

Reg. No. : 

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<b>Question Paper Code : 40438</b>
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B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Third/Fourth and Fifth Semester

Electronics and Communication Engineering

EC 8391 – CONTROL SYSTEMS ENGINEERING

(Common to : Electronics and Telecommunication Engineering/  
Mechatronics Engineering/Medical Electronics)

(Regulations 2017)

(Provide Semilog sheet, Polar sheet and ordinary graph sheet)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write any two limitations of transfer function approach.
2. Find the number of forward paths and independent loops for the signal flow graph shown in the Fig. 1



Fig. 1

3. A control system is defined by the following differential mathematical relationship  $9 \frac{d^2x}{dt^2} + 16 \frac{dx}{dt} + 5x = 12(1 - e^{-2t})$ . Find response of the system at  $t \rightarrow \infty$ .
4. The compensator has the transfer function  $G_c(s) = \frac{10(1 + 0.04S)}{(1 + 0.01S)}$ . Determine the maximum phase angle lead provided by this compensator.
5. The system with the open loop transfer function  $G(s)H(s) = \frac{1}{s(s^2 + s + 1)}$ . Determine the gain margin.
6. Differentiate phase lead and phase lag compensator?

# Control Systems Anna University Question Paper

**Sabine Zange**



## Control Systems Anna University Question Paper:

Global Perspectives on Air Pollution Prevention and Control System Design Venkatesan, G.,Thirumal, Jaganthan,2019-06-25 Once pollutants are released into the atmosphere they cannot be removed easily nor can the reaction with atmospheric constituents be ceased However through enhancing our understanding of control technology further addition of pollution can be forestalled Through better understanding of innovations in the field of air pollutant control technology and modelling better cost effective control equipment can be designed to achieve a clean biosphere for sustainable life in the near future Global Perspectives on Air Pollution Prevention and Control System Design is a pivotal reference source that provides vital research on the understanding of the basic concepts of air pollution modeling concepts development of various models for source specific pollutants and dispersion While highlighting topics such as climate change fossil fuels and motor vehicle emissions this publication explores the links between the global impact on climate change and modeling concepts of indoor air pollutants This book is ideally designed for professors students researchers environmental agencies environmentalists policymakers and government officials seeking current research on future solutions in critical fields of air pollution      **Education World** ,2005      *Annual Index/abstracts of SAE Technical Papers 2004* ,2005      **Paper as a Vehicle of Communication** Sweden illustrated,1968      **International Symposium on Mathematical Theory of Networks and Systems** International Symposium on Mathematical Theory of Networks and Systems,1979      Engineering Education ,1979      **Verti-flite** ,1998      **The Parliamentary Debates (official Report)**. Great Britain. Parliament. House of Commons,1934      *Parliamentary Debates* Great Britain. Parliament. House of Commons,1934 Contains the 4th session of the 28th Parliament through the session of the Parliament      **Engineering News and American Contract Journal** ,1900      The National Cyclopaedia of American Biography ,1907      **Modeling and Systems Engineering for Astronomy** Simon C. Craig,M. J. Cullum,2004 Proceedings of SPIE present the original research papers presented at SPIE conferences and other high quality conferences in the broad ranging fields of optics and photonics These books provide prompt access to the latest innovations in research and technology in their respective fields Proceedings of SPIE are among the most cited references in patent literature      *Journal of Education* ,1882      **Proceedings of the 2000 Congress on Evolutionary Computation** Institute of Electrical and Electronics Engineers,2000 These volumes contain the proceedings of the 2000 Congress on Evolutionary Computation The papers address genetic programming evolutionary optimization the evolution of neural networks evolutionary robotics data mining with evolutionary algorithms bio inspired hardware and more      The Journal of Education ,1895      *Journal of Education and School World* ,1895      Report of the Proceedings of the International Congress of Charities, Correction and Philanthropy, Chicago, June 1893 International Congress of Charities, Correction and Philanthropy,1894      **Accountants' Index** American Institute of Certified Public Accountants,1928      Abstracts of Papers Presented to the American Mathematical Society American Mathematical Society,1997      *The*

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