

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Sixth Semester

ME16605 – HYDRAULICS AND PNEUMATICS*(Mechanical Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. State Pascal's law.	1	R
2. Hydraulic system is a closed loop system. Justify?	1	U
3. Name different types of actuators.	2	R
4. What is Relay?	2	R
5. What is muffler?	3	R
6. Where do you need a quick exhaust valve?	3	U
7. Discuss about the role of regulator in the pneumatic system.	3	U
8. What are the significances of FRL unit?	3	U
9. Which fluid power system is termed as low cost automation? Why?	4	U
10. Discuss the features of PLC?	4	R

PART B - (5 X16 = 80 Marks)

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| 11. (a) (i) Sketch and explain a basic hydraulic and pneumatic system. | (12) | 1 | U |
| (ii) Compare hydraulic system with pneumatic system. | (4) | 1 | U |
| (OR) | | | |
| (b) (i) Explain the different hydraulic fluids and their properties | (10) | 1 | U |
| (ii) Discuss the advantages of fluid power system compared to mechanical system. | (6) | 1 | U |
| 12. (a) With a neat sketch, explain the constructional features, working principle, advantages and disadvantages of unbalanced vane pump. | (16) | 2 | U |

(OR)

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| (b) | (i) | Sketch and explain the construction of hydraulic cylinder. | (12) | 2 | U |
| | (ii) | Discuss the importance of accumulator and intensifier. | (4) | 2 | U |
| 13. | (a) | Explain the metering-in and metering-out system with a suitable industrial application. | (16) | 3 | AP |

(OR)

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| (b) | (i) | Explain the mechanical hydraulic servo system. | (8) | 3 | AP |
| | (ii) | Draw the regenerative hydraulic circuit and explain the principle. | (8) | 3 | AP |
| 14. | (a) | (i) Explain the FRL with a neat sketch. | (12) | 3 | U |
| | | (ii) Explain the flow control valve with a neat sketch. | (4) | 3 | U |

(OR)

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|-----|------|---|------|---|----|
| (b) | (i) | Sketch and explain different pneumatic actuators with symbols. | (10) | 3 | U |
| | (ii) | Write short notes on fluidics. | (6) | 3 | U |
| 15. | (a) | Design hydraulic circuit using cascade method to perform clawing and punching operation with following sequence A^+ , B^+ , B^- , A^- . | (16) | 4 | AP |

(OR)

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|-----|------|--|-----|---|----|
| (b) | (i) | Discuss the different preventive measures to maintain the hydraulic and pneumatic systems. | (8) | 4 | AP |
| | (ii) | Explain the different industrial applications of hydraulic and pneumatic system. | (8) | 4 | AP |