hegg<sup>®</sup> Study Textbook Solutions Expert Q&A Study Pack Practice<sup>NEW</sup> Search //ebookvab.ir/solution-manual-process-systems-analysis-and-control-coughanowr/

home / study / science / chemistry / chemical engineering / chemical engineering solutions manuals / process systems analysis and control / 3rd edition Email: ebookyab.ir@gmail.com, Phone:+989359542944 (Telegram, WhatsApp, Eitaa) Process Systems Analysis and Control (3rd Edition)

# See this solution in the app

≔	Chapter 1, Problem 1P	38 Bookmarks	Show all steps: ON	К.Я 2 У	Post a question
	Step-by-s	step solution		,	Answers from our experts for your tough homework questions
	Step	<b>1</b> of 3 🔨		>	
	Block diagram for the control system generated	d when a human being	steers an automobile.		Continue to post
	Let, human being driving an auto mobile on a r present on the road.	oad. Few meters far av	vay a speed breaker is		17 questions remaining
	Comment				My Textbook Solutions Solutions Solutions
	Step	<b>2</b> of 3 🔺			Process Systems Analysis and Control units of Control uni
	Whenever automobile reaches the speed brea steers further in smooth way with less bounces	ker, human being slows	down the vehicle and		Process Systems Semiconduct or Physics Sof
	In this process, human being can calibrate the After calibration of speed of automobile, he/she smooth journey. To cross the obstacle (speed b	38 Bookmarks Show all steps:   Pose Answitcher Solution   tep 1 of 3 ^   ated when a human being steers an automobile.   a road. Few meters far away a speed breaker is   My tep 2 of 3 ^ preaker, human being slows down the vehicle and noes.   the automobile speed with the help of speedo meter.   w/she compares the speed with desired speed for ed breaker) human being applies brakes on   celerator/gas paddle will decrease and further gear will o the engine will also be decreased.   tep 3 of 3 ^	3rd Edition 4th Edition View all solutions		
	automobile to slow down it.				Chega tutors who can beln
	To maintain the low speed, pressure on accele shift to down as well as fuel injection rate to the	rator/gas paddle will de e engine will also be de	crease and further gear will creased.		right now
	Comment				S Rensselaer Polytec 1276
	Step	<b>3</b> of 3 🔺			Cost a questionAnswers from our experts for your tough homework questionsEnter questionLater questionContinue to post J questions remainingMy Textbook Solutions Solutions $U questions remaining$ Solutions $U questions remaining rema$
	The above whole process is shown in the follow	wing block diagram.			Hannah Brigham Young Uni 🔈 874

Speed Breaker



# Recommended solutions for you in Chapter 1

## Chapter 1, Problem 5P

Chapter 1, Problem 6P

Draw a block diagram for a security lighting system that activates at dusk and turns off at dawn.

## See solution

Draw a block diagram for the control system for a home oven.

See solution

See more problems in subjects you study

Find me a tutor

#### **ABOUT CHEGG**

# Become a Tutor Chegg For Good College Marketing Corporate Development **Investor Relations** Jobs Join Our Affiliate Program Media Center Site Map

Advertising Choices Cookie Notice General Policies Intellectual Property Rights Terms of Use Chegg Tutors Terms of Service Global Privacy Policy UPDATED California Privacy Rights

Honor Code

**LEGAL & POLICIES** 

#### **CHEGG PRODUCTS AND SERVICES**

Chegg Play

eTextbooks

Mobile Apps

Cheap Textbooks Online Tutoring Chegg Coupon Solutions Manual Study 101 Chegg Study Help Test Prep College Textbooks Textbook Rental Used Textbooks Chegg Math Solver Digital Access Codes **CHEGG NETWORK** 

Easybib Internships.com Studyblue Thinkful

#### **CUSTOMER SERVICE**

**Customer Service** Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription Return Your Books Textbook Return Policy



เอาเอ

BBB

**OVER 6 MILLION** 谷 **TREES PLANTED** 

© 2003-2020 Chegg Inc. All rights reserved.

i=	Chapter 1. Problem 2P	2 Bookmarks	Show all steps:		
aih	ebookyabiregmailicer	ARAPAR	9893595429	44)(Tele	egram, WhatsApp, Ei
See t	his solution in the app			>	
	Pro	oblem			<b>Post a question</b> Answers from our experts for your tough homework questions Enter question
	Draw a block diagram for the control system ge arrow.	nerated when a huma	an being shoots a bow and		<b>Continue to post</b> 17 questions remaining
	Step-by-s	tep solution			
	Step a Block diagram is the depiction of relationship be interpreting the relationship of input and output information flow through the system.	I of 4 ▲ etween the variables of signal from a block, a	of the system. It is useful in nd to get an overall idea of		My Textbook SolutionsSolutionsSolutionsSolutionsImage: Displaying the second seco
	Comment				3rd Edition 4th Edition View all solutions
	Step 2 Let's understand the functions in human body v object or a distance.	<b>2</b> of 4 <b>^</b> when an arrow is tied	on a bow and aimed at an		Chegg tutors who can help right now S Repselaer Polyter
	Comment				Joanna Georgia Tech
	Step 3	<b>3</b> of 4 <b>^</b>	d be a distance, an object		Hannah Brigham Young Uni 🔈 874

