

School of Aeronautics (Neemrana)

Question Paper For Back / Re-back Internal Assessment Examination (Theory) - Old Scheme i.e 2012 Syllabus

Instructions For Students / Faculty

Back / Re-back Internal Examination (Total 60 Marks, 2 Hrs, Syllabus From Beginning of The Session)

Total number of questions to be given are 10, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and 4 questions from Part B. There is a choice of two questions out of four in part A and 4 questions out of 6 in Part B. Part A will be theoretical or derivation type (**Not More Than 70 Words For Question**). Part B will be fully numerically oriented questions (**Not More Than 70 Words For Question**), except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** Aircraft Materials, Aircraft System, Aircraft Rules & Regulation-I, Mechanics of Composite Materials, Aircraft Design, Aircraft Rules & Regulation-II, Avionics-I, Helicopter Theory, Maintenance of Airframe and System Design, Avionics-II, Airlines and Airport Management, Maintenance of Power Plant & Systems

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORETICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'B' OF QUESTION PAPER

STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION

Question Paper & Student Details

Name of Faculty*	<input type="text" value="Mrs Tarun Thukral"/>	Date of Submission of QP	<input type="text" value="15/03/2021"/>
Subject*	<input type="text" value="5MH4 - 05 - Modern Control Engineering (New)"/>	Date of Examination*	<input type="text" value="22/03/2021"/>
Email Id of Faculty:*	<input type="text" value="tarunthukral@soaneemrana.org"/>	Course*	<input type="text" value="B.Tech (Aeronautical Engineering)"/>
Phone Number of Faculty*	<input type="text" value="750 096 6580"/>	Semester*	<input type="text" value="Semester : 5"/>

Student Name	<input type="text"/>	Student Reg No.	<input type="text"/>
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Part A

Question : 1*

Define the concept of i. State ii. State variables iii. State space iv. Modern Vs conventional control theory

Lesson Plan*

Topic*

Source*

Question : 2*

Explain P, Pi and PID controllers. What are their effects on system performance?

Lesson Plan*

39

Topic*

Stability Criterion

Source*

Control system Engine

Question : 3*

Explain the Concept of Linearity, relaxedness, time invariance, causality.

Lesson Plan*

8

Topic*

Basic Concepts

Source*

Control system Engine

Question : 4*

a. Write the properties of STM.
b. Explain Jury stability criterion.

Lesson Plan*

26 & 36

Topic*

Stability Criterion

Source*

Control system Engine

Part B

Question : 1*

Calculate the transfer function using signal flow graph of figure 1.

Lesson Plan*

19

Topic*

State Space Representation

Source*

Control system Engine

Question : 2*

Find the number of open right half plane poles of the given transfer function in numerical sheet.

Lesson Plan*

31

Topic*

Digital Control Systems

Source*

Control system Enginee

Question : 3*

Find the inverse z transform of equation given in figure 2

Lesson Plan*

33

Topic*

Digital Control Systems

Source*

Control system Enginee

Question : 4*

Develop the jordan's canonic state model for a system having transfer function given in numerical sheet.

Lesson Plan*

21

Topic*

State Space Representation

Source*

Control system Enginee

Question : 5

A feedback system is represented by closed loop transfer function given in numerical sheet. Draw the signal flow graph and obtain the state model.

Lesson Plan

18 & 22

Topic

State Space Representation

Source

Control system Enginee

Question : 6

Consider a matrix A given in numerical sheet. Obtain the diagonalized matrix A.

Lesson Plan

20

Topic

State Space Representation

Source

Control system Enginee

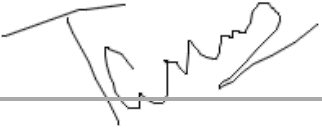
Upload Scanned Document In Case of Numerical or Diagram for any of the above question

Mention question number with relevant fig / numerical / equations.
Max 150 KB

archive-1.zip (49 KB)



I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.



School of Aeronautics (Neemrana)

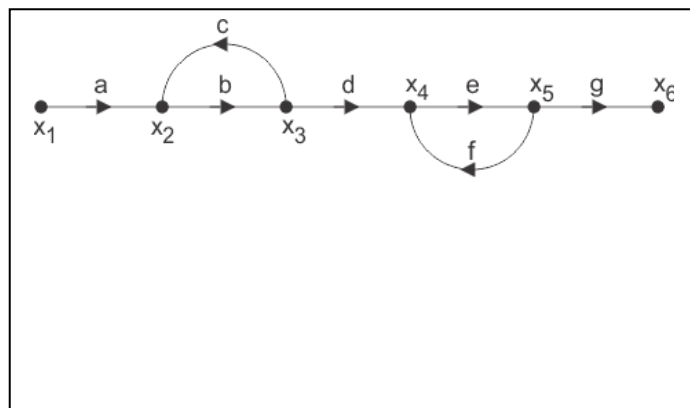
Question Paper For Internal Assessment Examination (Theory) Diagram Sheet

Faculties preparing Question Paper for various examinations, need to draw or insert diagrams as per requirement of questions in the below format and upload the same in upload documents column of the question paper.

Question Paper & Student Details

Mid Term *	Internal improvement	Date of Submission of QP	3/20/2021
Name of Faculty *	Tarun Thukral	Date of Examination *	22/3/2021
Subject *	Modern Control Engg.	Course*	Mechatronics Engg
Batch	Back/Reback	Semester *	5
Email Id of Faculty:*	tarunthukral@soaneemrana.org	Phone Number of Faculty*	7500966580
Student Name		Student Reg No.	

