



BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Sc.(MRIT)-2022

Course Name – Protocol and Procedure of MRI

Course Code - BMRITC503

(Semester V)

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Select the correct option , TR stand for in MRI?
 - a) Transient Relaxation
 - b) Time of Repetition
 - c) Time of Resonance
 - d) Transverse Relaxation
- (ii) Choose the correct option, What type of contrast is achieved with a short TR and short TE in MRI?
 - a) T1-weighted
 - b) T2-weighted
 - c) Proton density-weighted
 - d) Diffusion-weighted
- (iii) Select the correct option, Which sequence suppresses fat signal in MRI?
 - a) T2-weighted
 - b) FLAIR
 - c) GRE
 - d) STIR
- (iv) Choose the correct option, Which MRI sequence is best for detecting demyelinating lesions?
 - a) T1-weighted
 - b) FLAIR
 - c) GRE
 - d) Diffusion-weighted imaging (DWI)
- (v) Select the correct option, What artifact is caused by motion during an MRI scan?
 - a) Aliasing
 - b) Chemical shift
 - c) Motion artifact
 - d) Susceptibility artifact
- (vi) Select the correct option, FLAIR sequences are specifically designed to suppress the signal from which tissue?
 - a) Fat
 - b) Gray matter
 - c) White matter
 - d) Cerebrospinal fluid (CSF)
- (vii) Select, which imaging modality is safer for pregnant women?

- a) CT
c) X-ray
- b) PET
d) MRI
- (viii) What is the name of the process by which the protons return to their equilibrium state after being excited by RF pulses? Choose the correct option
- a) Relaxation
c) Decay
- b) Excitation
d) Refraction
- (ix) Select, which of the following is a common MRI artifact?
- a) Quantum noise
c) Scatter
- b) Motion artifact
d) Beam hardening
- (x) Select cooling elements used in MRI.
- a) Liquid Helium
c) Liquid Hydrogen
- b) Liquid Nitrogen
d) Both A & B
- (xi) Identify the parameters which separate the IR pulse sequence from others.
- a) TE
c) TI
- b) TR
d) T1
- (xii) Identify the landmark used for MRI epilepsy protocol pulse sequence.
- a) corpus callosum
c) Hippocampus
- b) Brain Steam
d) None of these
- (xiii) 31. Identify the correct statement about GRE Pulse sequence.... I. GRE Pulse sequence used for various applications, including functional MRI (fMRI) and dynamic contrast-enhanced MRI (DCE-MRI). II. EPI is the GRE pulse sequence used in used for fast imaging, including functional MRI and diffusion-weighted imaging (DWI). III. Fast low angle shot (FLASH) sequence is GRE pulse sequence GRE sequence is used for high-resolution imaging of the brain and is particularly useful for imaging cortical layers and small structures. IV. All of these are correct.
- a) I & II is true
c) I & III true
- b) I & IV true
d) I, II, III, & IV true
- (xiv) Identify the pulse sequences related to SE...
- a) FSE
c) IR
- b) TSE
d) All of these
- (xv) Select the correct option, for viewing the corpus callosum, the most useful MRI plane is:
- a) Sagittal
c) Axial
- b) Coronal
d) Oblique

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Define Artifact. (3)
3. What do you mean by Consent? Define MRI Consent. (3)
4. Explain Metallic Susceptibility artifacts in MRI scans with causes and remedy? (3)
5. Explain RF/ Zipper artifacts in MRI scans with causes and remedy? (3)
6. Explain Partial Volume Averaging artifacts in MRI scans with causes and remedy? (3)

OR

Explain Aliasing artifacts in MRI scans with causes and remedy? (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Write in detail about Motion Artifacts. (5)
8. Explain Wrist MRI Protocol. (5)
9. Explain shoulder MRI Protocol. (5)
10. List All the Sequences for Brain MRI Scan and explain any one sequence in detail with indication. (5)
11. Explain the MRI Feature, and clinical application over CT Scan. (5)
12. Write in detail about Zipper Artifacts. (5)

OR

Write notes on basic parameter of MRI Pulse sequence including SE, IR and PD. (5)

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