



BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Sc.(PA)-2022/B.Sc.(PA)-2023

Course Name – Basic Radiology and Imaging Technology

Course Code - BPAS403

(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) Identify the material which is commonly used as the X-ray target in an X-ray tube?
 - a) Copper
 - b) Aluminium
 - c) Tungsten
 - d) Lead
- (ii) Select the correct statement about CT imaging.
 - a) CT stands for Computerized Tomography
 - b) CT stands for Clinical Testing
 - c) CT stands for Cellular Technology
 - d) CT stands for Cervical Treatment
- (iii) Identify which of the following is not an application of CT imaging.
 - a) Diagnosis of bone fractures
 - b) Evaluation of brain tumors
 - c) Monitoring of fetal development
 - d) Assessment of lung conditions
- (iv) Choose the primary advantage of CT over MRI.
 - a) MRI provides better visualization of bones
 - b) CT is more expensive than MRI
 - c) MRI does not use ionizing radiation
 - d) CT has shorter scan times than MRI
- (v) select the type of radiation is typically used in CT imaging.
 - a) Gamma rays
 - b) X-rays
 - c) Ultraviolet rays
 - d) Infrared rays
- (vi) Select the inventor of the CT scan.
 - a) Sir Godfrey Hounsfield
 - b) Wilhelm Conrad Röntgen
 - c) Marie Curie
 - d) Albert Einstein
- (vii) Select the correct statement regarding MRI.
 - a) MRI uses sound waves to create images
 - b) MRI uses magnetic fields and radio waves to create images
 - c) MRI utilizes X-rays to generate images
 - d) MRI employs gamma rays to produce images
- (viii) choose the following conditions might require special considerations during an MRI scan.

- a) Claustrophobia
- c) Headache
- (ix) Identify the principle behind ultrasonography.
 - a) Reflection
 - c) Diffraction
- (x) Choose the term refers to the distance between two successive compressions or rarefactions of a sound wave in USG.
 - a) Wavelength
 - c) Amplitude
- (xi) Choose the term for the device that emits and receives ultrasound waves in ultrasonography.
 - a) Detector
 - c) Sensor
- (xii) Select the fracture type characterized by a break across the bone shaft at a right angle to the long axis.
 - a) Oblique fracture
 - c) Comminuted fracture
- (xiii) Select the term describing a fracture in which the bone is broken into several pieces.
 - a) Greenstick fracture
 - c) Comminuted fracture
- (xiv) Choose the term that describes the radiographic appearance of lung collapse.
 - a) Kerley B lines
 - c) Atelectasis
- (xv) Select the term that describes the radiographic finding of fluid in the pleural space.
 - a) Pneumothorax
 - c) Nodule
- b) Common cold
- d) Sunburn
- b) Refraction
- d) Absorption
- b) Frequency
- d) Velocity
- b) Transducer
- d) Amplifier
- b) Transverse fracture
- d) Spiral fracture
- b) Transverse fracture
- d) Oblique fracture
- b) Barrel chest
- d) Pneumothorax
- b) Effusion
- d) Consolidation

Group-B

(Short Answer Type Questions)

3 x 5=15

- 2. Write a short note on X-ray discovery. (3)
- 3. Explain about the working of Computed tomography. (3)
- 4. Explain the significance of a normal chest X-ray. (3)
- 5. Describe the differences between a PA (Posteroanterior) and an AP (Anteroposterior) chest X-ray. (3)
- 6. Explain how chest radiography aids in diagnosing pulmonary pathologies. (3)

OR

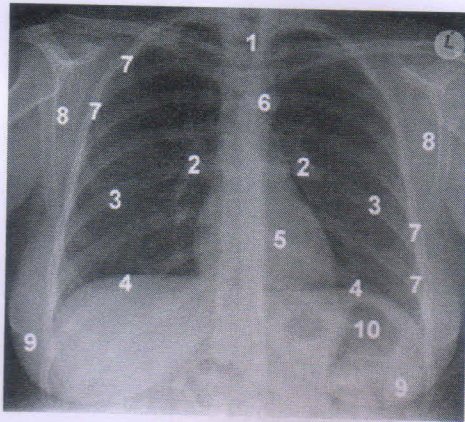
Explain the applications of MRI in medical diagnosis. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

- 7. Identify the normal anatomy of chest x-ray from the below mentioned image. (5)



8. Explain the interaction of ultrasound (USG) with matter, highlighting reflection, refraction, and absorption. (5)
9. Explain the function of a USG transducer in medical imaging, and describe its key components. (5)
10. Describe in detail about X-Ray production. (5)
11. Distinguish between the imaging characteristics of subarachnoid hemorrhage and intraventricular hemorrhage on NCCT. (5)
12. Explain the principles of radiation protection, emphasizing the ALARA concept. (5)

OR

- Illustrate the differences between time, distance, and shielding in radiation protection strategies, providing examples in a clinical setting. (5)

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