U.G. 6th Semester Examination-2021

PHYSICS

[HONOURS]

Discipline Specific Elective (DSE)

Course Code : PHY-H-DSE-T-03

(Medical Physics)

Full Marks : 40 Time : $2\frac{1}{2}$ Hours

The figures in the right-hand margin indicate marks.

Candidates are required to give their answers in their own words as far as practicable.

1. Answer any **five** questions : 2×5=10

   i) What are the processes by which heat is lost from the body?

   ii) State different characteristics of sound.

   iii) Define characteristic of X-ray.

   iv) What is a radioisotope?

   v) How does a dosimeter work?

   vi) Write some biological effects of radiation.

   vii) What is ultrasound imaging?

   viii) How can you control the intensity of X-ray?

2. Answer any **two** questions : 5×2=10

   i) Explain the physics of cardiovascular system. 5

   ii) What is Bremsstrahlung radiation? Describe the method of production of X-ray in a Coolidge tube. 2+3

   iii) How does radiation interact with matter? Write the names of different radiation detectors. Explain the use of pocket dosimeter in a nuclear laboratory. 2+1+2

   iv) Describe MRI radiological imaging. 5

3. Answer any **two** questions : 10×2=20

   i) Explain the use of sound and ultrasound to diagnose certain diseases. Describe the physics of electrical signals and information transfer in a nervous system. 5+5

   ii) Describe the principle, function and display of the gamma camera. What are the principles of radiation protection? Explain different radiation effects. 5+2+3

   iii) Write the working principle of any three radiation detectors. 10

   iv) State the physics of nuclear magnetic resonance (NMR). Explain NMR imaging. 7+3

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