etc. So, the set point is the desire to launch arrow to that distance or hit the object. In order to do so, brain must decide the force and direction with which the arrow should be launched to give the desired output. Brain sends the signal to hands and eyes to do so. Then the arrow is released and eyes are used to observe the deviation of arrow from the aim. Eyes send the signal to brain to adequately change the force and direction to hit the aim. While doing this all, air speed and air resistance is also taken into consideration which acts as disturbance to arrow's movement.

Therefore, we can conclude,

Set point: Distance or object;

**Controller**: Brain;

Control Signal: Electrical signal carried to eyes and hands;

Final Control Element: Eyes and hands;

Manipulated Variable: Change of direction and force applied on arrow;

**Disturbance**: Air speed, air resistance;

**Process**: Shooting of arrow;

Controlled Variable: Actual distance or aim achieved;

Measurement Device: Eyes;

**Measurement Signal**: Electrical Signal sent to brain.

Comment

Step 4 of 4 🔥

So, the block diagram of control system generated when a human being shoots an arrow is,

Distance or object B	Electrical signal carried to eyes and hands Fyes and hands Electrical Signal sent to brain Eyes
Comment	
	Was this solution helpful? 🕜 o

Find me a tutor

# Recommended solutions for you in Chapter 1 Chapter 1, Problem 5P Chapter 1, Problem 6P Draw a block diagram for a security lighting system Draw a block diagram for the control system for a that activates at dusk and turns off at dawn. home oven. See solution See solution

# See more problems in subjects you study

## **ABOUT CHEGG**

Become a Tutor Chegg For Good College Marketing Corporate Development Investor Relations Jobs Join Our Affiliate Program Media Center Site Map

# **LEGAL & POLICIES**

Advertising Choices Cookie Notice General Policies Intellectual Property Rights Terms of Use Chegg Tutors Terms of Service Global Privacy Policy UPDATED

California Privacy Rights Honor Code

#### **OVER 6 MILLION** 谷 BBB. **TREES PLANTED**

## CHEGG PRODUCTS AND SERVICES

Cheap Textbooks Chegg Coupon Chegg Play Chegg Study Help College Textbooks eTextbooks Chegg Math Solver Mobile Apps

## Online Tutoring Solutions Manual

Study 101 Test Prep Textbook Rental Used Textbooks **Digital Access Codes** 

#### **CHEGG NETWORK**

Easybib Internships.com Studyblue Thinkful

# **CUSTOMER SERVICE**

**Customer Service** Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription **Return Your Books** Textbook Return Policy



	alysis-and-control-coughanowr/
Chapter 1, Problem 3P	
Process Systems Analysis and Control (3rd Editio	h) (Telegram, WhatsApp, Eltaa)
See this solution in the app	>
	Post a question
	Answers from our experts for your tough homework questions
Problem	Enter question
Draw a block diagram for an automobile cruise control system.	
	Continue to post
Step-by-step solution	17 questions remaining
	My Textbook Solutions
Step 1 of 3 🔺	Solutions Solutions Solutions
The cruise control system is used to maintain the constant speed of the vehicle without the need of using accelerator. This system is particularly important when someone wants to drive at	Process Systems Analysis and Control
constant speed and reduces the stress on driver to maintain the speed. Let's understand the	by Chegg by Chegg
mechanism of cruise control system.	Process Semiconduct Fundamental Systems or Physics s of
Comment	3rd Edition 4th Edition View all solutions
Step 2 of 3 🔺	
The cruise control system is only activated after achieving the desired speed, though it can	Chegg tutors who can help right now
depend on manufactures. The system gets deactivated as soon as brakes and clutch are used.	S
when the desired speed is achieved cruise control system is activated. The cruise control computer sends the signal to vacuum actuator which controls the flow of fuel into the combustion	Rensselaer Polytec 1276
chamber. Disturbances like, heat losses and friction on vehicle affect the performance of engine (combustion chamber). The speed of the vehicle is monitored by vehicle speed monitor	Joanna Georgia Tech
(speedometer) and it sends vehicle speed signal to cruise control computer creating a closed	
Therefore, we can conclude,	Hannah Brigham Young Uni 🖢 874
Set point: Desired speed;	Find me a tutor
Controller: Cruise Control Computer;	
Final Control Element: Vacuum Actuator;	
Manipulated Variable: Manipulated fuel flow to combustion chamber;	
<b>Disturbance</b> : Heat losses, friction;	
Controlled Variable: Actual speed;	
Measurement Device: Vehicle speed monitor (speedometer);	
Measurement Signal: Vehicle speed signal.	
Comment	
Step 3 of 3 🔺	
Hence, block diagram for the cruise control system is,	
Vacuum fuel flow to friction	
Desired speed Cruise Control signal Vacuum chamber Combustion Actual speed	
Actuator	
Vehicle speed	
signal Vehicle speed	
monitor	
Comment	
Was this solution helpful? 1 0	

