BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(CCT)-2021/B.Sc.(CCT)-2022
Course Name – Basics of Imaging Studies
Course Code - BCCTS404
(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 location of trachea.

a) In the centre of the chest
b) Towards the right side of the chest
c) Towards the left side of the chest
d) At the back of the chest

(ii) Identify the location of mediastinum.

a) Above the lungs
b) Between the lungs
c) Below the lungs
d) Behind the lungs

(iii) 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.

(iv) Predict the correct factor from the following factors 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

(v) Predict the potential complication of a tension pneumothorax.

a) Increased cardiac output
b) Hypotension
c) Increased oxygenation of the blood
d) Increased lung compliance

(vi) Predict the correct common cause of spontaneous pneumothorax?

a) Trauma
b) Infection
c) Chronic obstructive pulmonary disease (COPD)
d) Idiopathic

(vii) Identify the diagnose method of hemothorax.

a) Physical examination
b) Chest X-ray

c) CT scan
d) All of these

(viii) 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

(ix) Identify the correct tissue from the following types of tissue that appears dark on a T1-weighted MRI image.

a) Fat
b) Water
c) Bone
d) Blood

(x) Select the unit of measurement for the strength of the magnetic field in an MRI scanner.

a) Hertz
b) Tesla
c) Ampere
d) Joule

(xi) Identify the type of angiography that is used to diagnose blood clots in the lungs.

a) Cerebral angiography
b) Pulmonary angiography
c) Coronary angiography
d) Renal angiography

(xii) Identify the type of angiography that is used to visualize the blood vessels in the kidneys.

a) Cerebral angiography
b) Pulmonary angiography
c) Coronary angiography
d) Renal angiography

(xiii) Identify the type of angiography that involves the use of a catheter inserted through the femoral artery.

a) Coronary angiography
b) Renal angiography
c) Cerebral angiography
d) Peripheral angiography

(xiv) Select the correct statement is true about angiography.

a) It is a non-invasive procedure.
b) It does not require the use of contrast material.
c) It is an invasive procedure.
d) It can be performed without radiation exposure.

(xv) Choose the most common diagnostic imaging modality used to evaluate hemorrhage in the brain:

a) CT scan
b) MRI
c) PET scan
d) X-ray

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Express the radiological appearance of pneumonia into a chest X-ray. (3)
3. Express the uses of CT Angiography. (3)
4. Discuss the role of the diaphragm in a normal chest x-ray. (3)
5. Explain the difference between ionizing and non-ionizing radiation. (3)
6. Explain the application of various types of doppler USG. (3)

OR

Focus on the disadvantages of CT Scan. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Explain about haemorrhage and classify it with proper diagram. (5)
8. Express the signs and symptoms of hemothorax. (5)
9. Analyze how healthcare providers can minimize the risks associated with contrast imaging? (5)
10. Distinguish the advantage and disadvantage of x-rays. (5)

11. Explain about the properties of X-Rays. (5)
12. Explain the basic principle of MRI. (5)

OR

Explain the advantages & disadvantages of USG. (5)

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