Name: **Enrolment No:**	UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Programme Name: B.Tech Mechatronics **Semester: VII**
Course Name : Distributed Control System **Time: 03 hrs**
Course Code : MEEL406 **Max. Marks: 100**
Nos. of page(s) : 02
Instructions: Attempt all the questions.

SECTION A

S. No.		Marks	CO
Q 1	Describe how computer based control is better than manual control. Draw the diagrams in support of your answer.	**4**	**CO1**
Q.2	List the typical functions available in distributed control systems. Also, mention their association with the hierarchical levels in DCS.	**4**	**CO2**
Q.3	A. Define the application software used in distributed control systems. Mention their examples. B. Define the sequential table used in application software. Draw it for yokogava DCS.	**4**	**CO3**
Q.4	Briefly describe how we can select the right automation technology for any industrial application.	**4**	**CO1**
Q.5	Choose any industrial process of your interest and draw the possible design flow to control that process using distributed control system.	**4**	**CO1**
SECTION B			
Q.6	Describe the field stations and intermediate stations in distributed control system with the help of examples and diagrams. OR Define Real Time Operating System. Describe its general structure and mention the inherent objectives.	**10**	**CO1**
Q.7	A. Assess the data transmission techniques available in distributed control systems. B. Describe how communication takes place between the different hierarchical levels of distributed control systems.	**5+5**	**CO2**

Q.8	Write short notes on following describing these with the help of diagrams. i. Soft wares used in distributed control systems. ii. Programming languages in distributed control systems	**5+5**	**CO2**
Q.9	A. Describe how distributed control system manufacturers are ensuring reliability. B. Illustrate the reliability concepts available in distributed control systems.	**5+5**	**CO4**
SECTION-C			
Q.10	A. Elucidate the pulp and paper process control using block diagrams. Present the control scheme using PROCONTROL I distributed control system. **OR** B. Illustrate the onshore Oil and Gas field automation using DCS. Draw block diagrams to explain the process and present the control scheme using SPECTRUM(Foxboro) distributed control system.	**20**	**CO4**
Q.11	Enumerate the control algorithms used in DCS. Formulate how these algorithms helps in getting the desired values of the industrial variables.	**20**	**CO3**