Recommended solutions for you in Chapter 1

	Chapter 1, Problem 5P	Chapter 1, Problem 6P	
,	Draw a block diagram for a security lighting system that activates at dusk and turns off at dawn.	Draw a block diagram for the control system for a home oven.	
$\leq$	See solution	See solution	/
	See more problems	in subjects you study	

#### **ABOUT CHEGG**

Become a Tutor Chegg For Good College Marketing Corporate Development Investor Relations Jobs Join Our Affiliate Program Media Center Site Map

# **LEGAL & POLICIES**

Advertising Choices Cookie Notice General Policies Intellectual Property Rights Terms of Use Chegg Tutors Terms of Service Global Privacy Policy

California Privacy Rights Honor Code

#### CHEGG PRODUCTS AND SERVICES

Cheap Textbooks Chegg Coupon Chegg Play Chegg Study Help College Textbooks eTextbooks Chegg Math Solver Mobile Apps

Online Tutoring Solutions Manual Study 101 Test Prep Textbook Rental Used Textbooks Digital Access Codes

#### **CHEGG NETWORK**

Easybib Internships.com Studyblue Thinkful

#### **CUSTOMER SERVICE**

**Customer Service** Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription Return Your Books Textbook Return Policy







# © 2003-2020 Chegg Inc. All rights reserved.

e this solution in the app	(11)
	>
	<b>Post a question</b> Answers from our experts for your tough homework questions
Problem	Enter question
Draw a block diagram for the control system that maintains the water level in a toilet tank.	Continue to post
	17 questions remaining
Step-by-step solution	
Step 1 of 3 🔺	My Textbook Solutions
Ever wonder, despite having no electrical connection to toilet tank, how it automatically gets filled and dumps water to the bowl. There are different components in a toilet tank, i.e. handle arm, fill valve, refill tube, float arm, float ball, overflow tube, flush valve, flapper, drain hole; which combinely forms a very highly efficent design of toilet tank.	WWW connector community         Process Systems         Subject Control         By Cheggs    by Cheggs
Let us first understand the mechanism of toilet tank and layout all the components that we will be using as blocks for our block diagram of maintaing water in the toilet tank.	Process Semiconduct Fundamer Systems or Physics s of 3rd Edition 4th Edition View all solutions
Comment	Chaga tutors who can bel
Step 2 of 3 🔥	right now
When the handle arm is pressed, a chain attached to handle arm and flapper, pulls up the flapper and opens the drain hole. As the water drains out, the float ball attached to handle lowers down with the level of water in the tank and restores the handle arm to its initial position. Restoring of handle arm pushes the flapper down and closes the drain hole. The piston attached to handle arm gets opened because of lowering of float ball and fills the tank. When the tank is filled, the float ball lies in horizontal position and closes the piston to water inlet.	<ul> <li>S Rensselaer Polytec</li> <li>Joanna Georgia Tech</li> <li>Hannah</li> </ul>
Therefore, the following conclusions can be drawn,	Brigham Young Uni 🍐 87
Set point: Keeping the tank filled with water;	Find me a tutor
Controller: Handle arm;	
Control Signal: Chain loosening to push flapper down;	
Final Control Element: Flapper; Manipulated Variable: Float ball downward movement to open piston to water inlet:	
<b>Disturbance</b> : Keeping the handle arm pressed:	
Process: Toilet tank filling;	
Controlled Variable: Actual water level reached in tank;	
Measurement Device: Float ball;	
Measurement Signal: Float ball position.	
Comment	
Step 3 of 3 🔺	
Now, let's construct the block diagram of maintaining water in toilet tank.	
Keeping the tank filled with water Handle arm Float ball downward movement to open piston to water inlet Flapper	
Float ball	
Comment	

Recommended solutions for you in Chapter 1

Chapter 1, Problem 5P	Chapter 1, Problem 6P	
Draw a block diagram for a security lighting system that activates at dusk and turns off at dawn.	Draw a block diagram for the control system for a home oven.	
See solution	See solution	/

