



Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 123 / SET 1

**NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA**

**Instructions for Students / Faculty**

**Mid Term I (Total 60 Marks, 2 HRS. Syllabus from Unit-1)**

- Part A: Total number of questions to be given are six (3 from CO1 and 3 from CO2), 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 12 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question**), each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student has to answer four (2 from CO1 and 2 from CO2). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)\*, each carrying 8 marks. Total 32 marks.

**Mid Term II (Total 90 Marks, 2.5 HRS., Syllabus from Unit-2)**

- Part A: Total number of questions to be given are ten (5 from CO3 and 5 from CO4), each carrying 3 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 30 marks
- Part B: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student has to answer four (2 from CO3 and 2 from CO4). 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 six (3 from CO3 and 3 from CO4), out of which student has to answer any four (2 from CO3 and 2 from CO4). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)\*, each carrying 9 marks. Total 36 marks.

**Mid Term III (Total 90 Marks, 2.5 HRS., Syllabus from Unit-3)**

- Part A: Total number of questions to be given are ten (5 from CO5 and 5 from CO6), each carrying 3 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 30 marks
- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6). 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 six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words For Question**)\*, each carrying 9 marks. Total 36 marks.

\* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS:** 3 MH4 - 07 Manufacturing Process, 4 AN4 - 06 Aircraft Materials and Processes (Cr 3), 5 AN4 - 05 Aircraft System (Cr 3), 6 AN4 - 05 Avionics-I (Cr 3), 6 MH4 - 03 Applied Hydraulics & Pneumatics (Cr 3), 6 MH5 - 11 Principles of Management (Cr 3), 6 MH5 - 13 Aircraft Electronics System (Cr 3), 7 AN5 - 12 Maintenance of Airframe and System (Cr 3), 7 AN5 - 13 Helicopter Theory (Cr 3), 7 AG6 - 60.1 Human Engineering and Safety (Cr 3), 7 ST - 01 Avionics II (Special Theory Subject) (Cr 3), 7 MH5 - 11 Design of Mechatronics Systems (Cr 3), 7 MH5 - 12 Robotics and Machine Vision System (Cr 3), 7 MH6 - 13 Medical Electronics (Cr 3), 7 AN6 - 60.1 Aircraft Avionic System (Cr 3), 8 AN5 - 12 Maintenance of Power Plant and System



## Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 123 / SET 1

**NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA**(Cr 3), 8 AN5 - 13 Unmanned Aerial Vehicles & Systems (UAV) (Cr 3), 8 MH5 - 13 Product Development & Launching  
(Cr 3), 8 EC6 - 60.2 Robotics and control (Cr 3)**Instructions For Faculties**

There should be total 6 Course Outcomes (COs) for each subject.

- Mid Term Question Papers are to be submitted as per Course Outcomes (COs) which should be divided equally in Part A, Part B and Part C according to Mid Term Examination and Credit Point.
- In Mid Term-1, the questions are to be given from CO1 and CO2. In Mid Term-2, the questions are to be given from CO3 and CO4. Similarly, in Mid Term-3, the questions are to be given from CO5 and CO6.
- **FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICAL ELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' OF QUESTION PAPER**

**INSTRUCTION FOR STUDENTS**

- **STUDENT IS ALLOWED TO ENTER LATE NOT MORE THAN 15 MIN AFTER STARTING OF EXAM,**

**QUESTION PAPER & STUDENTS DETAILS**

Type of Exam	Mid Term 3	Date of Submission	20/07/2021
Name of Faculty	Mr. R.N. Jha	Date of Examination	26/07/2021
Course	B.Tech (Mechatronics Engineering)	Semester	SEMESTER : 6
Batch	Fourth (4)	Subject	6 MH5 - 13 Aircraft Electronics System (Cr 3)-

**COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPERS**

(Faculties are required to mention Course Outcome Number against each part of the question paper)

Course Outcome	CO 5: Identifying the components of aircraft electronic flight instruments and automatic flight control system. CO 6: Describe about the operation of automatic flight control system , automatic landing system , auto throttle system in an aircraft.		
Email I'd	ramnareshjha@soaneemrana.org	Phone No.	769-093-4100
Student Name		Student Reg No.	

**PART A**

All the questions are compulsory to attend.

1. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.

