



BRAINWARE UNIVERSITY

Term End Examination 2022

Programme – B.Sc.(MRIT)-2020

Course Name – Regulatory Requirements in Diagnostic Radiology & Imaging, Act and Rules, Regulations for JCI, NABH

Course Code - BMRIT504

(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) Does using a real time dosimetry system match the implementation of the ALARA approach?
- a) No, but it is a tool; a very useful tool, to monitor what is being achieve b) Yes, it will reduce patient dose.
c) None of these d) All of these
- (ii) Identify the “tissue-weighting factor” of stomach according to ICRP 103, Annals of the ICRP, Volume 37, pp1-332, 2007
- a) 0.1 b) 0.12
c) 0.05 d) None of these
- (iii) Define the possible consequence of irradiation?
- a) prenatal death b) death shortly after birth
c) a nonlethal effect such as a deformed organ or mental retardation d) a tumor after birth
- (iv) Select the correct statements is correct?
- a) the energy of the characteristic X-ray radiation increases b) the energy of the characteristic X-ray radiation decreases
c) the energy of the characteristic X-ray radiation remains the same d) the intensity of the emitted radiation remains the same
- (v) Select the correct properties that holds for the radiation that is generated by an X-ray device?
- a) the half-value thickness increases when the exposure time increases b) the half-value thickness decreases when the exposure time increases
c) the half-value thickness of the primary beam is larger than the half-value thickness of the scattered beam d) the half-value thickness of the primary beam is smaller than the half-value thickness of the scattered beam
- (vi) Why must a medical diagnostic X-ray device be prepare with a position indicating device (PID)? Give the best and/or most complete answer.

- a) to limit the distance between focus and skin
- b) to limit the area exposed to the beam
- c) for both reasons named at [a] and [b]
- d) for another reason than the ones named at [a] and [b]
- (vii) Who is considered as Classified worker in diagnostic radiology
- a) who are likely to receive an effective dose in excess of threetenths of the average annual dose limits notified by the Competent Authority.
- b) who are likely to receive an effective dose in excess of half of the average annual dose limits notified by the Competent Authority.
- c) who are likely to receive an effective dose in excess the average annual dose limits notified by the Competent Authority.
- d) None of these
- (viii) Choose the correct answer that define Appendix I
- a) Dose limitation
- b) Minimum qualification and experiences required
- c) x-ray warning sign
- d) None of these
- (ix) This Safety Code is intended to govern radiation safety in design, manufacture, installation, operation and decommissioning of diagnostic x-ray equipment for medical diagnostic purposes in order to:
- a) ensure that radiation workers and members of public are not exposed to radiation in excess of dose limits;
- b) reduce radiation exposures below these limits to levels ALARA and
- c) ensure that radiation exposures to patients are optimized.
- d) All of these
- (x) PRE-REQUISITES in order to obtain licence for operation of x ray equipments
- a) X-ray Room Layout and Shielding Requirements
- b) Staffing Requirements and Radiological Safety Officer (RSO)
- c) Radiation Protection Devices and Personnel Monitoring Service
- d) All of these
- (xi) Select regulatory requirements in the use of x ray equipments
- a) procure NOC validated
- b) Type Approved X-ray equipment from authorized supplier(s)
- c) after obtaining procurement permission from the Competent Authority
- d) All of these
- (xii) Trained professional responsible to maintain all the regulatory norms and guidelines in radiology practice
- a) Radiation safety officer
- b) Radiologist
- c) Technician
- d) Incharge
- (xiii) statement A: QA programs are designed to ensure that the radiology equipment can yield the desired diagnostic information. Statement B: Quality control techniques used to test the components of the radiological system and verify that the equipment is operating satisfactorily
- a) statement A is true
- b) Statement B is true
- c) Both statement is true
- d) Both statement is false
- (xiv) which of the following is a constituent board of Quality Council of India, set up to establish, measure and operate accreditation programme for healthcare organisations.
- a) NABH
- b) AERB
- c) NCRP
- d) ICRP
- (xv) Which of the following design to overcome the effect of feticide?
- a) PCPNDT Act
- b) Atomic ReThe Atomic Energy (Control of Irradiation of Food) Rules, 1996
- c) Atomic Energy Act, 1962.
- d) Atomic Energy Act, 1966

Group-B

(Short Answer Type Questions)

3 x 5=15

2. Explain the Responsibilities of Radiological Safety Officer (3)
 3. Explain about the AERB guideline for radiation protection in digital radiology (3)
 4. Draw a specified diagram of X-ray room layout. (3)
 5. Discuss the process of Pre-requisites for obtaining License for Operation of X-ray Equipment (3)
 6. Draw and explain proper layout diagram required for mammography unit installation. (3)
- OR**
- Draw and explain proper layout diagram required for CT unit installation (3)

Group-C
(Long Answer Type Questions)

5 x 6=30

7. Explain the mission of AERB (5)
 8. Describe the aim, mission and function of AERB. (5)
 9. Write a short note on the responsibility of different professional work in diagnostic radiology. (5)
 10. Draw a specified diagram of X-ray room layout. (5)
 11. Differentiate Effective dose and Equivalent dose (5)
 12. Write a short note on Pre-Conception and Pre-Natal Diagnostic Techniques Act, 1994 (5)
- OR**
- Summarize the concept of pregnancy and radiation protection according to WHO guidelines for radiation protection (5)
