

Register No: ..... Name: .....



## SAINTGITS COLLEGE OF ENGINEERING KOTTAYAM, KERALA

(AN AUTONOMOUS COLLEGE AFFILIATED TO  
APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

### FIRST SEMESTER M.TECH. DEGREE EXAMINATION (R), MARCH 2021 ROBOTICS AND AUTOMATION

**Course Code:** 20ECRAT105

**Course Name:** FLUID POWER AUTOMATION

**Max. Marks:** 60

**Duration:** 3 Hours

#### PART A

*(Answer all questions. Each question carries 3 marks)*

1. How Fluid power automation supported for Industry 4.0 revolution?
2. Write a short note on cushioning in hydraulic actuators.
3. Illustrate the working of a 4/2 DCV. Explain with an example.
4. Describe the working of a servo valve in fluid power automation.
5. Give a short note on typical design methods for hydraulic circuits.
6. What are the types of Fluid control valves? Explain.
7. What is an electrical relay? How does it work?
8. Draw the ladder logic for (a) AND (b) OR (c) NOT (d) NAND

#### PART B

*(Answer one full question from each module, each question carries 6 marks)*

##### MODULE I

9. How a gear type motor works? Explain with neat diagram and list its advantages and disadvantages. (6)

OR

10. Explain the differences between positive displacement and non-positive displacement hydraulic pumps in detail. (6)

##### MODULE II

11. How a telescopic cylinder and tandem cylinder operates? Explain the details with its symbol and neat sketches (6)

OR

12. Explain the following: (a) Power packs and (b) Accumulator. (6)

##### MODULE III

13. Explain the construction details and working of a flow control valve. (6)

# 118A2

**OR**

14. Draw the internal structure of a spool valve and explain its operation. (6)

**MODULE IV**

15. Illustrate the working of electro hydraulic servo valves. (6)

**OR**

16. What are the different methods for shifting servo valve tool? Explain with neat schematics. (6)

**MODULE V**

17. Design a hydraulic circuit for the sequence A+ B+ | B- A- using cascade method (6)

**OR**

18. Discuss about the cascade design method for pneumatic circuit design with example. (6)

**MODULE VI**

19. How a Programmable logic controller works? What are the advantages of PLC over relay logic for fluid power automation systems? (6)

**OR**

20. Share your ideas on electrical control of pneumatic and hydraulic circuits in fluid power industry (6)

\*\*\*\*\*