

School of Aeronautics (Neemrana)

I-04, RIICO Industrial Area, Neemrana, Dist. Alwar, Rajasthan

Approved by Director General of Civil Aviation, Govt. of India, All India Council for Technical Education
Ministry of HRD, Govt of India & Affiliated to Rajasthan Technical University, Kota & BTU, Bikaner Rajasthan

Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 48 /

Instructions For Students / Faculty Mid Term I (Total 60 Marks, 2 HRS. Syllabus From Beginning Of Session)

• Part A: Total number of questions to be given are five, 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 15 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 7 marks. Total 21 marks.

Mid Term II & III (Total 90 Marks, 2.5 HRS. Syllabus From Beginning Of Session)

• 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 6 marks. Total 30 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 10 marks. Total 40 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 (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)

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

Question Paper & Student Details

Mid Term	Mid Term 3	Date of Submission	22/09/2020
Name of Faculty	Mr. Sukumar	Date of Examination	28/09/2020
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 7
Batch	Combined Batches 12, 13, 14	Subject	7 AN5 - 12 Maintenance of Airframe and System (Cr 3)

COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER


(Faculties are required to mention relevant Course Outcome number against the respective question in QP)

Course Outcome	7AN5-12: Maintenance of Airframe and System (Credit-3) COURSE OUTCOMES: Upon completion of this course, Students will be able to CO 1: Identify the various airframe constructions and various types of aircraft controls. CO 2: Summarize the various aircraft structure associated materials. CO 3: Interpret the construction and working principle of various aircraft control systems and auxiliary Systems.. CO 4: Illustrate about the performance basic Inspections procedures. CO 5: Identify the Major Inspections procedures on aircraft. CO 6: Describe about the Periodical inspections procedures on aircraft.		
Email I'd	sukumar@soaneemrana.org	Phone No.	790-425-6314
Student Name		Student Reg No.	

Part A

Question : 1	Define Skin of an Aircraft.		
4	Monocoque Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2	Define Pitching		

6	Control Surface	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 3	Define Adverse yaw effect.		
7	Control Surface	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 4	Define Application of Medium carbon steel.		
7	Structural Components	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 5	Define Fluid Flow Rate.		
14	Hydraulic system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 6	Define Steering Damper.		
16	Landing gear	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 7	List the different types Ice Prevention methods used in aviation industries.		
19	Aircraft Auxiliary system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 8	Define Tolerance.		
23	Gauges Inspections	AIRFRAME & AIRCRAFT COMPONENTS by SOA	4
Question : 9	Define rectification of defects.		
30	Defects	AIRFRAME & AIRCRAFT COMPONENTS by SOA	5
Question : 10	Define pressure defuelling.		
34	Defuelling.	AIRFRAME & AIRCRAFT COMPONENTS by SOA	5
Part B			
Question : 1	Summarize the about the empennage construction.		
3	Airframe Structure Construction	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2	Elaborate in detail about the Leading and Trailing edge flaps.		
7	Control Surface	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 3	Elaborate in detail about the Thermal (Hot Gas) De-Icing Systems.		
19	Aircraft Auxiliary system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 4	Examine about the Recommended Practices of Calibration.		
23	Gauges Inspections	AIRFRAME & AIRCRAFT COMPONENTS by SOA	4
Question : 5	Examine about the sound waves energy, types, characteristic and mode Conversion Ultrasonic Flaw Detection method.		
27	NDT	AIRFRAME & AIRCRAFT COMPONENTS by SOA	4
Question : 6	Elaborate in detail about the Hydraulic system maintenance.		
34	Maintenance.	AIRFRAME & AIRCRAFT COMPONENTS by SOA	5
Question : 7	Explain in detail about the Procedure to find Center of Gravity in an aircraft.		
38	Aircraft Weighing	AIRFRAME & AIRCRAFT COMPONENTS by SOA	6
Part C			
Question : 1	Demonstrate about the Wing Configurations in an Aircraft.		

4	Wing Configuration	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2		Explain in detail about the Endoscope Inspections procedures.	
26	NTD	AIRFRAME & AIRCRAFT COMPONENTS by SOA	4
Question : 3		Elaborate in detail about the investigation of defects in an aircraft.	
30	Defects	AIRFRAME & AIRCRAFT COMPONENTS by SOA	4
Question : 4		Demonstrate in detail about the procedure of Aircraft Weight schedule.	
37	Aircraft Weight schedule	AIRFRAME & AIRCRAFT COMPONENTS by SOA	6
Question : 5		Elaborate in detail about the EME Energy Propagation.	
40	EME	AIRFRAME & AIRCRAFT COMPONENTS by SOA	6
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.			

