitary fossa evaluation	All of the above
92	Rheumatoid arthritis can involve	D	Small joints of hand	Atlanto -axial joint	Lungs	All the above
93	Cerebral venous sinus thrombosis is best evaluated by	C	Doppler sonography	CT scan	MRI with MRV	Any of the above
94	Multiple Sclerosis is diagnosed best by	A	MRI scanning	CT angiography	USG	DSA
95	Gadolinium contrast media is used in children to diagnose the following except	A	Neonatal hypoxic insult to brain	Pediatric brain tumors	Pediatric demyelination	None of the above
96	Which of the following is a contraindication for CT contrast media?	A	Previous iodine allergy	Previous Gadolinium allergy	Previous food allergy	Prior cardiac disease
97	Interventional radiology is useful in	D	Stopping vessel injury induced bleeding	Treating aortic aneurysms	Treating osteoid osteoma of the bone	All of the above
98	Which of the following material is added to the anode disc of a rotating X-ray tube to prevent the crazing effect?	C	Molybdenum	tungsten	Rhenium	Copper
99	The filtration of an X-ray beam has the effect of	A	Improving the quality of the transmitted X-ray beam	Improving the quantity of the transmitted X-ray beam	Reducing the quantity and decreasing quality of the transmitted X-ray beam	Improving the quality and increasing quantity of the transmitted X-ray
100	Which of the following is used to measure the cooling time of an X-ray Tube?	B	Tube rating chart	Anode heat storage chart	Cathode heat storage chart	Cooling chart