



BRAINWARE UNIVERSITY

Term End Examination 2024-2025

Programme – B.Sc.(CCT)-2021/B.Sc.(CCT)-2022/B.Sc.(CCT)-2023

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 name of the cavity that hemothorax is defined as the accumulation of blood.
 - a) Pericardial cavity
 - b) Peritoneal cavity
 - c) Pleural cavity
 - d) Mediastinal cavity
- (ii) 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
- (iii) Predict the medical condition may be treated using angiography?
 - a) Blocked arteries
 - b) Aneurysms
 - c) Abnormal blood vessels
 - d) All of these
- (iv) Predict the type of contrast media that is used to visualize blood vessels.
 - a) Negative contrast media
 - b) Positive contrast media
 - c) Neutral contrast media
 - d) None of these
- (v) Select the organ that is centrally located and visible in a chest X-ray.
 - a) Brain
 - b) Liver
 - c) Stomach
 - d) Heart
- (vi) Choose which of the following is NOT typically evaluated in a normal chest X-ray.
 - a) Lungs
 - b) Ribcage
 - c) Kidneys
 - d) Diaphragm
- (vii) Identify a common reason why doctors request a chest X-ray.
 - a) To check for lung infections like pneumonia
 - b) To measure blood sugar levels
 - c) To diagnose a stomach ulcer
 - d) To check for muscle injuries
- (viii) List two key indicators of a normal chest X-ray.
 - a) Clear lung fields and normal heart size
 - b) Enlarged heart and fluid buildup
 - c) Broken ribs and air pockets
 - d) Dark spots and missing bones

- (ix) Choose the pathology associated with the collapse of a lung segment.
- | | |
|-----------------|-----------------|
| a) Pneumonia | b) Atelectasis |
| c) Cardiomegaly | d) Pneumothorax |
- (x) Predict which pathology might cause difficulty in breathing due to lung infection.
- | | |
|-----------------|-------------|
| a) Pneumonia | b) Nodule |
| c) Cardiomegaly | d) Effusion |
- (xi) Choose the pathology most likely to result from air leakage into the pleural space.
- | | |
|-------------|-----------------|
| a) Effusion | b) Pneumothorax |
| c) Mass | d) Infiltration |
- (xii) Select the correct range of frequencies used in medical ultrasound imaging.
- | | |
|----------------------|-------------------|
| a) 20 Hz – 20 kHz | b) 1 MHz – 15 MHz |
| c) 100 MHz – 200 MHz | d) 1 GHz – 10 GHz |
- (xiii) List the three main ways ultrasound interacts with matter.
- | | |
|---------------------------------------|--|
| a) Reflection, refraction, absorption | b) Conduction, convection, radiation |
| c) Diffusion, emission, transmission | d) Interference, diffraction, polarization |
- (xiv) Choose the component of an ultrasound transducer responsible for sound wave generation.
- | | |
|--------------------------|-----------------|
| a) Piezoelectric crystal | b) Copper wire |
| c) Battery | d) Silicon chip |
- (xv) Select the material commonly used in piezoelectric transducers.
- | | |
|-----------|------------|
| a) Quartz | b) Plastic |
| c) Copper | d) Lead |

Group-B

(Short Answer Type Questions)

3 x 5=15

- Express the radiological appearance of pneumonia into a chest X-ray. (3)
- Distinguish between the appearance of the heart and the lungs on a normal chest x-ray. (3)
- Describe the basic properties of X-rays (3)
- Describe two important properties of ultrasound. (3)
- Explain why a PA view is preferred over an AP view for routine chest X-rays. (3)

OR

Explain the discovery of X-rays. (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

- Describe cystic fibrosis and explain the radiological findings associated with this condition. (5)
- Distinguish between pleural effusion and pneumothorax based on X-ray findings. (5)
- Explain the difference between BREMSSTRAHLUNG X-RAYS and CHARACTERISTIC X-RAYS. (5)
- explain in detail about the advantages and disadvantages of x-rays (5)
- Describe about ARDS and its causes. (5)
- Explain the role of chest X-rays in diagnosing asthma and describe the possible radiological findings. (5)

OR

Explain the condition of atelectasis as seen on a chest X-ray. (5)
