

Program: BE Biomedical Engineering

Curriculum Scheme: Revised 2012

Examination: Final Year Semester VII

Course Code: BMC702 and Course Name: Medical Imaging-II

Time: 1 hour

Max. Marks: 50

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Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Small deviations from uniform CT numbers for homogeneous object is called as
Option A:	Image
Option B:	Contrast
Option C:	Resolution
Option D:	Noise
Q2.	Total number of projections acquired in third generation of CT
Option A:	180
Option B:	6
Option C:	1000
Option D:	50
Q3.	Which Reconstruction algorithm produce star pattern for sudden density changes
Option A:	Iterative
Option B:	Back Projection
Option C:	Filter Back Projection
Option D:	Fourier transform
Q4.	In helical CT, pitch is defined as
Option A:	Table movement for 360°/ beam width
Option B:	Patient dose for 360°/ beam width
Option C:	Reconstructed slice thickness / beam width
Option D:	Gantry angle with respect to the scan axis
Q5.	Identify Rotation speed of X-ray tube in conventional CT
Option A:	100 rpm
Option B:	60 rpm
Option C:	20 rpm
Option D:	10 rpm
Q6.	Which factor does not affect spatial resolution in CT image
Option A:	Detector Size
Option B:	Reconstructed matrix size
Option C:	Display matrix size
Option D:	CT gantry size

Q7.	Identify roll of scintillating crystal in Flat panel detector
Option A:	Converts light into X-rays
Option B:	Converts light into electrons
Option C:	Converts electrons into light
Option D:	Converts X-Rays into light
Q8.	Which of the given option is not typical operating mode of gas filled detector
Option A:	Recombination region
Option B:	Ionization chamber
Option C:	Proportional counter
Option D:	Geiger-Muller counter
Q9.	MDCT is called as
Option A:	Seventh generation of CT
Option B:	Third generation of CT
Option C:	First generation of CT
Option D:	Fourth generation of CT
Q10.	Which of the given statement is valid for MRI
Option A:	X-Rays are used during Imaging process
Option B:	Ultrasound is used during the Imaging process
Option C:	Radiopharmaceuticals are given to the patient
Option D:	RF pulse are used during the imaging process
Q11.	If the magnetic field strength is 1.5 T, Find precession frequency of the proton
Option A:	63.9 MHz
Option B:	42.6 MHz
Option C:	1.5 MHz
Option D:	120 MHz
Q12.	Another name for T2 relaxation time is
Option A:	Spin-Spin Relaxation
Option B:	Spin-Lattice Relaxation
Option C:	Spin-Proton Relaxation
Option D:	Spin-RF Relaxation
Q13.	In an MRI when RF pulse is switched of
Option A:	Spins are in phase
Option B:	Transverse magnetization increases
Option C:	Longitudinal magnetization decreases
Option D:	Objects emit signal in the form of RF
Q14.	To achieve T2 weighted image, what should be combination of TR and TE
Option A:	Long-TR, Long-TE
Option B:	Long-TR, Short-TE

Option C:	Short-TR, Short-TE
Option D:	Short-TR, Long-TE
Q15.	Which approach is best suited to select thinner slices in MRI
Option A:	Select wide bandwidth of RF Pulse
Option B:	Select narrow bandwidth of RF Pulse
Option C:	Decreasing Gradient Strength
Option D:	Keeping fixed frequency of RF Pulse
Q16.	For a chest slice, if the Gz gradient varies from 1.55 to 1.57 Tesla. What will be the band range of RF pulse
Option A:	64 MHz-65 MHz
Option B:	63.9 MHz
Option C:	66 MHz-67 MHz
Option D:	42.6 MHz-43.6 MHz
Q17.	Open Bore MRI systems generally uses which type of magnets
Option A:	Permanent Magnets
Option B:	Resistive Magnets
Option C:	Superconductive Magnets
Option D:	Ferromagnets
Q18.	What is the effect of 180° RF on protons alignment
Option A:	Protons change their alignment from Longitudinal to Transverse axis
Option B:	Protons change their alignment from +Z axis to XY plane
Option C:	Protons change their alignment from +Z axis to -Z axis
Option D:	Protons change their alignment from Transverse to Longitudinal axis
Q19.	Which element is used as cryogen for cooling superconducting magnets
Option A:	Neon
Option B:	Helium
Option C:	Xenon
Option D:	Krypton
Q20.	Which of the given statement is not true for Saturation Recovery RF pulse sequence
Option A:	RF Pulses have long TR
Option B:	All FIDs generated have equal strength
Option C:	Protons recovers completely along longitudinal axis
Option D:	Protons does not recover fully before next RF pulse
Q21.	Identify RF pulse sequence in MRI which starts with 180° RF pulse followed by another 90° RF pulse
Option A:	Partial Saturation
Option B:	Saturation Recovery
Option C:	Inversion Recovery
Option D:	Spin Echo

Q22.	What is characteristic of spin echo RF pulse sequence
Option A:	90° RF pulse followed by another 90° RF pulse with long TR
Option B:	90° RF pulse followed by another 90° RF pulse with short TR
Option C:	90° RF pulse followed by another 180° RF pulse
Option D:	180° RF pulse followed by another 90° RF pulse
Q23.	Increased concentration of Choline is an indication of
Option A:	Tuberculosis
Option B:	Benign Tumor
Option C:	Malignant Tumor
Option D:	Jaundice
Q24.	Creatine (Cr) has major resonance peak at
Option A:	3.2 ppm
Option B:	3.0 ppm
Option C:	2.02 ppm
Option D:	2.0 ppm
Q25.	Multivoxel MRS is also called as
Option A:	Magnetic Resonance Imaging (MRI)
Option B:	Magnetic Resonance Spectroscopic Imaging (MRSI)
Option C:	Nuclear Magnetic Resonance (NMR)
Option D:	Radionuclide Imaging

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Question	Correct Option (Enter either 'A' or 'B' or 'C' or 'D')
Q1.	D
Q2.	C
Q3.	B
Q4	A
Q5	B
Q6	D
Q7	D
Q8.	A
Q9.	A
Q10.	D
Q11.	A
Q12.	A
Q13.	D
Q14.	A
Q15.	B
Q16.	C

Q17.	A
Q18.	C
Q19.	B
Q20.	D
Q21.	C
Q22.	C
Q23.	C
Q24.	B
Q25.	B