

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

FIFTH SEMESTER B.TECH DEGREE EXAMINATION (Regular), DECEMBER 2022

(2020 SCHEME)

Course Code : 20MET395

Course Name: Fluid Power Automation

Max. Marks : 100

Duration: 3 Hours

PART A

(Answer all questions. Each question carries 3 marks)

1. List the main components of a fluid power system and their functions
2. Explain the limitations of fluid power.
3. List the different types of actuators used in fluid power systems
4. What are the different types of control valve used in fluid power automation?
5. Enumerate the different types of pumps used in fluid power systems
6. Define underlap and overlap in the context of servo valve spools.
7. Describe the function of Karnaugh map.
8. How counter is represented in Ladder Diagram?
9. What are the major components of PLC?
10. What are the uses of relays in hydraulic and pneumatic circuits?

PART B

(Answer one full question from each module, each question carries 14 marks)

MODULE I

11. a) Sketch any four ISO symbols for fluid power elements (8)
b) Illustrate any three application of fluid power system (6)

OR

12. a) What are the advantages and disadvantages of hydraulic power system? (6)
b) Explain the working of Vane pump used in fluid power systems (8)

MODULE II

13. a) Illustrate the different types of mounting methods for linear actuators (8)
b) Explain the drive characteristics of fluid power systems (6)

OR

14. a) With a neat sketch, explain the functions of end cushion provided in the hydraulic cylinder. (8)
- b) What are power packs of hydraulic systems? (6)

MODULE III

15. Explain the working of a Pressure compensated flow control valve (Neat diagram is mandatory). (14)

OR

16. Outline the constructional features of 5/2 and 4/3 direction control valves. (14)

MODULE IV

17. Explain the combinational and sequential logic gate circuits (14)

OR

18. Sketch and explain the working principle of fail-safe circuit with overload protection. (14)

MODULE V

19. a) List and explain any four basic electrical devices used in electro pneumatics. (8)
- b) Sketch the fluid power symbols of any three accessories. (6)

OR

20. Design and draw an electro hydraulic circuit for “Automated toll gate” (14)