CO 5



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**NAME OF STUDY CENTER: SCHOOL OF AERONAUTICS, NEEMRANA**

<b>Question : 1</b>	Explain the difference between the function of two display units of ECAM.		
30	ECAM.	Aircraft instruments and integrated systems (EHJ Pallett) Chapter No:- 16	
<b>Question : 2</b>	Describe the functions of upper display unit of EICAS.		
31	EICAS	Aircraft instruments and integrated systems (EHJ Pallett) Chapter No:- 16	
<b>Question : 3</b>	Describe the various ways of failure annunciation of EFIS.		
32	EFIS.	Aircraft Instruments and Integrated Systems (EHJ Pallett) Chapter No:- 12	
<b>Question : 4</b>	Explain caret( &lt; ) and asterisk (*) sign indication on control and display unit of flight management system.		
33	flight management system	Aircraft Instruments and Integrated Systems (EHJ Pallett) Chapter No:-17	
<b>Question : 5</b>	Name the basic components of Automatic Flight control system and explain their function.		
34	AFCS	Automatic Flight control system (EHJ Pallett)Chapter No-2	
<b>2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.</b>			CO 6
<b>Question : 6</b>	Explain the necessity of command signal processing.		
35	command signal processing.	Automatic Flight Control system (EHJ Pallett) Chapter No-5	
<b>Question : 7</b>	Explain outer loop operation or external mode of AFCS.		
36	outer loop control	Automatic Flight Control System (EHJ PALLETT) Chapter No:-6	
<b>Question : 8</b>	Explain the requirement of Navigational aids in Automatic flight control system.		



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37	outer loop control	Automatic Flight Control System (EHJ PALLETT) Chapter No:-6	
<b>Question : 9</b>	Explain FMC speed and MCP speed of autothrottle system.		
38	Speed control mode	Automatic Flight control system (EHJ Pallett ) Chapter No:-10	
<b>Question : 10</b>	Explain the term fail operational in automatic landing system.		
39	System reliability and redundancy	Automatic Flight control system (EHJ Pallett) Chapter No:-10	

**PART B**

**FOR MIDTERM 1 - Part B:** Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).

**FOR MIDTERM 2 - Part B:** Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).

**FOR MIDTERM 3 - Part B:** Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

**3. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.**

CO 5

<b>Question : 1</b>	Describe the functions of various switches on control panel of Electronic Centralised Aircraft Monitoring system.		
30	control panel ECAM.	Aircraft instruments and integrated systems (EHJ Pallett) Chapter No:- 16	
<b>Question : 2</b>	Describe the functions of lower display unit in EICAS.		
31	Display unit EICAS.	Aircraft instruments and integrated systems (EHJ Pallett) Chapter No:- 16	
<b>Question : 3</b>	Explain the functioning of symbol generator of EFIS.		
32	Symbol generator EFIS.	Aircraft Instruments and Integrated Systems (EHJ Pallett) Chapter No:- 12	

**4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.**

CO 6

<b>Question : 4</b>	Explain the role of Automatic Flight control system .
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34	Role of AFCS	Automatic Flight control system (EHJ Pallett)Chapter No-2	
<b>Question : 5</b>	Describe the fundamentals of Automatic Flight control system .		
34	fundamentals of AFCS	Automatic Flight control system (EHJ Pallett)Chapter No-2	
<b>Question : 6</b>	Explain the purpose and process of synchronisation in command signal processing.		
35	Synchronisation	Automatic Flight Control system (EHJ Pallett) Chapter No-5	
<b>Question : 7 (Old Pattern)</b>			

**PART C**

**FOR MIDTERM 1 - Part C:** Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).

**FOR MIDTERM 2 - Part C:** Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).

**FOR MIDTERM 3 - Part C:** Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student has to answer four (2 from CO5 and 2 from CO6).

**5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.**

CO 5

<b>Question : 1</b>	Describe the various types alert messages displayed by Engine Indicating and Crew Alerting System (EICAS).		
31	Alert messages	Aircraft instruments and integrated systems (EHJ Pallett) Chapter No:- 16	
<b>Question : 2</b>	Name the different components of flight management system and explain their function.		
33	Typical systems	Aircraft Instruments and Integrated Systems (EHJ Pallett) Chapter No:-17	
<b>Question : 3</b>	Name the components of auto throttle system and explain their function.		
38	Auto throttle system	Automatic Flight control system ( EHJ Pallett ) Chapter No:-10	



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**6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.**

CO 6

<b>Question : 4</b>	Explain the operation of automatic flight control system in altitude hold mode.		
36	Manometric modes	Automatic Flight Control System (EHJ PALLETT) Chapter No:-6	
<b>Question : 5</b>	Explain the operation of auto throttle system in take off mode.		
38	Take off mode.	Automatic Flight control system (EHJ Pallett ) Chapter No:-10	
<b>Question : 6</b>	Explain the automatic landing sequence		
40	Automatic landing sequence	Automatic Flight control system (EHJ Pallett) Chapter No:-10	

**Upload Scanned Document In Case of Numerical or Diagram For Any of The Above Questions. (Mention question number with relevant fig / numerical / equations. Max 150 KB)**

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

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