

Code No: K0225

**R07****Set No. 1**

IV B.Tech II Semester Supplementary Examinations, July/August-2017

**PROGRAMMABLE LOGIC CONTROLLERS**

(Electrical and Electronics Engineering)

Time : 3 hours

Max. Marks: 80

Answer any Five Questions  
All Questions carry equal marks

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1. a) Sketch the functional components of a PLC system and explain.  
b) What is commonly used method of programming PLCs? Explain with an example. [8+8]
2. Draw the layout of Drill press operation and explain the PLC programming of a semiautomatic drill press operation. [16]
3. a) Implement the PLC ladder diagram for the Boolean algebra expression  $(A+B+C).(D+E+E).G.\overline{H}=M$ . Also show their gate diagram  
b) Draw and explain the PLC equivalent of AND, OR gates. [8+8]
4. Discuss different input and output registers of programmable logic controllers. [16]
5. A motor and its lubrication pump motor are both running. Lubrication for main motor bearings is required during motor coast-down. After the main motor is shut off, the lubrication pump remains on for 20 seconds. Explain the PLC programming of the above process. Also show the corresponding timing diagrams. [16]
6. Discuss the master control relay (MCR) function in PLCs. Also explain its application with the help of an application program. [16]
7. a) Explain the typical PLC sequencer function.  
b) What is the significance of Cascaded sequencers in PLC programming? Explain. [8+8]
8. a) Explain about the position indicator with PID control.  
b) Discuss in briefly about the PID Modules, PID tuning and PID functions. [6+10]