



Library
Department of Allied Health Sciences
Brainware University
Barasat, Kolkata- 700125

BRAINWARE UNIVERSITY

Term End Examination 2025-2026

Programme – B.Sc.(MRIT)-2022/B.Sc.(MRIT)-2023/B.Sc.(MRIT)-2024/B.Sc.
(MRIT)-2025

Course Name – Fundamental Physics & Radiological Physics

Course Code - BMRITC202

(Semester II)

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) Identify the correct unit of impedance.

a) Volt	b) Ohm
c) Henry	d) Coloumb
- (ii) Which of the following did Bohr employ to explain his theory?

a) Conservation of linear momentum.	b) The quantization of angular momentum.
c) Conservation of quantum frequency.	d) Conservation of mass.
- (iii) Work done by the force is said to be negative, if the displacement of a body is _____.

a) along the force	b) against the force
c) normal to the force	d) zero
- (iv) Resistivity of a wire depends on.

a) volume	b) material
c) cross section area	d) length
- (v) Select the correct option: 1 rad equal.

a) 5 mGy	b) 20 mGy
c) 10 mGy	d) 50 mGy
- (vi) Select the correct option: 1 mGy equal.

a) 10 mrad	b) 20 mrad
c) 50 mrad	d) 100 mrad
- (vii) Identify an alpha particle is same as ?

a) a helium nucleus	b) a hydrogen nucleus
c) a proton	d) a positron
- (viii) Alpha, beta and gamma radiations have different penetrating powers. Select from the following options, the correct answer for increasing penetrating power.

- a) Beta, gamma, alpha
b) Alpha, gamma, beta
c) Gamma, beta, alpha
d) Alpha, beta, gamma
- (ix) After Compton scattering, the scattered X-ray is represented as.
a) Higher energy
b) Less mass
c) Lower velocity
d) Longer wavelength
- (x) Explain Emission of an alpha particle leads to a.
a) Decrease of 2 units in the charge of an atom
b) Increase of 2 units in the charge of an atom
c) Decrease of 2 units in the mass of an atom
d) Increase of 2 units in the mass of an atom
- (xi) Choose the type of X-ray produced due to electron deceleration.
a) Characteristic X-ray
b) Scattered X-ray
c) Bremsstrahlung X-ray
d) Secondary radiation
- (xii) Select the material commonly used for X-ray tube filtration.
a) Lead
b) Copper
c) Aluminum
d) Iron
- (xiii) Identify the region of the electromagnetic spectrum where X-rays are located.
a) Infrared region
b) Visible light region
c) High-energy short wavelength region
d) Radiofrequency region
- (xiv) Identify the source of leakage radiation in an X-ray unit.
a) Collimator
b) Tube housing
c) Patient
d) Image receptor
- (xv) Choose the correct statement regarding X-rays.
a) They have mass and charge
b) They travel at the speed of sound
c) They are invisible electromagnetic waves
d) They can be focused by lenses

Group-B

(Short Answer Type Questions)

3 x 5 = 15

2. Calculate the binding energy of Hydrogen atom in the ground state and first excited state? (3)
 3. Define isobars and isotopes. Give examples. (3)
 4. Define ionizing radiation? Give some examples? (3)
 5. Distinguish between light waves and sound waves. (3)
 6. Explain the main characteristics of X-rays. (3)
- OR**
- Explain the different types of X-ray tube? (3)

Group-C

(Long Answer Type Questions)

5 x 6 = 30

7. Express the process of nuclear fission and its properties. (5)
8. Explain radioactivity? Give an ideal example to explain alpha decay (5)
9. Write a brief note on grid? (5)
10. How does the X-ray tube dissipate heat? (5)

11. Explain the relationship between Curie and Rutherford. (5)
 12. Explain beam limiting device? (5)

OR

How can we evaluate the performance of grid? Explain? (5)

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