Roll No…….. **Total No. of Printed Pages: 1**
Total No. of Questions: [09]

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.