BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Sc.(PA)-2021
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) Select the correct type of open fracture?

a) Hairline fracture
b) Greenstick fracture
c) Comminuted fracture
d) Compound fracture

(ii) Select the most common type of fracture is seen in the elder patient.

a) Comminuted fracture
b) Greenstick fracture
c) Stress fracture
d) Hip fracture

(iii) What is the difference between a closed and an open fracture?

a) A closed fracture is a break in the bone without damage to the skin, while an open fracture is a break in the bone with an accompanying wound in the skin

b) A closed fracture is a complete break in the bone, while an open fracture is a partial break in the bone

c) A closed fracture occurs in children, while an open fracture occurs in adults

d) A closed fracture can only be diagnosed with an MRI, while an open fracture can only be diagnosed with a CT scan

(iv) Choose the correct imaging modalities uses ionizing radiation?

a) MRI
b) CT scan
c) Ultrasound
d) Echo cardiography

(v) Select the correct option regarding X-ray production?

a) X-rays are produced when high-energy electrons collide with atoms, causing the electrons to move to a lower energy level.

b) X-rays are produced when low-energy electrons collide with atoms, causing the electrons to move to a higher energy level.

c) X-rays are produced when high-energy photons collide with atoms, causing the electrons to move to a higher energy level

d) X-rays are produced when low-energy photons collide with atoms, causing the electrons to move to a lower energy level

(vi) 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

(vii) Select the correct purpose of the collimator in X-ray imaging?

a) To reduce patient dose

b) To increase image resolution

c) To control the size and shape of the X-ray beam

d) To filter out low-energy X-rays

(viii) Predict the correct factor that affects the contrast of an X-ray image?

a) Photon energy

b) Patient thickness

c) X-ray tube current

d) X-ray tube voltage

(ix) Identify the type of radiation is used in CT scans?

a) Gamma radiation

b) X-ray radiation

c) Beta radiation

d) Alpha radiation

(x) Select the correct answer- How does a CT scanner create images?

a) By measuring the electrical activity of the brain

b) By using magnetic fields to align atomic nuclei

c) By detecting the radiation that passes through the body

d) By bouncing sound waves off of internal structures

(xi) Indicate the correct purpose of a CT scan?

a) To diagnose and monitor the progression of cancer

b) To diagnose and monitor the progression of heart disease

c) To diagnose and monitor the progression of neurological disorders

d) All of these

(xii) Select the correct property of the body doing MRI scanners measure to create images?

a) X-ray attenuation

b) Magnetic susceptibility

c) Electrical conductivity

d) Ultrasonic reflection

(xiii) Select the correct function of the radiofrequency (RF) pulse in MRI imaging?

a) To create a magnetic field gradient

b) To excite the hydrogen atoms in the body

c) To detect the resonance frequency of the body

d) To measure the electrical conductivity of the body

(xiv) Indicate the main clinical application of MRI?

a) Detecting bone fractures

b) Imaging soft tissue structures

c) Evaluating lung function

d) Monitoring heart rate

(xv) Identify the primary clinical application of MRCP?

a) Imaging the brain

b) Imaging the musculoskeletal system

c) Evaluating the liver and bile ducts

d) Diagnosing cardiovascular disease

Group-B
(Short Answer Type Questions)

3 x 5=15

2. Describe about X-Rays? (3)

3. Indicate the common causes of a hemothorax? (3)

4. Express the Indications of CT scan Brain. (3)

5. Discuss about the disadvantages of using a TLD badge? (3)

6. Select the type of fracture from below mentioned x-ray image and explain about it. (3)

OR
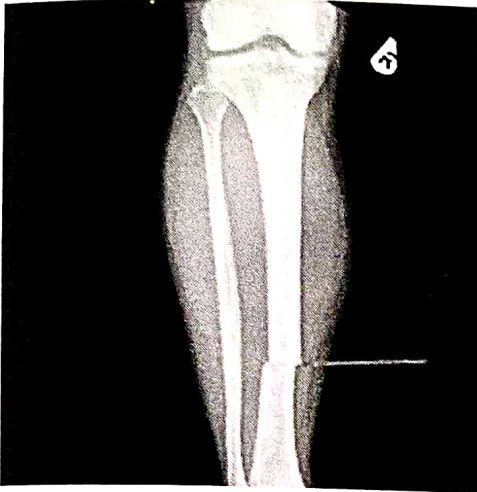
Explain about hairline fracture. (3)

Group-C
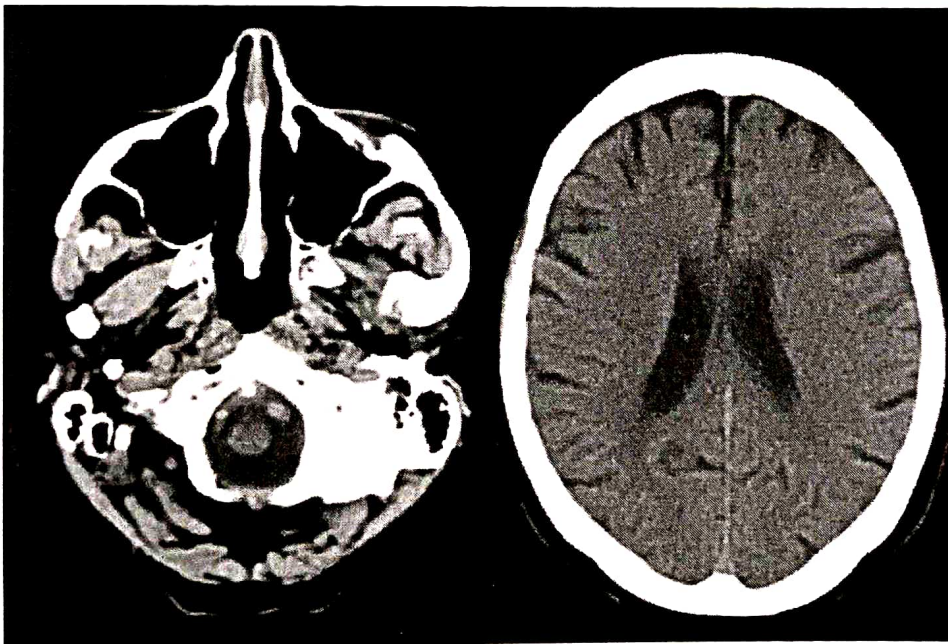(Long Answer Type Questions)   5 x 6=30

7. Explain about hemorrhage and classify it.   (5)
8. Explain the advantages & disadvantages of USG.   (5)
9. Identify the cross-sectional anatomy from the below mentioned axial image and explain   (5)
   about it.

10. Distinguish the advantage and disadvantage of x-rays.   (5)
11. Express the indications of HRCT Chest & CECT Chest.   (5)
12. Illustrate the different applications of MRI in medicine.   (5)

OR

Explain pneumothorax and classify it.   (5)

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