



BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(MRIT)-2022/B.Sc.(MRIT)-2023/B.Sc.(MRIT)-2024

Course Name – Physic of Modern Radiographic and Imaging Equipment-Digital
Radiography,CT

Course Code - BMRITC402

(Semester IV)

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) Indicate conversion of an image into digital data requires the use of the:

- | | |
|-----------------|---------|
| a) ADC | b) DAC |
| c) PACS_RIS_HIS | d) HL-7 |

(ii) Indicate Fluorography typically...

- | | |
|--|--|
| a) produces images of far inferior quality to fluoroscopy | b) refers to a continuous x-ray exposure technique |
| c) results in dose rates which are much less than in fluoroscopy | d) uses dose rates 10-50 times greater than in fluoroscopy |

(iii) Who developed the 1st CT scan ?

- | | |
|--------------------|-----------------------|
| a) Purcell & Bolch | b) Godfrey Hounsfield |
| c) WC Roentgen | d) Paul Luterberg |

(iv) Complete the sentence: 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 |

(v) Choose the correct value of CT number in water ?

- | | |
|---------|-----------|
| a) (+)1 | b) (-)1 |
| c) 0 | d) (+)200 |

(vi) Identify CT reference material is ?

- | | |
|----------|------------------|
| a) Water | b) Air |
| c) Bone | d) None of these |

(vii) Define Slice acquisition rate?

- a) Couch movement each 360 degree divided by slice thickness. b) Couch movement each 360 degree multiplied by slice thickness
- c) Couch movement each 360 degree added by slice thickness d) None of these
- (viii) Estimate the internal structure of body attenuates the X-ray beam according to their?
- a) Size b) FOV
- c) Slice thickness d) Atomic Number
- (ix) Select the most critical component in optically coupling the image intensifier to a spot film camera is.....
- a) Vidicon b) Tv frame
- c) Camera lens d) Fluorescent screen
- (x) Select which is the photoconductor material typically used in the direct conversion of digital radiography?
- a) a-Se b) a-Si
- c) CsI d) NaCl
- (xi) Identify Image receptor in CR is ?
- a) PMT b) Silicon TFT
- c) Amorphous d) Photostimulable phosphor
- (xii) Choose the correct option: Fast scan/scan direction is the direction of motion of
- a) Laser beam b) Phosphor plate
- c) X-ray beam d) Grid
- (xiii) Select where in an x-ray image intensifier are x-rays are converted into light?
- a) anode b) input phosphor
- c) output phosphor d) photo-cathode
- (xiv) If you need to visualize a patient's History and Physical(H&P) report, you would find this in which of the following choose:
- a) PACS b) RIS
- c) DICOM d) HIS
- (xv) Identify the post processing technique used in CT
- a) MIP b) VR
- c) MPR d) All of these

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain the data acquisition process in CT. (3)
3. Write the indication head CT. (3)
4. Explain with the diagram CT instrumentation (3)
5. Determine the Instrumentation of CT Scan? (3)
6. Explain the instrumentation and working principle of CT Scan with a Block diagram? (3)

OR

What are the key differences between first-generation and modern multi-slice CT scanners? (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Explain Direct and Indirect radiography? (5)
8. Explain Image reconstruction of CT scan and CT number with calculation? (5)
9. Explain PACS and HIS? (5)
10. Explain Teleradiology? (5)
11. Difference between SSCT and MSCT? (5)

12. Explain Computed Radiography reader?

(5)

OR

Evaluate an Image Acquisition of DR System?

(5)

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