Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17EC3074** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MEDICAL IMAGE PROCESSING** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Summarize the method of acquisition of images using various medical imaging systems. | CO1 | 20 |
| (OR) | | | | |
| 2. | a. | Explain the procedure to reconstruct the images from projections in two dimensions. | CO4 | 10 |
| b. | List the applications of medical image processing with real time example. | CO6 | 10 |
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| 3. | a. | Explain the construction and operation of CT machine in acquisition of medical images. | CO3 | 12 |
| b. | Discuss the advantages of CT and MR Images. | CO3 | 8 |
| (OR) | | | | |
| 4. | a. | Write short notes on SPECT and PET. | CO3 | 12 |
| b. | Relate the advantage of fMRI with respect to disease diagnosis. | CO3 | 8 |
|  |  |  |  |  |
| 5. | a. | Explain the procedure followed to enhance the quality of the signal by digital fluoroscopy technique. | CO2 | 8 |
| b. | Find the theoretical improvement in image quality if 3,5 and 7 digital images are averaged. | CO2 | 5 |
| c. | How tissue contrast is obtained in MRI-Angiography? | CO2 | 7 |
| (OR) | | | | |
| 6. |  | Describe the ultrasound scanning machine with neat diagram. Discuss the procedure adopted in clinic for scanning the internal body structures and disease diagnosis. | CO5 | 20 |
|  |  |  |  |  |
| 7. | a. | Define Doppler shift principle and explain how the blood flow in a human body can be detected. | CO5 | 15 |
| b. | A 10 MHz ultrasound is used for the detection of bloodflow. For blood flowing at 15 cm/sec towards the ultrasound sourse, find the Doppler shift frequency. Assume that the angle θ is zero so that cosθ=1. | CO5 | 5 |
| (OR) | | | | |
| 8. | a. | Comment briefly on the various thresholding concepts used in Medical image processing with suitable example. | CO6 | 10 |
| b | Write the procedure to detect the points and edges using various masks in digital images. | CO6 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | What do you mean by image fusion? List the transforms used for rigid registration techniques. | CO2 | 10 |
| b. | Explain the minimum distance classifier algorithm with a case study. | CO2 | 10 |