

B.Sc. (Hons.) Physics (Semester – 6th)
MEDICAL PHYSICS
Subject Code: BPHYD1621
Paper ID: [19131537]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt all the following questions:

- a) Discuss how energy balance is maintained in the human body.
- b) Differentiate between stochastic and deterministic effects of radiation.
- c) How the interactions of radiation with matter vary depending upon the type and energy of radiations?
- d) How does tube current influence the quality and intensity of X-rays produced in an X-Ray tube?
- e) What is meant by dose in context of radiation exposure and mention its units.
- f) What is the role of a bolus in radiation therapy and how does it affect the dose distribution in tissues?
- g) How does body regulates its temperature?
- h) What are radiopharmaceuticals? How these are used in nuclear medicine imaging and therapy?
- i) What is the significance of linear attenuation coefficient for radiations in any medium?
- j) What are three primary body planes used to describe anatomical positions and movements and how do they differ from each other?

Section – B

(5 marks each)

- Q2. Explain the process of producing speech sounds, including the role of the speech organs and the mechanism involved in creating different sounds.
- Q3. Explain the importance of radiography in medical imaging and list the essential accessories required for the production of good radiological image?
- Q4. Write brief about CT scan including their principle, applications and advantages in medical imaging.
- Q5. Describe the various types of personal monitoring devices used for radiation detection and dosimetry?
- Q6. Explain film processing in radiography with all step involved from the development of exposed X-Ray films to the final interpretation of images.

Section – C

(10 marks each)

- Q7. Describe the functioning of human eye. Discuss various eye defects and vision correction techniques.
- Q8. Discuss how X-rays are produced through the interaction of high energy electrons with a target and also describe its properties and types?
- Q9. Explain the principles of ultrasound imaging and its applications in diagnosing the various body organs.