[Time: Three Hours]   **[Marks:80]**

Please check whether you have got the right question paper.

N.B: 1.   Question.No.1 is compulsory.
2.   Attempt any **three** questions out of the remaining **five** questions.
3.   Figures to the **right** indicate **full marks**.
4.   Assume suitable data wherever required but justify the same.

1.   Write short note on any 4   20
(a)   Foam resistant fluids.
(b)   Cylinder mounting.
(c)   Shuttle valve.
(d)   Pneumatic actuators.
(e)   Selection of PLC.

2. (a)   Explain how Darcy equation is used for finding head losses in laminar and turbulent flow.   9
(b)   Write short notes on classification of pumps.   11

3. (a)   Explain construction and working of cylinder cushions.   5
(b)   What are accumulators? What are its types? Draw and explain the circuit for accumulator as an   15
auxiliary power source.

4. (a)   Draw the hydraulic circuit showing two cylinders connected in parallel and another circuit showing   6
two cylinders connected in series. In which case synchronization of motion is achieved?
(b)   Write short note on logic valves and time delay valves.   14

5. (a)   In a stamping station cylinder 'A' extends and brings the work-piece under stamping cylinder 'B'.   12
Cylinder 'B' then extends and stamps the job. Cylinder A can return back only after cylinder B has
retracted fully. Draw a displacement step diagram and develop a pneumatic circuit using cascade
method.
(b)   Explain the basic instructions in ladder logic diagram.   8

6. (a)   Explain working of any one hydro-pneumatic circuit.   10
(b)   Components are to be supplied to a processing machine from the discharge rail of a vibrator   10
conveyor as shown in Figure 1. Cylinder A extends and picks up the component from the
discharge rail and then retracts. Cylinder B extends and then shifts the component to the machine.
Cylinder A extends once again, lowering and dropping the component to the machine. At the end
cylinder A and B retract one after other. Develop the electro-pneumatic control circuit to implement
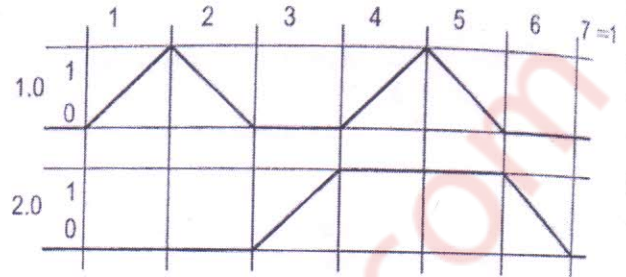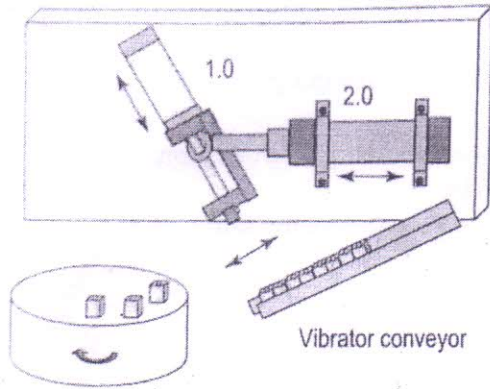the control task.

8463BEBB1C5F90DFF79EFBBFAB1A4076

FIGURE 1

****