The message has been sent from 123.63.6.45 (India) at 2020-09-26 17:40:56 on Firefox 82.0
Entry ID: 48

School of Aeronautics (Neemrana)

I-04, RIICO Industrial Area, Neemrana, Dist. Alwar, Rajasthan

Approved by Director General of Civil Aviation, Govt. of India, All India Council for Technical Education
Ministry of HRD, Govt of India & Affiliated to Rajasthan Technical University, Kota & BTU, Bikaner Rajasthan

Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 45 /

Instructions For Students / Faculty Mid Term I (Total 60 Marks, 2 HRS. Syllabus From Beginning Of Session)

• Part A: Total number of questions to be given are five, 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 15 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 7 marks. Total 21 marks.

Mid Term II & III (Total 90 Marks, 2.5 HRS. Syllabus From Beginning Of Session)

• 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 6 marks. Total 30 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 10 marks. Total 40 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 (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)

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

Question Paper & Student Details

Mid Term	Mid Term 3	Date of Submission	21/09/2020
Name of Faculty	Mr. Maris Brightson	Date of Examination	28/09/2020
Course	B.Tech (Aeronautical Engineering)	Semester	SEMESTER : 7
Batch	Thirteenth (13)	Subject	7 AN5 - 13 Helicopter Theory (Cr 3)


COURSE OUTCOMES FOR REFERENCE TO FRAME QUESTION PAPER

(Faculties are required to mention relevant Course Outcome number against the respective question in QP)

Course Outcome	COURSE OUTCOMES: Upon completion of this course, Students will be able to CO1: Identify the various theory of flight behind the helicopter. CO2: Analysis the Aerodynamics calculation of Rotor blade. CO3: Illustrate the stability and control characteristics of Helicopter. CO4: Perform and control the Rotor vibration. CO5: Explain the stability characteristics of a helicopter. CO6: Demonstrates the role of rotor vibrations in helicopter structural design.		
Email I'd	marisbrightson@soaneemrana.org	Phone No.	805-667-7643
Student Name		Student Reg No.	

Part A			
Question : 1	What are the functions of transmission systems in Helicopters? Name the components of the transmission systems.		
4	Theory of Flight	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 2	Define Solidity.		
5	Theory of Flight	Principles of Helicopter Flight - W J Wagtendonk	2

Question : 3	Define Coning Angle.		
5	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 4	Define Rotor Drag.		
6	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 5	Define Angle of Climb.		
17	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 6	Define the following (1) Stick Free Stability (2) Stick Held Stability		
22	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	3
Question : 7	Define the Center of Gravity Envelope.		
31	Vibrations	Principles of Helicopter Flight - W J Wagtendonk	5
Question : 8	What is meant by High-Frequency Vibrations in Helicopters?		
28	Vibrations	Principles of Helicopter Flight - W J Wagtendonk	5
Question : 9	Define Hoop Stress.		
38	Structures	Principles of Helicopter Flight - W J Wagtendonk	6
Question : 10	Write any 3 differences between monocoque and semi-monocoque constructions.		
33	Structures	Principles of Helicopter Flight - W J Wagtendonk	6
Part B			
Question : 1	Explain the theory of flight for Helicopters.		
2	Theory of Flight	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 2	With neat illustrative diagrams explain Ground effects in Helicopters.		
11	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 3	Explain types of Power Requirements for the Steady Level Flight in Helicopters.		
8	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 4	Explain the Climbing and Descending Performance in Helicopters.		
17	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 5	Explain Longitudinal and Lateral Stability in Helicopters.		
24	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	3
Question : 6	With neat illustrative diagrams explain the different types of rotor systems.		
27	Vibrations	Principles of Helicopter Flight - W J Wagtendonk	4
Question : 7	With neat illustrative diagrams explain Lightning Strike Protection Provisions.		
40	Structures	Principles of Helicopter Flight - W J Wagtendonk	6
Part C			
Question : 1	With neat illustrative diagrams explain Settling with Power for Helicopters.		
12	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2

Question : 2	With neat illustrative diagrams explain the Aerodynamics of Autorotation for Helicopters.		
21	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 3	With neat illustrative diagrams explain types of Vibrations occurring in Helicopters.		
28	Vibrations	Principles of Helicopter Flight - W J Wagtendonk	5
Question : 4	Explain Safe-Life, Fail-Safe and Damage Tolerance design concepts with suitable examples.		
36	Structures	Principles of Helicopter Flight - W J Wagtendonk	6
Question : 5	With neat illustrative diagrams explain Zonal and Station Identification Systems for any Helicopter.		
37	Structures	Principles of Helicopter Flight - W J Wagtendonk	6
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.			

The message has been sent from 123.63.6.45 (India) at 2020-09-23 16:06:58 on Firefox 82.0
Entry ID: 45