Course	BE(MARINE)		
Batch	14		
Semester	VII		
Subject Code	ME702		
Subject Name Marine Control Engineering & Automation			
	UNIT - 1(Control systems)		
Part-A			
20*2marks			
1	Define control system		
2	Define desired value		
3	What is meant by offset?		
4	What is meant by feed forward control system?		
5	What is meant by feedback controller?		
6	List out the various control modes?		
7	What is the use of reset control?		
8	Write few disadvantages of an open loop control system?		
9	List any two advantages of Open loop control system		
10	Define system		
PART-B			
15*6 Marks			
1	Define the following terms, set value, desired value, over shoot, offset in Control System?		
2	Draw the block diagram of feedback control system and explain?		
3	Comparison of open loop and closed loop control system		

S Comparison of open loop and closed loop control system
4 What is ON-OFF control mode? Explain it with necessary waveforms?
5 Describe the term 'stability' of Automatic control system?
6 Draw the graphical Symbols of the following components.
1. Pressure, Temperature, level and Flow sensors.
2. I/P and P/I converters
3. Valve

PART-C 6*10 Mark

6*10 Marks				
1	Explain one of the PID controllers tuning technique in detail?			
2 Explain cascade control system with an example?				
3 Briefly explain about open loop and closed loop control system with diagram ?				
4	Briefly explain about feedback and feed forward control system with diagram?			

	UNIT - 2(Servomechanism)				
Part-A					
20*2marks					
1	Define Settling time?				
2	Define Delay time?				
3	3 Define Rising time?				
4	4 What is an automatic controller?				
5	What is a synchro?				
6	What is a three term controller?				
7	What is hybrid computer?				
8	What is an analogue computer?				
9	What is meant by a relay?				
10	What are the layers in TCP/IP protocol?				

15*6 Marks	
1	Explain Time constant with a practical example?
2	Discuss briefly CPP?
3	Briefly explain hybrid computer?
4	Explain about analog computer?
5	What is an Operational amplifier?
6	List few uses of Op-Amp?

PART-C

6*10 Marks

1	Explain the various control modes of a controller with required waveforms?
2	Explain the construction and working principle of RTD?
3	Describe a closed loop control system with an example and a neat sketch?
4	Explain the working principle of Thermocouple with diagram?

	UNIT - 3(Transmission)					
Part-A						
20*2marks						
1	What is meant by pneumatic controller?					
2	What is the difference between a transmitter and a transducer?					
3 What is meant by a pulse timer?						
4 What is a on delay timer?						
5 What is meant by off delay timer?						
6 Write any three advantages of PLC?						
7	Define NO and NC?					
8 Define sinking and sourcing of PLC?						
9 What is meant by retentive timer?						
10 List the types of PLC's?						

15*6 Marks

1	Give a short note on SCADA system?
2	Draw the diagram of a pneumatic PID controller?
3	What is meant by a PLC and why is it used? List its advantages?
4	Explain TCP/IP protocol?
5	What is meant by differential relay and draw the schematic diagram?
6	Explain a level control application using pneumatic control system?
DADT C	

PART-C 6*10 Marks

1	Discuss the basic instructions and registers of PLC?
2	Explain ISO/OSI Protocol in detail?
3	Explain in details open loop and closed loop hydraulic circuit with figures?
4	Discuss the significant blocks of PLC and list out the advantages of PLC?

	UNIT - 4(Correcting units)				
Part-A					
20*2marks					
1	Define SCADA?				
2 Define a Control Valve?					
3 What is meant by an actuator?					
4 Which are the types of control valves?					
5	5 What is the necessity of a valve positioner?				
6	What is a piston actuator?				
7	What is an electro-pneumatic transducer?				
8	Mention two advantages of a positioner?				
9	9 What is meant by direct and reverse acting actuator?				
10	10 Which are the types of valve positioners?				

1	5	*	6	I	M	[a	r	k	S

1	What are the advantages of SCADA?
2	Discuss the construction and working principle of Butterfly valve?
3	Discuss the construction and working principle of Gate valve?
4	Discuss the construction and working principle of Globe valve?
5	Discuss the construction and working principle of Ball valve?
6	briefly explain the types of control valves?

PART-C

6*10 Marks

1	Explain the working of a diaphragm actuator with diagram?
2	Discuss the construction and working principle of Diaphragm valve?
3	Explain the combustion control of main boilers?
4	Briefly explain about valve positioners with neat Diagram ?

	UNIT - 5(Application of controls in ships)
Part-A	
20*2marks	
1	What is meant by Split control method?
2	What is meant by viscosity?
3	What is meant by low signal selector?
4	What is meant by Purging cycle
5	What is meant by kinematic viscosity
6	What is meant by scavenging?
7	Define Maneuvering?
8	Define PLC?
9	What is mean by System?
10	Define Timers and Counters?

15*6 Marks

1	What are valve positioners, explain them briefly?
2	Brief about Direct-acting actuator?
3	Draw the block diagram of jacket cooling water system .?
4	Draw the block schematic of a three element boiler water level control?
5	Explain about two element boiler water level control with diagram?
6	Explain the Theory of Wheat stone bridge and its advantages as well?
PART-C	

6*10 Marks

1	Explain three element boiler water level control with diagram?
2	List the uses of boiler feedwater treatment ?
3	Explain boiler water level control with neat diagram?
4	Discuss different cooling control systems used in Marine machineries?