Q. Code: 591601

Reg. No. | | | | | | | | | | | | | |

B.E. / B. TECH DEGREE EXAMINATIONS, MAY 2024

Fourth Semester

MN22408 – HYDRAULICS AND PNEUMATICS FOR AUTOMATION: THEORY AND PRACTICES

(Common to ME and MN)

(Regulation 2022)

TIME: 1 HOUR 30 MINUTES **MAX. MARKS: 50**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Describe the working and calculate the performance of the hydraulic components.	**2**
CO 2	Explain the working of components used in pneumatic systems.	**2**
CO 3	Describe the working of accessories used in fluid power system.	**2**
CO 4	Design a fluid power circuit using various controls for different industrial applications	**3**
CO 5	Simulate and analyze fluid power circuits using software tools	**4**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Pascals law states that pressure applied to an unconfined fluid is transmitted undiminished in all directions -True/False. Justify.	**1**	**3**
2.	Can the Darcy's equation used to calculate the pressure drop in bar directly? Justify.	**1**	**3**
3.	Distinguish between directional control valve and servo valve.	**1**	**3**
4.	Draw the ANSI fluid power symbols for 4/2 solenoid operate DCV and pressure relief valve.	**1**	**3**
5.	The function of FRL unit is to filter, regulate and lubricate the hydraulic fluids-True/False. Justify.	**2**	**3**
6.	Distinguish between electrical limit switches and pressure switches.	**2**	**3**
7.	What is the objective of air-over-oil system?	**3**	**3**
8.	How weight loaded accumulator is superior than other types?	**3**	**3**
9.	What do you mean by hydrostatic transmission?	**2**	**3**

10.	Fluid Power system/Mechanical system – which one is suitable for low-cost automation. Justify.	**2**	**3**	

PART- B (2 x 10 = 20 Marks)

			Marks	CO	RBT LEVEL
11. (a)	Hydrodynamic pumps are used in hydraulic power system-True/False. If true explain the construction and working of any one of the such pumps. Else recommend the suitable pump and explain the construction and working of the same with neat diagram.		**(10)**	**1**	**3**
	(OR)				
(b)	Recommend the valve used to protect the freely falling of vertically mounted hydraulic cylinder and explain the working of the same with neat circuit diagram.		**(10)**	**1**	**3**
12. (a)	**(i)**	Name the device used as leakage compensator in hydraulic system. With neat circuit diagram, explain how it works.	**(5)**	**2**	**3**
	(ii)	Name the valve used to bypass the DCV and exhaust the return air from the actuator to atmosphere. Explain its working with neat sketch.	**(5)**	**2**	**3**
	(OR)				
(b)	How the unwanted contaminants are removed from the atmospheric air and lubricated in pneumatic system. Explain the working of those devices with neat diagram.		**(10)**	**2**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.13 is compulsory)

		Marks	CO	RBT LEVEL
13.	Recommend the suitable hydraulic actuator used to hoist the dump-truck. Explain the working principle of the same with neat sketch.	**(10)**	1	4

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