



# BRAINWARE UNIVERSITY

Term End Examination 2023-2024

Programme – B.Sc.(PA)-2022

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) Predict the principle of justification in radiation protection?
- a) Radiation exposure should be avoided unless it provides a net benefit      b) Radiation exposure should be maximized to provide the greatest benefit
- c) Radiation exposure should be limited only for workers      d) Radiation exposure should be limited to a certain dose regardless of the benefit
- (ii) Select the correct definition of subarachnoid hemorrhage.
- a) Bleeding in the brain tissue      b) Bleeding in the blood vessels of the brain
- c) Bleeding in the space between the brain and the skull      d) Bleeding in the membranes that cover the brain
- (iii) Select the advantage of X-rays in medical imaging:
- a) High cost      b) Non-invasive
- c) Limited availability      d) High radiation dose
- (iv) Identify the unit used to measure the quality of X-rays:
- a) Gray (Gy)      b) Sievert (Sv)
- c) Watt (W)      d) Kilovolt (kV)
- (v) Identify the principle that CT scanning is based on:
- a) X-ray absorption      b) Radioactive decay
- c) Magnetic fields      d) Ultrasonic waves
- (vi) Select the application of CT scan used to diagnose and treat stroke:
- a) Abdominal CT scan      b) Cardiac CT scan
- c) CT angiography      d) Brain CT scan
- (vii) Identify the type of electromagnetic radiation used to generate MRI images:
- a) Gamma rays      b) X-rays
- c) Radio waves      d) Ultraviolet rays
- (viii) Predict the clinical application of doppler ultrasonography.
- a) Evaluation of fetal growth and development      b) Diagnosis of deep venous thrombosis

- c) Assessment of liver function
- d) Assessment of blood flow in arteries and veins
- (ix) Identify the type of fracture where the bone is bent, but not completely broken.
- a) Greenstick fracture
- b) Comminuted fracture
- c) Hairline fracture
- d) Transverse fracture
- (x) Collect the recommended maximum exposure limit for members of the public to ionizing radiation?
- a) 1 mSv per year
- b) 10 mSv per year
- c) 50 mSv per year
- d) 100 mSv per year
- (xi) Predict the most common cause of intracerebral hemorrhage:
- a) Trauma
- b) Hypertension
- c) Aneurysm rupture
- d) Arteriovenous malformation
- (xii) Choose the scientist who discovered X-rays
- a) Isaac Newton
- b) Marie Curie
- c) Wilhelm Conrad Roentgen
- d) Albert Einstein
- (xiii) Identify the term used to describe the process of aligning the magnetic moments of atomic nuclei in MRI
- a) Excitation
- b) Relaxation
- c) Precession
- d) Saturation
- (xiv) Choose the correct statement about ultrasonography
- a) It uses electromagnetic waves to produce images
- b) It uses sound waves to produce images
- c) It uses X-rays to produce images
- d) It uses radio waves to produce images
- (xv) Predict the radiographic finding in a patient with tuberculosis
- a) Cavitory lesion
- b) Mediastinal widening
- c) Pleural effusion
- d) Normal lung fields

