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 4 / 6 / SET 1

Question Paper For Internal Assessment Examination (Theory) - Credit 4

- · Instructions For Students / FacultyMid Term I (Total 80 Marks, 2 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 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. 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 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: NO SUBJECT UNDER CREDIT FOUR

FACULTY MEMBERS, PLEASE ENSURE EXCEPT ABOVE LISTED SUBJECTS, NO THEORITICALELABORATIVE QUESTION SHOULD BE GIVEN IN PART 'C' 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

| Mid Term | Mid Term 2 | Date of Submission | 21/08/2020 |
|-----------------|-----------------------------------|---------------------|---|
| Name of Faculty | Mr. Sidhartha Sondh | Date of Examination | 25/08/2020 |
| Course | B.Tech (Aeronautical Engineering) | Semester | SEMESTER : 3 |
| Batch | Combined Batches 18, 19, SF 2 | SIINIACT | 3 AN4 - 04 Incompressible Fluid Mechanics (Cr 4) |

| 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 OUTCOME Upon completion of the course, Students will be able to CO1: Distinguish different types of fluid, properties and their behavior under various conditions. CO2: Apply scientific method strategies to fluid mechanics: analyse qualitatively and quantitatively the problem situation, propose hypotheses and solutions. CO3: Demonstrate conservation laws to determine velocities, pressures, and accelerations for incompressible and inviscid fluids. CO4: Analyse the relationship between shear stress and pressure gradient for different conditions. | | |
| Email I'd | sidharthasondh@soaneemrana.org | Phone No. | 963-455-7511 |
| Student Name | | Student Reg No. | |

| Part A | | | |
|-------------|-----------------------------|------|---|
| Question: 1 | What is flow visualization? | | |
| 11 | Flow visualization | Self | 3 |
| Question: 2 | Define shear stress. | | |
| 16 | Shear stress | Self | 2 |
| Question: 3 | Define transition flow. | | |

| Plow Self 4 4 | 23 | Flow | Self | 4 |
|--|--------------|---|--|----|
| Question : 5 What are non-Newtonian Fluids? Give some examples 1 3 Non-Newtonian Fluids Self 1 Question : 6 Give the significance of Happen Poisseuflis equation. 4 25 Happen Poisseufli Self 4 Question : 7 What is an orifice meter? 3 Question : 8 Distinguish between static and stagnation pressure 1 4 Presure Self 1 Question : 9 What is vene controcto? 1 19 Orifice Self 3 Question : 10 Mention the characteristics of ideal fluid. 1 2 Fluids Self 1 Part B Question : 1 What are the different types of fluid flows? illustrate them with a next diagram? 6 Types of flow Self 1 Question : 2 Yellow the late of end of gram response 2 18 Fluid Mechanics Self 3 3 Rowspan and controlled flowership of pressure at a point in a fluid at rest is the same in all directions? 14 Flui | Question : 4 | What is the a fully developed flow? | | |
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| Question : 7 What is an orifice meter? Self 3 Question : 8 Distinguish between static and stagnation pressure 4 Pressure Self 1 Question : 9 What is vena contracta? 19 Orifice Self 3 Question : 10 Mention the characteristics of ideal fluid. 2 Fluids Self 1 Question : 1 What are the different types of fluid flows? Illustrate them with a neat diagram? 6 Types of Flow 1 Question : 2 What are the different types of fluid flows? Illustrate them with a neat diagram? 6 Types of Flow 1 Question : 2 What are the different types of fluid flows? Illustrate them with a neat diagram? Fluids Self 1 Question : 2 What are the and Metacentric Height 3. Rotational and Vorticity Be Fluid Mechanics Self 3 Question : 3 Prove that intensity of pressure at a point in a fluid at rest is the same in all directions? 14 Fluid Kinematics Self 3 Question : 4 Derive Momentum conservation equation, justify, what is the need of considering control volume for this. 23 Momentum conservation Self 3 Question : 5 Find the value of the water displaced and location of center of Buoyancy for a wooden block of width 4.5 m and depth 1m, when it floats horizontally in water. The density of wooden block is 550 kg/m3 and its length tim. Question : 6 What are the conclusion of Reynold's experiment? Reynold's experiment Self 4 Explain in detail about the significance of Navier Stokes equation in Fluid Mechanics | Question : 6 | Give the significance of Hagen Poisseulli equation. | | |
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| Question: 7 Explain in detail about the significance of Navier Stokes equation in Fluid Mechanics | Question: 6 | What are the conclusion of Reynold's experiment? | | |
| | 22 | Reynold's experiment | Self | 4 |
| 24 Navier Stokes equation Self 4 | Question: 7 | Explain in detail about the significance of Navier Stokes equation in Fluid Mechanics | | |
| | 24 | Navier Stokes equation | Self | 4 |
| Part C | | | | |
| Question: 1 Derive expression for Bernoulli's equation. Also state the assumptions made. | Question: 1 | Derive expression for Bernoulli's equation. Also state the assumptions made. | | |
| 20 Bernoulli's equation Self 4 | 20 | Bernoulli's equation | Self | 4 |

| Question: 2 | A venturimeter with a throat diameter of 7.5 cm is installed in a 15 cm diameter pipe. The pressure at the entrance is 70kPa (Gauge) and it is desired that the pressure at any point should not fall below 2.5 m of absolute. Determine the maximum flow rate of water through the meter. Take Cd = 0.97 and atmospheric pressure as 100 kPa. | | |
|---|--|---|---|
| 18 | Venturimeter | Fluid Mechanics and Machinery By R k Rajput | 4 |
| Question: 3 | Derive the Chezy's formula for loss of head due to friction. | | |
| 25 | Chezy's formula | Self | 4 |
| Question : 4 | The rate of flow of water through a horizontal pipe is 0.25 m3/s. The diameter of the pipe which is 200 mm is suddenly enlarged to 400 mm. The pressure intensity in the smaller pipe is 11.772 N/cm2. Determine: (i) loss pf head due to enlargement (ii) pressure intensity in the large pipe, (ii) power lost due to enlargement | | |
| 25 | Frictional loss | Fluid Mechanics and Machinery By R k Rajput | 4 |
| Question : 5 | A uniform body of size 3m long X 2m wide X 1m deep floats in water. What is the weight of the body if depth of immersion is 0.5m. Determine the metacentric height also | | |
| 10 | Metacenter | Fluid Mechanics and Machinery By R k Rajput | 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) | | | |
| I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question. | | 55 | |

The message has been sent from 157.37.43.7 (India) at 2020-08-21 17:47:34 on Firefox 79.0 Entry ID: 6