K.RAMAKRISHNAN
COLLEGE OF TECHNOLOGY
An Autonomous Institution
Affiliated to Anna University Chennai, Approved by AICTE New Delhi,
ISO 9001:2015 & ISO 14001:2015 Certified Institution, Accredited with 'A+' grade by NAAC
Samayapuram, Tiruchirappalli – 621 112, Tamilnadu, India.

Department of Mechanical Engineering
(NBA Accredited)

Question Bank

Semester	:	VII
Subject Code	:	
Subject Name	:	LOW COST AUTOMATION
Regulations	:	R2017
Academic Year	:	2021 – 2022
Prepared By	:	A. Godwin Antony K.Rajaguru

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UNIT-III : AUTOMATION USING PNEUMATIC SYSTEMS

Syllabus : Pneumatic fundamentals - control elements, position and pressure sensing -logic circuits - switching circuits - fringe conditions modules and these integration - sequential circuits - cascade methods - mapping methods – step counter method - compound circuit design - combination circuit design. Pneumatic equipments - selection of components - design calculations -application - fault finding – hydro pneumatic circuits - use of microprocessors for sequencing - PLC, Low cost automation - Robotic circuits.

Objectives: To give basic knowledge about automation
To understand the basic hydraulic and pneumatic systems for automation
To understand the assembly automation.

Outcomes: To give basic knowledge about automation process in industries and its efficiency calculations (K5)

PART-A

S.No.	*Questions*	*Knowledge Level*	*Competence*
1	What is FRL Unit?		
2	Discuss the function of an air filter and dryer.		
3	List the purpose of an Air lubricant.		
4	List the purpose of a check Valve.		
5	Define fluidics.		
6	Sketch the graphical symbol of the pneumatic regulator.		

7	Conclude that why should a lubricator be used in a pneumatic system?		
8	Classify the pneumatic cylinders based on operating principle.		
9	Name the various types of filters used in the pneumatic system		
10	What is the purpose of a shuttle valve in a pneumatic circuit?		
11	List out any two applications in fluid power control.		
12	What is the advantage of using a servo system?		
13	What is the advantage of using sequential circuits?		
14	Mention the advantage of air motor over electric motor.		
15	What do you mean by logic control?		
16	What is a ladder diagram?		
17	Draw any one type of cylinder synchronizing circuit.		
18	How does a servo valve differ from a proportional valve?		
19	List the components associated with the PLC system.		
20	Differentiate pressure switch and temperature switch		
21	When to use a timer and relay? Why?		
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PART-B

S.No.	*Questions*	*Mapping*	
1	Explain the types of Directional control valve and its construction and operation		
2	Describe pneumatic Actuators and explain the types of linear Actuators.		
3	Write Short Notes of mufflers		
4	Describe pneumatic Actuators and explain the types of linear Actuators.		
5	Design a pneumatic circuit for the following sequence using cascade method A+B+B-A- where the + cylinder extraction and – cylinder retraction.		
6	Design a pneumatic circuit using the cascade method for the sequence A+ A- B+ B- and explain its working principle.		
7	Design a pneumatic circuit for the following sequence using cascade method A+B+A-B- where the + cylinder extraction and – cylinder retraction		
8	List the qualities for good hydraulic oil.		
9	Explain the application of an accumulator used as Leakage Compensator & Auxiliary power source.		
10	Explain the application of an accumulator used as Emergency power source & Hydraulic shock absorber		

11	Explain in detail air over oil intensifier circuit		
12	Explain with the neat sketch a hydraulic Regenerative circuit.		
13			
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PART-C

S.No.	*Questions*	*Mapping*	
1	Design an electro pneumatic circuit using cascade method for the following sequences A+B+B-A-C+C-		
2	Explain the construction and working of following control components 1)check valve 2)Shuttle valve 3) Sequence valve 4) Flow control valve		
3	Explain the various Fluid Properties in detail.		
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