

**B.Tech. SEM -VII Bio Medical 2014 Course (CBCS) : SUMMER - 2019**  
**SUBJECT : 1) ELECTIVE – I : SOFTWARE TOOLS FOR BIO SIGNAL ANALYSIS**

Day : Tuesday  
Date : 14/05/2019

Time : 02.30 PM TO 05.30 PM  
Max. Marks : 60

S-2019-2853

**N. B. :**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data, if necessary.

**Q. 1 a)** What are features of MATLAB? (05)

**b)** What are the script and function files in MATLAB? Give examples of each. (05)

**OR**

**a)** Create a vector x with 10 elements : 1, 2, 3, .....10

Compute the following quantities using MATLAB (04)

**i)**  $t \sin(t)$

**iii)**  $t \cos(t)$

**ii)**  $Y = \frac{t-1}{t+1}$

**iv)**  $Z = \frac{\sin(t^2)}{t^2}$

**b)** Define structure in MATLAB. Explain multiple records in a structure array and in field array. (06)

**Q. 2 a)** What are the control flow and loop statements in VB? Give example of each statement with proper syntax. (10)

**OR**

Enlist the database types and elaborate any two databases with suitable example. What are the advantages of connecting VB to database? (10)

**Q. 3** What is the difference between arrays and clusters? Define any two types of each with diagrammatic representation. (10)

**OR**

Explain "For loop" in LabVIEW. Write any program using "For loop" with its execution. (10)

**Q. 4 a)** What is DAQ<sub>mx</sub>? Draw and explain DAQ<sub>mx</sub> timing VI. (06)

**b)** What are the limitations of simple VI? (04)

**OR**

**a)** Classify signals and give the importance of analog interfacing. (05)

**b)** In what way the LabVIEW is used to acquire the real time data? Give one example. (05)

**P. T. O.**

**Q. 5** What do you mean by windowing? Explain any three key properties of window design method with suitable diagram. **(10)**

**OR**

Define following windows used in FIR filter with its equation: **(10)**

- i) Hanning window
- ii) Kaiser window
- iii) Rectangular window
- iv) Hamming window

**Q. 6** Why do you need to compress any bio signal? What are the techniques use to compress the ECG signal? **(10)**

**OR**

a) Explain the reconstruction of ECG signal Using MATLAB functions **(05)**

b) Write a note on “Importance of QRS detection”. **(05)**

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