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 / 36 /

Instructions For Students / FacultyMid 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 2	**Date of Submission**	02/09/2020
Name of Faculty	Mr. Sukumar	**Date of Examination**	09/09/2020
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	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	Airframe Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2	Define Fuselage stations.		

5	Airframe Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 3	Define Adverse yaw effect.		
7	Aircraft Controls	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 4	Define Phosphating Processes		
11	Airframe Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 5	What is the application of Pulleys in the control system.		
13	Control System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 6	Define Steering Damper.		
16	Landing Gear	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 7	Define Bungee Cord.		
17	Landing Gear	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 8	Define Purpose of oxygen system.		
18	Aircraft Auxiliary system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 9	List the different types Ice Prevention methods used in aviation industries.		
19	Anti Icing System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 10	List the Precautions to be followed during Fuel Transfer.		
20	Fuel System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Part B			
Question : 1	Differentiate between Tubular Structure and Braced Structure.		
3	Airframe Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2	Elaborate in detail about the Leading and Trailing edge flaps.		
7	Aircraft Control System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 3	Elaborate in detail about the type of paints used in aircraft structure.		
11	Aircraft Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 4	Demonstrate the construction and working of Mechanical flight control surfaces.		
13	Control System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 5	Examine about the different types of Hydraulic Pumps.		
14	Control System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 6	Elaborate in detail about the Brake Actuating Systems.		
17	Brake System	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 7	Summarize about the Continuous Flow Oxygen Systems.		
18	Aircraft Auxiliary system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Part C			
Question : 1	Explain about the Construction Semi-Moncoque Structure with neat sketch.		

5	Semi-Moncoque Structure	AIRFRAME & AIRCRAFT COMPONENTS by SOA	1
Question : 2	Demonstrate in detail about the Properties and uses of different type of aluminium alloys.		
9	Airframe Materials	AIRFRAME & AIRCRAFT COMPONENTS by SOA	2
Question : 3	Elaborate in detail about the Landing-Gear Components and its functions.		
16	Landing-Gear	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 4	Elaborate in detail about the Thermal (Hot Gas) De-Icing Systems.		
19	De-Icing Systems	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
Question : 5	Demonstrate in detail about the fixed fire extinguisher systems in an aircraft.		
20	Aircraft Auxiliary system	AIRFRAME & AIRCRAFT COMPONENTS by SOA	3
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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Question Paper For Internal Assessment Examination (Theory) - Credit 3 / 38 /

Instructions For Students / FacultyMid Term I (Total 60 Marks, 2 HRS. Syllabus From Beginning Of Session)
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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 2	Date of Submission	03/09/2020
Name of Faculty	Mr. Maris Brightson	Date of Examination	09/09/2020
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)

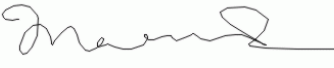| Course Outcome	COURSE OUTCOMES: Upon completion of this course, Students will be able to CO1: Identify the various theory of flight behind the helicopter. CO2: Analysis the Aerodynamics calculation of Rotor blade. CO3: Illustrate the stability and control characteristics of Helicopter. CO4: Perform 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	Define Power Loading.		
5	Theory of Flight	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 2	Define Blade Loading.		
5	Theory of Flight	Principles of Helicopter Flight - W J Wagtendonk	1

Question : 3	Define Induced Flow.		
6	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 4	Define Induced Power.		
8	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 5	Define Parasite Drag? How it is related to Parasite Power.		
7	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 6	Define Available Power.		
8	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 7	Define the following (1) Range (2) Endurance		
16	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 8	Define Angle of Climb.		
17	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 9	Define Trim Condition for Aircrafts.		
22	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	5
Question : 10	Define Cross Coupling.		
24	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	5
Part B			
Question : 1	With neat illustrative diagram explain Gyroscopic Precession.		
14	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 2	With neat illustrative diagram explain Translating Tendency.		
11	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 3	With neat illustrative diagrams explain Range and the factors affecting Range.		
16	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 4	With neat illustrative diagram explain the working of Turboshaft Engines.		
20	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	1
Question : 5	With neat illustrative diagrams explain Climbing Performance of Helicopters.		
17	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 6	With neat illustrative diagrams explain Longitudinal Stability of Helicopters.		
23	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	5
Question : 7	With neat illustrative diagrams explain Directional Stability of Helicopters.		
24	Stability and Control	Principles of Helicopter Flight - W J Wagtendonk	5
Part C			
Question : 1	With neat illustrative diagrams explain Retreating Blade Stall.		
12	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2

Question : 2	With neat illustrative diagram explain the Power Required to perform Steady Level Flight for Helicopters.		
8	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 3	With neat illustrative diagrams explain Autorotation.		
21	Flight Performance	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 4	With neat illustrative diagrams explain the Aerodynamics of Forward Flight and Vertical Flight in Helicopters.		
13	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
Question : 5	With neat illustrative diagrams explain (1) Translational Lift (2) Transverse Flow Effect		
11	Aerodynamics	Principles of Helicopter Flight - W J Wagtendonk	2
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)*			
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