Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Fifth Semester B.Tech (Hons) Degree Examination December 2021 (2019 admission)

Course Code: MET397

Course Name: FLUID POWER AUTOMATION

Max. Marks: 100 Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks) Marks

1. Draw the hydraulic symbol for the following, 3
   (i) Double acting cylinder
   (ii) Pilot operated check valve
   (iii) 3/2 directional valve
2. List out any six field of application of fluid power. 3
3. What is a hydraulic cylinder? List out its types. 3
4. What is cylinder cushioning? What is its purpose? 3
5. How do a simple pressure relief valve and compound pressure relief valve differ in operation? 3
6. What is a servo valve? Mention the purpose of feedback in a servo system. 3
7. What are the required hydraulic circuit design informations? 3
8. Write down the steps of Karnaugh- Veitch mapping method. 3
9. Write a short note on electric relay with an application. 3
10. Draw the block diagram of PLC construction and list the components of PLC. 3

PART B

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

Module -1

11 a) Compare hydraulic and pneumatic systems. 7

b) Briefly explain the classification of pump 7

12. Explain the working, construction and performance of unbalanced vane pump with neat sketch. 14

Module -2

13	With neat sketch explain the working of various separator type gas loaded accumulator.	14
14	Explain different methods of applying linear motion with diagram and also write down the expression for cylinder force of each method.	14

Module -3

15	Describe the various types of location of a flow control valve with neat sketch.	14
16	With neat sketch describe the working and construction of two stage servo valve.	14

Module -4

17	Draw and explain the circuit of drilling operation using sequencing valve.	14
18	Design and draw a hydraulic circuit for A+, B+, B-, A- sequencing operation using cascade method and explain.	14

Module -5

19	Draw the hydraulic circuit and ladder diagram for control of a cylinder using single limit switch and explain the sequence of operation.	14
20	Describe the various approaches for entering the program into the PLC.	14

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