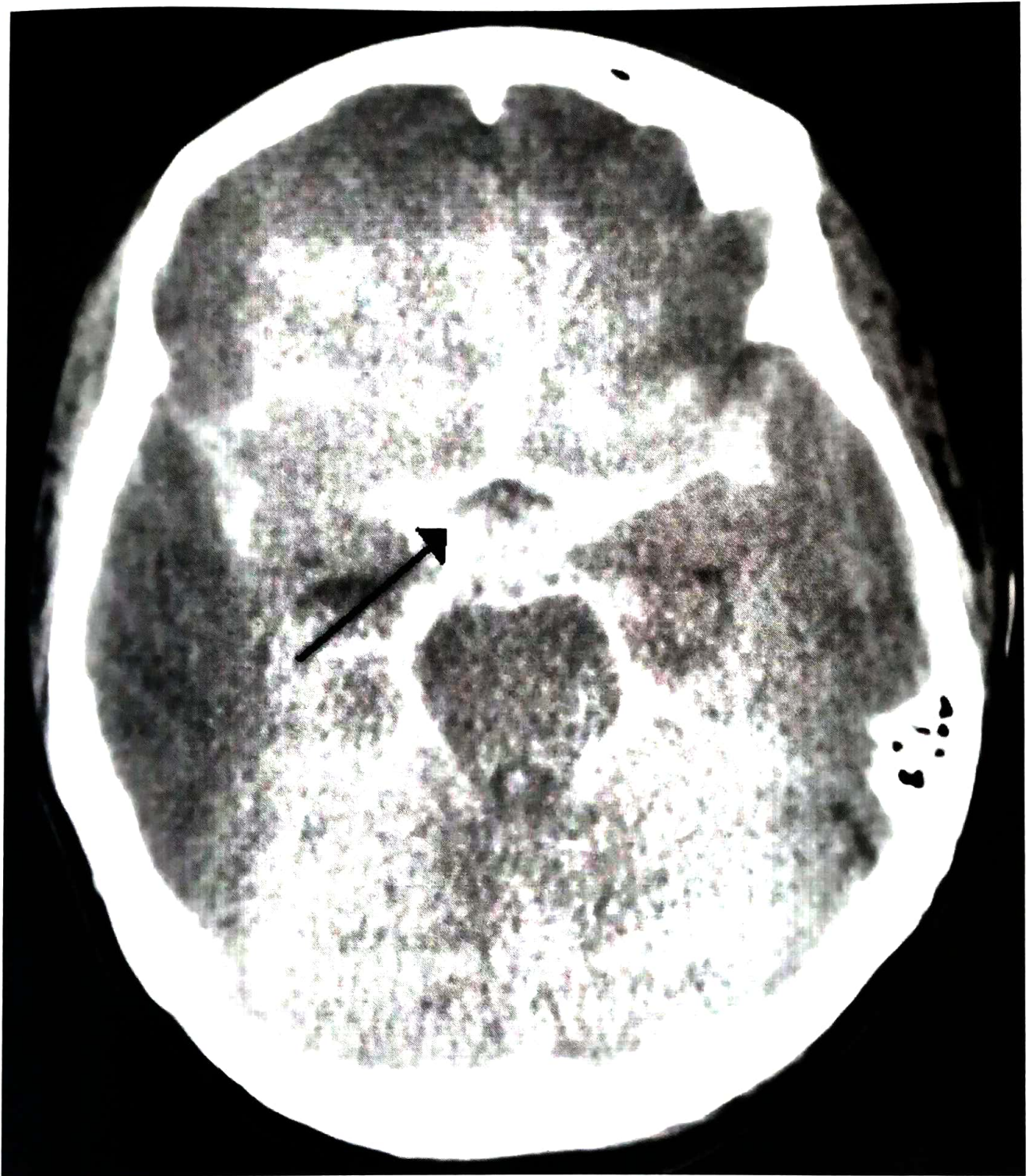
### Group-B

(Short Answer Type Questions)

3 x 5=15

*Answer all questions*

2. Express the indication of CT scan Whole Abdomen. (3)
3. Explain about the material used into the TLD Badges. (3)
4. Explain the anatomy of thorax in any one axial plane image with diagram. (3)
5. Discuss the indications of Chest X-Ray. (3)
6. Select the type of hemorrhage from below mentioned image and explain about it. (3)



OR

Focus on Thyroid shield and it's uses.

(3)

**Group-C**

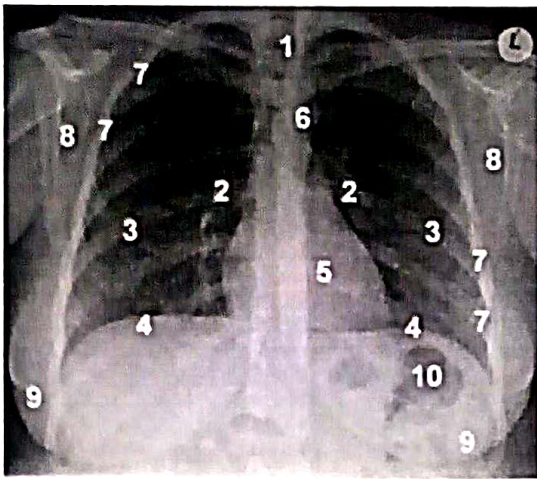
(Long Answer Type Questions)

5 x 6=30

*Answer all questions*

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

(5)



8. Distinguish between fixed and movable radiation shielding barriers in the radiology department and discuss their respective applications. (5)
9. Distinguish between the imaging characteristics of subarachnoid hemorrhage and intraventricular hemorrhage on NCCT. (5)
10. Describe about Pneumothorax and its radiological appearance. (5)
11. Explain the importance of proper positioning and technique in obtaining accurate radiographic images of fractures. (5)
12. Explain the radiographic features of pulmonary edema and differentiate between cardiogenic and non-cardiogenic causes. (5)

**OR**

Differentiate between the radiographic features of pulmonary embolism and lung cancer, and illustrate the importance of ancillary findings in their diagnosis. (5)

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