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Reg. No. :

Question Paper Code: 55P03

M.E. DEGREE EXAMINATION, APRIL 2019

Elective

CAD / CAM

15PCD503 - DESIGN OF HYDRAULIC AND PNEUMATIC SYSTEMS

(Regulation 2015)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Explain the working principle of bend axis piston pump with neat   CO1- U   (10)
         sketch.

                                          Or

    (b) Explain the working principle of the swash plate piston pump with   CO1- U   (20)
         neat sketch.

2. (a) Explain the counter balance valve with one of its application in   CO2- U   (20)
         detail.

                                          Or

    (b)   Explain the working principle of unloading valve with its   CO2- U   (20)
          application.

3. (a) Describe the hydraulic circuit used to control the motion of a   CO3- U   (20)
         hydraulic vertical milling machine.

                                          Or

    (b) Describe the hydraulic circuit used to control the motion of a   CO3- U   (20)
         hydraulic planning machine.

4. (a) What are the different types of pneumatic switching elements are   CO4- U   (20)
        there .Explain them in detail

                            Or

    (b) Consider an automatic drilling machine with three cylinders. The   CO4- U   (20)
        complete cycle is as follows; Cylinder A extends to clamp the work
        piece, then cylinder B extends to drill the hole and then retracts.
        Cylinder A then retracts to unclamp the work piece. Design a control
        circuit applying step- counter method.

5. (a) Explain the maintenance and troubleshooting of pneumatic systems   CO5- U   (20)
        in detail.

                            Or

    (b) Develop a circuit to control a double acting cylinder which uses a   CO5- U   (20)
        single solenoid valve and a single limit switch . Clearly sketch the
        pneumatic circuit and PLC ladder logic diagram and explain

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