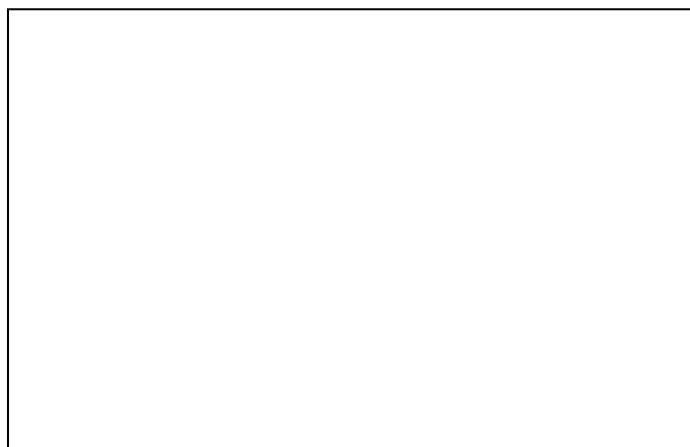
Part No. __C__, Question Number __1__ .



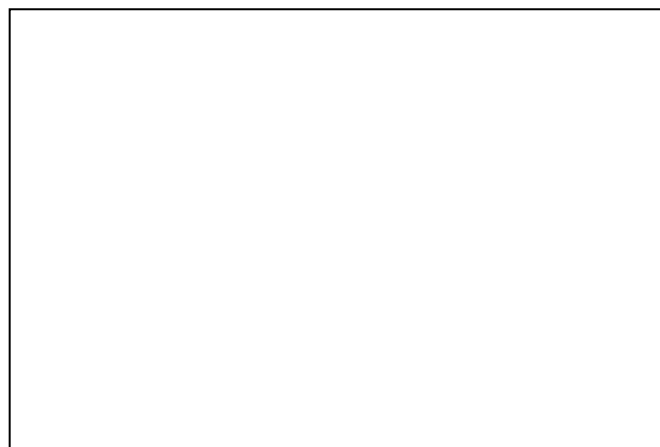
Part No. _C_, Question Number ___3_ .

5. Find $Z^{-1}\left[\frac{z^2}{(z-a)(z-b)}\right]$.

Part No. ____, Question Number ____ .



Part No. ____, Question Number ____ .



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Numerical Sheet for Part C of New Scheme and Part B of Old Scheme
Question Paper - Credit 1/2/3/4 and 2012 Scheme

Instructions For Students / Faculty Mid Term I (Total 80 Marks, 2 hrs.)

- Part A: Total number of questions to be given are ten, each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer**), no objective type or fill in the blanks. Total 20 marks.
- Part B: Total number of questions to be given are six, out of which student has to answer any four. They are long answer type (**Not More Than 50 Words for Question**), each carrying 6 marks. Total 24 marks.
- Part C: Total number of questions to be given are four, out of which student has to answer any three. They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)*, each carrying 12 marks. Total 36 marks.

Mid Term II & III (Total 120 Marks, 2.5 hrs.)

- Part A: Total number of questions to be given are ten, each carrying 2 marks and are compulsory to attend. There is no choice. They are short answer type questions (**Not More Than 25 Words For both Question & Answer**), no objective type or fill in the blanks. Total 20 marks
- Part B: Total number of questions to be given are seven, out of which student has to answer any five. They are long answer type (**Not More Than 50 Words For Question**), each carrying 8 marks. Total 40 marks.
- Part C: Total number of questions to be given are five, out of which student has to answer any four. They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)*, each carrying 15 marks. Total 60 marks.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** Communication Skills, Human Values, Technical Communication, Managerial Economics and Financial, Aircraft Materials and Processes, Aircraft Systems, Aircraft Maintenance Practices, Avionics-I, Aircraft Rules and Regulation, Wind Tunnel Techniques, Maintenance of Airframe and System, Helicopter Theory, Avionics-II, Maintenance of Power Plant and System, Unmanned Aerial Vehicles & Systems (UAV), Space Mission Design & Optimization, CAD, Airlines and Airport Management.

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER.

FOR OLD SCHEME INSTRUCTIONS ARE SAME AS ON QP FORMAT OF OLD SCHEME

Question Paper & Student Details

Mid Term *	<input type="text" value="Internal improvement"/>	Date of Submission of QP	<input type="text" value="3/20/2021"/>
Name of Faculty *	<input type="text" value="Tarun Thukral"/>	Date of Examination *	<input type="text" value="22/3/2021"/>
Subject *	<input type="text" value="Modern Control Engg"/>	Course*	<input type="text" value="Mechatronics"/>
Batch	<input type="text" value="Back/Reback"/>	Semester *	<input type="text" value="5"/>
Email Id of Faculty:*	<input type="text" value="tarunthukral@soaneemrana.org"/>	Phone Number of Faculty*	<input type="text" value="7500966580"/>
Student Name	<input type="text"/>	Student Reg No.	<input type="text"/>

Part C (2017 Scheme) & Part B (2012 Scheme)

Question: 2*

$$10/s^5 + 2s^4 + 3s^3 + 6s^2 + 5s + 3$$

Lesson Plan*

Topic*

Source*

Question: 4*

$$T(s) = 2s^2 + 6s + 7 / (s+1)^2 (s+2)$$

Lesson Plan*

Topic*

Source*

Question: 5

$$8/s^3 + 7s^2 - 14s + 8$$

Lesson Plan

Topic

Source

Question: 6

$$A = \begin{matrix} 0 & 1 & 0 \\ 3 & 0 & 2 \\ -12 & -7 & -6 \end{matrix}$$

Lesson Plan

Topic

Source

Question: 5

Lesson Plan

Topic

Source

Question: 6

Lesson Plan

Topic

Source

I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.