BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(MRIT)-2020/B.Sc.(MRIT)-2021
Course Name – Quality Assurance & Radiation Safety (AERB Guidelines) in Diagnostic Radiology
Course Code - BMRIT601
(Semester VI)

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) Tell the name of radiographic QC procedure that is usually done once a year.
a) Retake analysis
b) Visual inspection of cleanliness of imaging systems
c) Cassette and screen cleaning
d) Safelight test

(ii) Identify the tolerance limit of tube leakage radiation at 1 m from the focus is
a) >110 mR / hour
b) <115 mR/hour
c) >115 mR/hour
d) None

(iii) Select the correct answer, MRI phantom is made up of
a) Metal
b) Water
c) Water equivalent material
d) All

(iv) Select the frequency of checking kVP is
a) Yearly
b) Monthly
c) Once in 3 year
d) Once in 2 year

(v) Identify the material used for CT couch
a) Carbon
b) Carbon fiber
c) Aluminium
d) Plastic

(vi) Identify which of the following is not consider as a mechanical QA test of CT.
a) Gantry tilt
b) Axial patient positioning accuracy
c) Collimation test
d) Noise test

(vii) Select the FFD used to check linearity of mA loading station
a) FFD 100 cm
b) FFD 80 cm
c) FFD 25 cm
d) FFD 150 cm

(viii) Predict, in which year Mammography quality standard test implemented
a) 1990
b) 1992

c) 1997 d) 1895

(ix) Select the tolerance for Assessment of accuracy of gantry tilt QA test.

a) ± 2 degree b) ± 5 degree
c) ± 10 degree d) None

(x) Select the following parameters use to decide X-ray output.

a) KVp , mA and time b) Image quality, Noise
c) All d) None

(xi) Select the patient dose during fluoroscopy as compare to radiography is

a) Much high b) Low
c) Equal d) None of these

(xii) Select HVL stand for:

a) Half Value Layer b) Half Value Luminescence
c) Half Vetted Layer d) High Value Layer

(xiii) Select which of the following is not one of the three major principles assisting the ALARA concept.

a) Maintenance b) Shielding
c) Pistance d) Time

(xiv) Choose the correct frequency of testing for automatic exposure control (AEC) in radiography machines.

a) Monthly b) Quarterly
c) Annually d) Every 3 years

(xv) Choose which of these is a test for display

a) SMPTE b) Congruency
c) Prependicularity d) none of these

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Define quality assurance and quality control in the context of CR/DR systems. (3)
3. Describe the process of quality assurance for CT scans. (3)
4. Explain the role of quality control in MRI imaging. (3)
5. Determine the timeframe for maintaining records for medical imaging quality control. (3)
6. Explain High contrast resolution test in CT. (3)

OR

Explain Low contrast resolution test in CT. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Classify the types of artifacts that can occur in digital radiography and computed radiography images and describe the quality control measures necessary to prevent and detect these artifacts. (5)
8. Describe the importance of quality control in Computed radiography by describing a scenario where an equipment malfunction resulted in a poor image and how this could have been prevented through proper QC measures. (5)
9. Explain how to maintain proper records of quality control testing. (5)
10. Explain what steps are taken to ensure proper functionality of CT scanner components during QA? (5)
11. Illustrate the importance of maintaining an records for quality control data. (5)
12. Distinguish between Annual and daily quality control documentation procedures. (5)

OR

Explain the importance of timely record-keeping for quality control purposes. (5)

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