# See more problems in subjects you study

## **ABOUT CHEGG**

Become a Tutor Chegg For Good College Marketing Corporate Development Investor Relations Jobs Join Our Affiliate Program Media Center Site Map

Advertising Choices Cookie Notice General Policies Intellectual Property Rights Terms of Use Chegg Tutors Terms of Service Global Privacy Policy

**LEGAL & POLICIES** 

California Privacy Rights Honor Code

# CHEGG PRODUCTS AND SERVICES

Cheap Textbooks Chegg Coupon Chegg Play Chegg Study Help College Textbooks eTextbooks Chegg Math Solver Mobile Apps

# Online Tutoring Solutions Manual Study 101 Test Prep Textbook Rental Used Textbooks Digital Access Codes

#### **CHEGG NETWORK**

Easybib Internships.com Studyblue Thinkful

#### **CUSTOMER SERVICE**

Customer Service Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription Return Your Books Textbook Return Policy







## © 2003-2020 Chegg Inc. All rights reserved.





During dawn, the high intensity of sunlight falling on the photo resistor reduces its resistance and allows the current to flow through it. The current is then amplified by the transistor which activates the relay. The activation of relay opens the bulb circuit and turn off the light.

Set point: Lights off;

**Controller**: Transistor;

Control Signal: Large amplified current;

Final Control Element: Relay;

Manipulated Variable: Relay activation;

Disturbance: Artificial light;

Process: Bulb;

**Controlled Variable**: Actual state of light;

Measurement Device: Photo resistor;

Measurement Signal: Small current.

Hence, block diagram for the above system is as follows:



Step 4 of 4 🔥

During dusk, the low intensity of sunlight increases the resistance of photo resistor and allows very small amount of current to pass through it. The current is so small that it can't be amplified enough by the transistor to activate relay. Hence, relay gets deactivated, the bulb circuit gets closed and turns on the light.

Set point: Lights on;

Controller: Transistor;

Control Signal: Small amplified current;

Final Control Element: Relay;

# Find me a tutor



# Recommended solutions for you in Chapter 1

# Chapter 1, Problem 5P

Chapter 1, Problem 6P

Draw a block diagram for a security lighting system that activates at dusk and turns off at dawn.

Draw a block diagram for the control system for a home oven.

See solution

See solution

#### **ABOUT CHEGG**

Become a Tutor Chegg For Good College Marketing Corporate Development Investor Relations Jobs Join Our Affiliate Program Media Center Site Map

#### **LEGAL & POLICIES**

Advertising Choices Cookie Notice General Policies Intellectual Property Rights Terms of Use Chegg Tutors Terms of Service Global Privacy Policy UPDATED California Privacy Rights Honor Code

#### **CHEGG PRODUCTS AND SERVICES**

Cheap Textbooks Chegg Coupon Chegg Play Chegg Study Help College Textbooks eTextbooks Chegg Math Solver Mobile Apps

# Online Tutoring Solutions Manual Study 101 Test Prep **Textbook Rental** Used Textbooks **Digital Access Codes**

#### **CHEGG NETWORK**

Easybib Internships.com Studyblue Thinkful

#### **CUSTOMER SERVICE**

Customer Service Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription **Return Your Books** Textbook Return Policy





#### © 2003-2020 Chegg Inc. All rights reserved.

BBB





# Recommended solutions for you in Chapter 1

## Chapter 1, Problem 5P

Draw a block diagram for a security lighting system that activates at dusk and turns off at dawn.

## See solution

Chapter 1, Problem 6P

Draw a block diagram for the control system for a home oven.

Online Tutoring

Study 101

Test Prep

Solutions Manual

Textbook Rental

**Used Textbooks** 

**Digital Access Codes** 

See solution

# See more problems in subjects you study

#### **ABOUT CHEGG**

Become a Tutor Chegg For Good College Marketing Corporate Development **Investor Relations** Jobs Join Our Affiliate Program Media Center Site Map

# Advertising Choices **Cookie Notice** General Policies Intellectual Property Rights Terms of Use

Chegg Tutors Terms of Service Global Privacy Policy

UPDATED California Privacy Rights Honor Code

#### **OVER 6 MILLION** Pal BBB. **TREES PLANTED**

© 2003-2020 Chegg Inc. All rights reserved.

# **LEGAL & POLICIES**

Cheap Textbooks Chegg Coupon Chegg Play Chegg Study Help College Textbooks eTextbooks Chegg Math Solver Mobile Apps

#### **CHEGG PRODUCTS AND SERVICES**

#### **CHEGG NETWORK**

Easybib Internships.com Studyblue Thinkful

#### **CUSTOMER SERVICE**

**Customer Service** Give Us Feedback Help with Chegg Tutors Help with eTextbooks Help to use EasyBib Plus Manage Chegg Study Subscription **Return Your Books** Textbook Return Policy

