

Control Systems Pe Exam

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-IV (NEW) - EXAMINATION - SUMMER 2017

Subject Code: 2140307

Date: 14/06/2017

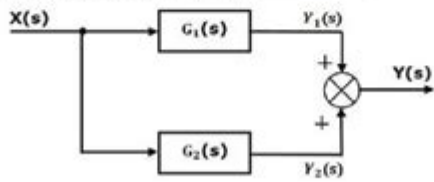
Subject Name: Control System and Analysis

Time: 10:30 AM to 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	Short Questions	14
1	In an open loop control system	
A	Output is independent of control input	B Output is dependent on control input
C	Only system parameters have effect on the control output	D None of the above
2	A car is going at a constant speed of 50 km/h, which of the following is the feedback element for the driver ?	
A	Clutch	B Legs
C	Needle of the speedometer	D Steering wheel
3	The initial response when the output is not equal to input is called	
A	Transient response	B Error response
C	Dynamic response	D None of these
4	The capacitance, in force-current analogy, is analogous to	
A	momentum	B velocity
C	displacement	D mass
5	The type 0 system has _____ at the origin.	
A	no pole	B net pole
C	single pole	D two poles
6	The time required for the response to rise from 10% to 90% of the final value for over damped systems and 0 to 100% of the final value for under damped systems is called the	
A	Rise time	B Pickup time
C	Settling time	D Transient time
7	If poles of system are left side of s plane then system is _____.	
A	stable	B Unstable
C	Marginally stable	D None
8	What is the output of $Y(s)/X(s) =$ _____	
		
9	Write down forward paths of below system:	

1

Control Systems PE Exam is a critical assessment for engineers specializing in control systems design and analysis. It is part of the Professional Engineer (PE) licensing process in the United States, which evaluates the competency and knowledge of individuals in their respective fields. This article will delve into the structure, preparation strategies, and resources for the Control Systems PE exam, providing a comprehensive guide for prospective examinees.

Understanding the Control Systems PE Exam

The Control Systems PE Exam is designed for engineers who wish to demonstrate their expertise in control systems and related technologies. This exam is typically taken by professionals who have already completed their education in engineering and have gained significant work experience.

Exam Structure

- Exam Format: The Control Systems PE Exam is a computer-based test consisting of 80 questions. The questions are multiple-choice, covering a range of topics pertinent to control system engineering.
- Duration: The total time allotted for the exam is 8 hours, which includes a break period. Candidates should manage their time wisely to ensure they can complete all questions.
- Topics Covered: The exam covers various topics, including but not limited to:
 - Control system components
 - System dynamics and modeling
 - Feedback control systems
 - Stability analysis
 - Frequency response
 - Time domain analysis
 - Control system design
 - Digital control systems

Eligibility Requirements

To sit for the Control Systems PE Exam, candidates must meet specific eligibility requirements, which typically include:

1. Education: A bachelor's degree in engineering from an accredited program.
2. Work Experience: A minimum of four years of relevant work experience under the supervision of a licensed PE.
3. Fundamentals of Engineering (FE) Exam: Successful completion of the FE exam is a prerequisite for taking the PE exam.

Preparation Strategies for the Control Systems PE Exam

Preparing for the Control Systems PE Exam requires a strategic approach to ensure mastery of the material. Here are some effective preparation strategies:

Create a Study Plan

Draft a study schedule that outlines your preparation timeline. Consider the following steps:

- Set Goals: Define what you want to achieve in each study session.
- Allocate Time: Dedicate specific time blocks each day or week for studying.
- Balance Topics: Ensure a balanced approach by covering all exam topics adequately.

Utilize Study Materials

Effective study materials can significantly enhance your preparation. Consider the following resources:

1. Textbooks: Standard control systems textbooks are invaluable. Recommended titles include:
 - "Modern Control Engineering" by Ogata
 - "Control Systems Engineering" by Nise
 - "Feedback Control of Dynamic Systems" by Gene Franklin
2. Online Resources: Websites such as NCEES (National Council of Examiners for Engineering and Surveying) offer sample questions and exam specifications.
3. Review Courses: Enrolling in a review course can provide structured learning and access to experienced instructors.

Practice Problems and Mock Exams

Regular practice is essential to success on the exam. Engage in the following activities:

- Practice Problems: Solve as many practice problems as possible to familiarize yourself with the types of questions you will encounter.
- Mock Exams: Take full-length mock exams under timed conditions to build stamina and improve time management skills.
- Review Mistakes: Analyze your incorrect answers to understand your weaknesses and address them.

Exam Day Tips

As the exam day approaches, it's important to prepare not just academically but also mentally and physically. Follow these tips:

Get Organized

- Materials: Ensure you have all necessary materials ready, including:
 - Approved calculators
 - Reference materials (if allowed)
 - Identification documents
- Arrival: Plan to arrive early at the testing center to avoid any last-minute stress.

Stay Calm and Focused

- Mindset: Approach the exam with confidence. Practice relaxation techniques to manage anxiety.
- Time Management: Keep an eye on the clock and pace yourself. If you get stuck on a question, move on and return to it later.

Post-Exam Considerations

After completing the Control Systems PE Exam, candidates should be aware of the following:

Results and Licensing

- Results Timeline: Typically, exam results are available within a few weeks. Candidates will receive notification via email.
- Licensing Process: Upon passing the exam, candidates can apply for their PE license through their state's licensing board. This process may involve submitting proof of education and work experience.

Continuous Professional Development

Even after obtaining your PE license, continuous learning is vital:

- Professional Development: Engage in continuing education courses, workshops, or seminars to stay current in the field of control systems.
- Networking: Join professional organizations, such as the Institute of Electrical and Electronics Engineers (IEEE) or the American Society of Mechanical Engineers (ASME), to connect with peers and access resources.

Conclusion

The Control Systems PE Exam is a significant milestone for aspiring licensed engineers in the control systems domain. With thorough preparation, effective study strategies, and a clear understanding of the exam structure, candidates can enhance their chances of success. By staying committed to continuous learning, engineering professionals can maintain their expertise and contribute meaningfully to the field. Whether you are just starting your preparation or are approaching the exam date, remember that diligence and dedication are key to achieving your professional goals.

Frequently Asked Questions

What topics are covered in the Control Systems PE Exam?

The Control Systems PE Exam typically covers topics such as system modeling, feedback control, stability analysis, frequency response, control system design, and digital control systems.

How can I prepare effectively for the Control Systems PE Exam?

Effective preparation for the Control Systems PE Exam involves studying the NCEES exam specifications, using reference materials such as textbooks and practice problems, taking practice exams, and joining study groups or review courses.

What resources are recommended for studying Control Systems for the PE Exam?

Recommended resources include the 'Control Systems Engineering' textbook by Ogata, 'Modern Control Engineering' by Ogata, NCEES sample questions, and online platforms that offer PE exam review courses.

What is the format of the Control Systems PE Exam?

The Control Systems PE Exam is a computer-based test consisting of 80 multiple-choice questions that candidates must complete within a 6-hour time frame.

What is the passing score for the Control Systems PE Exam?

The passing score for the Control Systems PE Exam is typically around 70-75%, but this can vary based on the specific exam and the grading scale used by NCEES.

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