DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE

DEPARTMENT OF BIOMEDICAL ENGINEERING

RADIOLOGICAL EQUIPMENTS

QUESTION BANK

Unit – 1

Two marks:

1. What are x-rays
2. Write the principle of x-rays
3. Write some of the properties of x-rays
4. What are soft and hard x-rays
5. What is the use of hard x-rays
6. How the x-rays are produced
7. What are the disadvantages of gas tube
8. Write the advantages of Coolidge tube
9. What is potter bucky system
10. What are the types of grid movements
11. Give any two features of bucky system
12. What is the need for cooling system
13. Give short notes on scattered radiation
14. List the types of anodes used in x-ray system
15. What is the criteria need for selection of anodes in x-rays tubes
16. Write the function of collimator
17. What is stroboscopic effect

16 marks:

1. Discuss in detail about stationary type anode
2. Discuss in detail about rotating type anode
3. How x-rays are produced. What are the properties of x-rays
4. Explain potter bucky system in detail.
5. Give short notes on cooling system and scattered radiation
6. Draw the block diagram of x-rays machine and explain the components
7. Give short notes on collimator and grid with appropriate diagram

Unit-2

Two marks:

1. What is radiography
2. Define angiography
3. Define fluoroscopy
4. What are the uses of fluoroscopy

5. Mention the application of radiography
6. What is the contrast material used in fluoroscopy
7. Give the components used in fluoroscopy
8. List the advantage and disadvantages of fluoroscopy
9. Differentiate flat panel detectors over image intensifier
10. What are the uses of angiography
11. How is angiography performed
12. Give the application of angiography
13. What is multi section radiography
14. Give the benefits and risk of angiography

16 marks:

1. Discuss in detail about projectional radiography
2. Write brief description about the following
    a. angiography
    b. fluoroscopy
3. explain the technique involved in multi section radiography
4. with the neat diagram explain the components of fluoroscopy system
5. explain the image intensifier with neat diagram

unit-3

Two marks:

1. what is computed tomography
2. differentiate CT from conventional tomography
3. what are the different artifacts occur during CT imaging
4. define FID associated with MRI
5. what are the different types of detectors used in CT
6. define NMR, FID associated with MRI
7. what are the limitations of normal x-rays
8. what is the principle of CT
9. what are the components of CT
10. explain the processing system in CT
11. what are storage devices
12. what is the principle of MRI
13. what is precession frequency
14. when RF pulse is send to the proton what will happen
15. what is longitudinal relaxation time

16 marks:

1. Explain the different types of detectors used in CT
2. What is MRI . draw and explain the MRI unit
3. Explain the principle and types of scanner used in CAT
4. Explain the principle of MRI technique

5. Discuss in detail about processing unit and storage unit in CT

Unit-4

Two marks:

1. What are isotopes and mention some applications of radioisotopes used in medical field
2. What is radioactivity
3. What are the types of radioactivity
4. What is natural RA
5. What is artificial RA
6. What are radioactive radiations
7. List the properties of alpha , beta and gamma rays
8. What is alpha and beta emission
9. What is radioactive decay
10. What is half life period
11. What is average life period
12. What are the units of RA
13. What are the different types of radiation detectors
14. What are the uses of alpha and beta emission
15. What is rectilinear scanner
16. What is the need of pulse height analyzer

16 marks:

1. Draw the block diagram of gamma camera and explain its components
2. Write short notes on
    a. GM counter
    b. Radiation therapy
    c. Nuclear angiogram
3. List the properties of alpha, beta and gamma rays
4. Explain the principle involved in gamma camera
5. Explain the principle of radiation therapy
6. List the various isotopes used in radiation therapy
7. Write short notes on ionization chamber and scintillation detector
8. With neat diagram explain rectilinear dot scanner in detail.

Unit-5

Two marks:

1. What are the indirect effects of radiation

2. What is ICRP regulation
3. What is area monitoring
4. What are the hazardous effects of radiation
5. Draw the graph of variation of absorbed dose by different body tissues
6. Mention some of the effects of radiation on human body
7. Explain about radiation protection
8. What is stochastic and non-stochastic effect
9. What are the precautions to be taken by the people who are handling nuclear medicine
10. What are radiation monitoring equipments
11. What are the types of dosimeter
12. Explain film badge dosimeter

16 marks:

1. Discuss the various hazardous effects of radiation
2. Explain any two personnel monitoring instruments for radiation safety
3. Explain various types of dosimeter in detail
4. Discuss safety limits in detail.