Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Sixth Semester B.Tech Degree (R,S) Examination May 2024 (2019 Scheme)

Course Code: MRT306

Course Name: INDUSTRIAL HYDRAULICS & PNEUMATICS

Max. Marks: 100 **Duration: 3 Hours**

PART A

Answer all questions, each carries 3 marks. Marks

1		Explain term Pascal's law with suitable diagram and derivation.	(3)
2		Explain about Pressure relief valve and Pressure reducing valve	(3)
3		Write about the use of twin pressure valve and shuttle valve.	(3)
4		State the working principle of 4-way spool valve with a neat schematic drawing.	(3)
5		What are the limitations of reaction curve technique for tuning of controller?	(3)
6		Discuss about internal and external feedback devices.	(3)
7		Write about the principle of cascade control systems.	(3)
8		Define and write about proportional valves.	(3)
9		Point out the advantages of electro hydraulic servo systems.	(3)
10		Discuss and write any two causes and any two remedies for hydraulic pump with noisy operation.	(3)

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

11	a)	List out write the classification of positive displacement pumps.	(6)
	b)	Explain any two type gear pump with suitable diagram.	(8)

OR

12	a)	Draw a neat diagram of an electro-hydraulic servo valve.	(6)
	b)	Discuss and explain how an electro-hydraulic servo valve works?	(8)

Module II

13	a)	With help of neat drawing explain about proportional valves.	(8)
	b)	Compare conventional and proportional valves.	(6)

OR

14	a)	With a neat sketch describe the construction details of a pressure compensated flow control valve.	(8)

b) Explain about the operation of a pressure compensated flow control valve. (6)

Module III

15 a) State about the block diagram and components of closed loop electro-hydraulic servo system. (8)

b) Write the reaction curve technique for tuning of controller. (6)

OR

16 a) Explain open loop and closed loop control systems. (9)

b) Write about the merits and demerits of open loop and closed loop control systems. (5)

Module IV

17 a) Discuss with neat sketch coordinated sequence motion of two cylinders. (10)

b) Explain the principle of cascade control systems. (4)

OR

18 a) Explain the role of Ladder diagram in Industrial Control logic system. (7)

b) What is the use of Karnaugh map method in circuit design? (7)

Module V

19 a) Explain Electro Hydraulic Servo system with neat figure. (10)

b) Write about the requirement of PLC Application in fluid power control with a suitable example. (4)

OR

20 a) Discuss about the applications of servo systems in process industry. (7)

b) How can low cost automation be achieved using pneumatics? Write your explanation. (7)

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