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 2 / 97

Instructions for Students / Faculty

Mid Term I (Total 40 Marks, 1.5 HRS., Syllabus from Unit-1)

- Part A: Total number of questions to be given are four (2 from CO1 and 2 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 8 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 Only)**, each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO1 and 2 from CO2), out of which student has to answer two (1 from CO1 and 1 from CO2). They are numerical answer type / fully elaborative type* **(Not More Than 70 Words for Question Only)**, each carrying 8 marks. Total 16 marks.

Mid Term II (Total 60 Marks, 2 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 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 (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 Only)**, each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO3 and 2 from CO4), out of which student has to answer any two (1 from CO3 and 1 from CO4). They are numerical answer type / fully elaborative type **(Not More Than 70 Words For Question Only)** *, each carrying 12 marks. Total 24 marks.

Mid Term III (Total 60 Marks, 2 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 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 (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 Only)**, each carrying 4 marks. Total 16 marks.
- Part C: Total number of questions to be given are four (2 from CO5 and 2 from CO6), out of which student has to answer any two (1 from CO5 and 1 from CO6). They are numerical answer type / fully elaborative type **(Not More Than 70 Words For Question Only)** *, each carrying 12 marks. Total 24 marks.

*** LIST OF ELABORATIVE THEORY QUESTION SUBJECTS**: 1 FY1 - 04 Communication Skills (Cr 2), 1 FY1 - 05 Human Values (Cr 2), 2 FY1 - 04 Communication Skills (Cr 2), 2 FY1 - 05 Human Values (Cr 2), 3 AN1 - 02 Technical Communication (Cr 2), 4 MH1 - 02 Technical Communications (Cr 2), 4 MH1 - 03 Economics and Financial Accounting (Cr 2), 5 AN5 - 12 Aircraft Maintenance Practices (Cr 2), 6 AN3 - 01 Mechanics of Composite Materials (Cr 2), 6 AN5 - 12 Aircraft Rules and Regulation (Cr 2), 6 MH3 - 01 Automobile Engineering (Cr 2).

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, AND MAY LEAVE THE EXAM HALL ON EXPIRY OF ATLEAST OF 1 Hr FROM THE STARTING TIME OF EXAMINATION.**

Question Paper & Student Details

Type of Exam	Mid Term 1	**Date of Submission**	17/03/2021
Name of Faculty	Mr. Bipin Kumar Dwivedi	**Date of Examination**	24/03/2021
Course	B.Tech (Aeronautical Engineering)	**Semester**	SEMESTER : 6
Batch	Sixteenth (16)	**Subject**	6 AN5 - 13 Wind Tunnel Techniques (Cr 2)

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	CO 1. Capable to develop the dimensional analysis to design a wind tunnel. CO 2. Able to describe the various layouts of wind tunnels.

Email I'd	bipinkumardwivedi@soaneemrana.org	**Phone No.**	931-400-9035
Student Name		**Student Reg No.**	

Part A

INSTRUCTIONS FOR 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.			1
Question : 1	Define the low-speed wind tunnel.		
Lesson Plan No. - 1	Topic - Low-speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 2	Differentiate between viscous force and inertia force.		
Lesson Plan No. - 2	Topic - Low-speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 3			
Lesson Plan No. -	Topic -	Source -	CO No. -
Question : 4			
Lesson Plan No. -	Topic -	Source -	CO No. -
Question : 5			
Lesson Plan No. -	Topic -	Source -	CO No. -
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 6	Define the high speed wind tunnel.		
Lesson Plan No. - 5	Topic - High speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 7	Differentiate between open section and closed section wind tunnel.		
Lesson Plan No. - 6	Topic - High speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 8			
Lesson Plan No. -	Topic -	Source -	CO No. -
Question : 9			
Lesson Plan No. -	Topic -	Source -	CO No. -
Question : 10			
Lesson Plan No. -	Topic -	Source -	CO No. -
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 has to 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 has to 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.			1
Question : 1	Explain about the various types of low speed wind tunnel.		

Lesson Plan No. - 1	Topic - Low speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 2	Describe the constructional detail of convergent section of low speed wind tunnel.		
Lesson Plan No. - 2	Topic - Low speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 3	Explain about the total power loss in wind tunnel.		
Lesson Plan No. - 3	Topic - Power loss in wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 4	Explain about the different types of Honeycombs used in the settling chamber of wind tunnel.		
Lesson Plan No. - 5	Topic - Design parameters of wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 5	Explain about the various types of high-speed wind tunnels.		
Lesson Plan No. - 6	Topic - High-speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 6	Explain the Effect of second throat for supersonic wind tunnel.		
Lesson Plan No. - 7	Topic - supersonic wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Part C			
FOR MIDTERM 1 - Part C: Total number of questions to be given are four (2 from CO1 and 2 from CO2), out of which student has to answer two (1 from CO1 and 1 from CO2). FOR MIDTERM 2 - Part C: Total number of questions to be given are four (2 from CO3 and 2 from CO4), out of which student has to answer any two (1 from CO3 and 1 from CO4). FOR MIDTERM 3 - Part C: Total number of questions to be given are four (2 from CO5 and 2 from CO6), out of which student has to answer any two (1 from CO5 and 1 from CO6).			
5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			1
Question : 1	Consider the incompressible flow of water through a divergent duct. The Inlet velocity and area are 1.524m/s and 0.93m2, respectively. If the exit Area is 4 times the inlet area, calculate the water flow velocity at the exit.		
Lesson Plan No. - 1	Topic - Low-speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 2	An open circuit subsonic wind tunnel of test section 1.2×0.9m is run by a 110kw motor. If the test section speed is 90m/s, calculate the energy ratio of the tunnel.		
Lesson Plan No. - 3	Topic - Energy ratio of the wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			2
Question : 3	Explain with schematic layout of the Induction type wind tunnel.		
Lesson Plan No. - 6	Topic - high speed wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
Question : 4	Constructs a label diagram of Claw yaw meter and describe its Advantages and disadvantages.		
Lesson Plan No. - 8	Topic - Calibration of wind tunnel	Source - INSTRUMENTATION, MEASUREMENT AND EXPERIMENTS IN FLUID	CO No. -
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.