

B.TECH SEM – VI (2007 COURSE) (BIOMEDICAL ENGG.) :

SUMMER - 2018

SUBJECT: MEDICAL IMAGING & PROCESSING

Day: **Wednesday**

S-2018-2740

Time: **02.30 PM TO 05.30 PM**

Date: **06/06/2018**

Max. Marks: 80

N.B.:

- 1) **Q.No.1** and **Q.No.5** are compulsory. Out of remaining questions attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in **SEPARATE** answer books.
- 4) Assume suitable data if necessary.

SECTION-I

- Q.1** a) How to control X-ray dose in an X-ray image intensifier system? (05)
b) Explain the concept of Doppler colour flow imaging in detail. (05)
c) Describe the principle of Computed tomography. (04)
- Q.2** a) What is Heel effect? Explain stationary X-ray tube. (07)
b) Explain the following effects: (06)
i) Photoelectric effect
ii) Compton effect
- Q.3** a) List the various arrangements in multi element array scanners. Explain any two arrangements in detail. (07)
b) Mention various application of A-scan, M-scan and B-scan ultra sound imaging. (06)
- Q.4** a) Describe the basic principle of CT and describe it's generations. (07)
b) With block diagram, explain Single Photon Emission Computed Tomography (SPECT). (06)

SECTION-II

- Q.5** a) Elaborate scintillation camera in detail. (05)
b) What is medical Thermography? Explain. (05)
c) Explain image arithmetic for image enhancement. (04)
- Q.6** a) List the various collimators used with gamma camera. Explain any two collimators in detail. (07)
b) Draw and explain in detail radiation detectors. (06)
- Q.7** a) Describe the basic principle of MRI. (07)
b) Write a short note on Thermographic equipment. (06)
- Q.8** a) Explain the JPEG file format. (07)
b) What is image restoration? With a sample application describe an image restoration technique. (06)