



## BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – B.Sc.(MRIT)-2021

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) Why must a medical diagnostic X-ray device be prepared 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]
- (ii) Explain What should personnel do in the event of a radiographic equipment malfunction that results in excessive radiation exposure?
- a) Wait until the end of the workday to report it      b) Ignore it if it doesn't affect patients  
c) Report it to the radiation safety officer              d) Attempt to repair it themselves  
immediately
- (iii) The (extra) filter thickness is reduced. Select the correct consequence of this for an X-ray image?
- a) the contrast increases                                      b) the contrast decreases  
c) the skin dose decreases                                  d) the average grey shade decreases
- (iv) Identify the recommended distance for personnel to stand from the primary beam during an X-ray exposure
- a) As close as possible for accuracy                      b) At least 10 feet (3 meters)  
c) Within 2 inches (5 centimeters)                      d) There is no recommended distance
- (v) Identify What type of monitoring device is typically used for personnel monitoring
- a) Thermometer                                                  b) Geiger counter  
c) Dosimeter                                                      d) Stethoscope
- (vi) Identify the primary purpose of the AERB's regulatory guidelines in radiology?

- a) To establish radiation safety standards and quality assurance in radiology  
 b) To set pricing standards for radiological services  
 c) To ensure patient comfort during radiological procedures  
 d) To determine the eligibility of radiologists for licensure
- (vii) Select the primary objective of the WHO guidelines for radiation protection
- a) To promote the use of radiation in medical treatment  
 b) To maximize radiation exposure for better imaging quality  
 c) To ensure the safety of radiation workers only  
 d) To protect individuals from harmful effects of radiation
- (viii) Select under the PNDT Act, who is legally authorized to conduct prenatal diagnostic procedures
- a) Any qualified medical practitioner  
 b) Only government-employed doctors  
 c) Any person with a medical degree  
 d) Only those registered and qualified as per the Act
- (ix) predict Which document serves as the foundation for NABH standards and guidelines?
- a) Indian Constitution  
 b) World Health Organization (WHO) guidelines  
 c) ISO 9001:2015  
 d) NABH Standards for Hospitals
- (x) .....refers to “controlling human or societal behavior by rules or restrictions”
- a) AERB  
 b) Regulations  
 c) ICRP  
 d) NCRP
- (xi) Identify Which of the following indicated maximum LET Value?
- a) Alfa  
 b) Beta  
 c) Gamma  
 d) X ray
- (xii) Identify Which of the following explain the Responsibilities of Licensee ?
- a) Periodic Training - radiation workers for performing their intended task.  
 b) Pregnant Worker- Advise the employer for modifications in working condition of a pregnant radiation worker.  
 c) Ensure that the workers are familiarized with content of the relevant surveillance procedures, safety documents issued by the Competent Authority.  
 d) All of these
- (xiii) Government Rule used in order to adhere the radiation safety in the India?
- a) Atomic Energy (Radiation Protection) Rules, 2008  
 b) Atomic Energy (Radiation Protection) Rules, 2004  
 c) Atomic Energy (Radiation Protection) Rules, 1904  
 d) Atomic Energy (Radiation Protection) Rules, 2009
- (xiv) Activities considering establishment and utilisation of nuclear facilities and use of radioactive sources are carried out in India in accordance with the relevant provisions of the Atomic Energy Act, 1962.
- a) Atomic Energy Act, 1960  
 b) Atomic Energy Act, 1962.  
 c) Atomic Act, 1962.  
 d) Energy Act, 1969
- (xv) Select According to the PCPNDT Act, which of the following medical professionals are authorized to conduct prenatal diagnostic procedures?
- a) General practitioners  
 b) Radiologists and gynecologists  
 c) Pediatricians  
 d) Dentists

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. Explain the Responsibilities of Radiological Safety Officer (3)
3. Omit What is the mission of the International Commission on Radiological Protection (ICRP)? (3)
4. define Why is the first trimester of pregnancy considered the most sensitive period to radiation exposure? (3)
5. Explain What does the ALARA principle stand for, and how does it guide radiation protection during pregnancy? (3)
6. Write the requirements for floor and ceiling materials in an X-ray room? (3)

**OR**

Write the purpose of a radiation warning sign in an X-ray room? (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. Classify different national and international agencies works on Radiation safety in India. (5)
8. Illustrate What should healthcare providers and pregnant individuals know about radiation safety and informed decision-making regarding medical imaging procedures during pregnancy? (5)
9. Explain the decomposition process of radiographic equipment (5)
10. Explain the mammography room layout ? (5)
11. Explain How does the sensitivity to radiation exposure vary throughout the different trimesters of pregnancy, and what precautions should be taken during each trimester? (5)
12. Explain the measures taken to protect pregnant patients from unnecessary radiation exposure? (5)

**OR**

Explain the measures should be taken to prevent accidental patient falls in radiography rooms? (5)

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