



VI SEMESTER B.TECH. END SEMESTER EXAMINATIONS APR 2019

SUBJECT: DIGITAL MEDICINE [IIE 5202]

REVISED CREDIT SYSTEM (06/05/2019)

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

✤ Answer ALL the questions.

✤ Missing data may be suitable assumed.

1A.	Give a brief history of genomics.	02
1B.	Draw and describe the genetic blue print of the DNA.	02
1C.	What is a gene in the DNA, and what are its features?	02
1D.	What are the changes in a DNA? What diseases do they cause? How do we use ML & sequencing to identify them?	02
1E.	What are the technologies to cause changes in the DNA?	02
2A.	What is Imaging Informatics? Define.	02
2B.	What are the key areas where digital technology plays a role in Imaging?	02
2C.	Enumerate the basic principle of MRI.	02
2D.	Describe Photoacoustic imaging.	02
2E.	What are the basic principles of digital biomedical image management? What are the open source software used for the same?	02
3A.	What are the different types of Clustering?	02
3B.	In K means clustering, what role does a centroid play?	02

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3C.	What are the steps in K means clustering?	02
3D.	Define in detail the sum of squared error formula for defining the convergence criteria for squared error.	02
3E.	What is the weakness & strength of K means?	02
4A.	What is an artificial neural network? What is the concept?	03
4B.	Only draw the general model of an ANN.	02
4C.	What are the different types of network? Elaborate.	03
4D.	What is back propagation in ANN?	02
5A.	Describe the application of ML to any one major health problem.	02
5B.	What are the 4 stages of digital medicine? Please draw it as a figure.	04
5C.	Summarize the challenges that AI/ML face in the field of Medicine that IEEE paper on Watson can be used.	04