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EIC—May 18   **80686**

B.Tech. 8th Semester Examination
INTELLIGENT INSTRUMENTATION
EIC-412B

Time : 3 Hours]   [Max. Marks : 60

Instructions :

(i)   Part-A is compulsory and attempt 4 Questions from Part-B.

(ii) Assume relevant data/figure if found missing.

PART–A

1. (a) Calculate the address line required for an 2K byte memory chip.   (2)

   (b) Explain the concept of Sub-virtual Instrumentation. (2)

   (c) Differentiate between a formula node and a Math Script Node.   (2)

   (d) Explain the need of shift register and feedback node used in loops in LABVIEW. How can these be initialized? (2)

   (e) What are the functions available in LABVIEW to write the data into a spread sheet file.   (2)

   (f) Differentiate between continuous and discrete wavelet transform. What are their characteristics.   (2)

   (g) Explain how does the UART receiver section synchronized itself to the incoming serial data.   (2)

   (h) Give the comparison among the Fourier Transform, Short time Fourier Transform and Wavelet Transform.(2)

(i) Differentiate between Intelligent and Virtual instrumentation. (2)

(j) Clearly specify the sequence of actions associated with the following modes of data transfer

(i) synchronous.

(ii) asynchronous with one way and two way control. (2)

PART-B

2. (a) For each of the following discuss the consequences if a connection fails

(i) five devices arranged in mesh topology

(ii) five devices arranged in star topology

(iii) five devices arranged in bus topology

(iv) five devices arranged in ring topology (5)

(b) What are different control techniques for serial data transfer schemes? Explain different 5 types of bus arbitration schemes of serial data transfer. Compare them in terms of no. of control lines used. (5)

3. (a) Explain the components of Intelligent Instrumentation system. Explain static and 5 dynamic characteristics of Intelligent Instrumentation. (5)

(b) Specify the characteristics of parallel bus standards (1) IEEE 488 and IEEE 796. (5)

4. (a) Differentiate between case and sequence structure. Explain how case and sequence structures are used in VI programming? (5)

(b) Find the full scale output potential for an 8 bit DAC with a reference potential of 10.00 V. (5)

5. (a) 'Build a VI to generate two waveforms of different amplitude and frequency. Add the signals to find the resultant waveform and plot it on the separate waveform graph. (5)

   (b) Explain the concept of Auto-indexing in FOR and WHILE loop in LabVIEW software. (5)

6. (a) Explain with the help of flowchart the software implementation of Butterworth band pass and band stop analog filter. (5)

   (b) Explain the concept of Wavelet Transform. Explain in detail the various properties of continuous and discrete wavelet transform. (5)

7. (a) Create a VI which consists of numeric input array. Set a threshold value and separate the array elements which are greater than the threshold. Create an icon and connector and save this file as sub VI. (5)

   (b) Find the most probable straight line for the following data by the method of

   (i) Sequential difference

   (ii) Extended differences

x	1	3	4	6	11	14
y	1	2	4	5	8	10

   (5)