CBCS SCHEME

USN | | | | | | | | | | |

21MT54

Fifth Semester B.E. Degree Examination, June/July 2024
Control Theory and Virtual Instrumentation

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain open loop control system with two examples. **(10 Marks)**
b. Explain closed loop control system with an example. **(10 Marks)**

OR

2 a. Differentiate between open loop control system and closed loop control system. **(10 Marks)**
b. Explain analogous systems based on force voltage analogy and force current analogy. **(10 Marks)**

Module-2

3 a. Explain block diagram reduction techniques or rules. **(10 Marks)**
b. Explain signal flow graph and Mason's gain formula. **(10 Marks)**

OR

4 a. Explain the rules to solve signal flow graph. **(10 Marks)**
b. Define the terminologies used in signal flow graph:
i) Node ii) Branch iii) Forward path iv) Input node v) Output node. **(10 Marks)**

Module-3

5 a. Define virtual instrumentation. Explain the need of VI and advantages of VI. **(10 Marks)**
b. Explain block diagram and architecture of virtual instrumentation. **(10 Marks)**

OR

6 a. Compare conventional programming with graphical programming. **(10 Marks)**
b. Explain the operation of single ended and differential inputs. **(10 Marks)**

Module-4

7 a. Define LABVIEW. Explain the components of LABVIEW. **(10 Marks)**
b. Explain for loop and while loop. **(10 Marks)**

OR

8 a. Define structures. Explain the concepts of case structures and sequence structures. **(10 Marks)**
b. Define array. Explain the concepts of one-dimensional and two dimensional array. **(10 Marks)**

Module-5

9 a. Explain interfacing of external instrument PC using RS232. **(10 Marks)**
b. Explain CAN bus in detail. **(10 Marks)**

OR

10 a. Explain the following:
i) IEEE 488 standard
ii) USB **(10 Marks)**
b. Explain Modbus protocol in detail. **(10 Marks)**

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