Question Paper For Internal Assessment Examination (Theory) - Credit 4 / 14 / SET 1

Instructions For Students / Faculty

Mid 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

Type of Exam	Internal Improvement Exam	**Date of Submission**	26/11/2020
Name of Faculty	Mr. Bipin Kumar Dwivedi	**Date of Examination**	03/12/2020
Course	B.Tech (Aeronautical Engineering)	**Semester**	SEMESTER : 4
Batch	-	**Subject**	4 AN4 - 05 Aircraft Structures-I (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	School of Aeronautics (neemrana)

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

Part A

Question : 1	Define semi-monocoque structures.		
2	Aircraft structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 2	What is statically indeterminent structure?		
4	Indeterminent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 3	What is truss?		
7	Determinent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 4	What do you mean by composite beam?		
15	Indeterminent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 5	What is Costigliano's theorem?		
18	Energy method	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 6	Define the degree of indeterminancy.		
16	Indeterminent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 7	What is principal of virtual wark?		
20	Energy method	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 8	Define the buckling of column.		
24	Columns	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 9	Differentiate between ductile and brittle materials.		

26	Failure theories	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 10	Define principal stresses and strain.		
30	Failure theories	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Part B			
Question : 1	Explain the features of aircraft structure.		
2	Aircraft structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 2	Explain the method of sections to analyse the planer trusses.		
8	Determinent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 3	Describe the clapeyron's three moment equation method for Indeterminent structures.		
15	Indeterminent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 4	Describe the moment area method to determine the deformation due to loading.		
22	Deformation due to loading	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 5	Explain the Maxwell's reciprocal theorem.		
25	Energy method	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 6	Explain the Euler's theory of long column, and derive the critical load expression for both end of column are fix.		
26	Columns	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 7	Explain about the octahedral shear stress theory.		
30	Failure theories	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	

Part C

Question : 1	Draw the shear force and bending moment diagram of given fig-1. Also find the maximum bending moment.		
4	Shear force and bending moment	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 2	calculate the maximum deflection of the given fig-1.		
26	Deformation due to loading	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 3	Determine the reactions at both the end A and D of the given fig-2.		
8	Determinent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 4	Determine the nature of force in member CD by joint method of the given fig-2.		
12	Determinent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
Question : 5	Determine the nature of force in member BE by method of sections of the given fig-2.		
14	Determinent structure	STRENGTH OF MATERIALS BY S. RAMAMRUTHAM	
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)*	https://form.123formbuilder.com/upload_dld.php?fileid=452521f445940e50b6a42d84d6d31bae		
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.	Yes		

School of Aeronautics (Neemrana)

Question Paper For Back / Re-back Internal Assessment Examination (Theory) - Old Scheme i.e 2012 Syllabus

Instructions For Students / Faculty

Back / Re-back Internal Examination (Total 60 Marks, 2 Hrs, Syllabus From Beginning of The Session)

Total number of questions to be given are 10, each carrying 10 marks and it is compulsory to attend 2 questions from Part A and 4 questions from Part B. There is a choice of two questions out of four in part A and 4 questions out of 6 in Part B. Part A will be theoretical or derivation type **(Not More Than 70 Words For Question).** Part B will be fully numerically oriented questions **(Not More Than 70 Words For Question)**, except for the list of subjects given below. No objective type or fill in the blanks shall be given, but subpart of question can be given for both Part A & B.

* **LIST OF ELABORATIVE THEORY QUESTION SUBJECTS**: Aircraft Materials, Aircraft System, Aircraft Rules & Regulation-I, Mechanics of Composite Materials, Aircraft Design, Aircraft Rules & Regulation-II, Avionics-I, Helicopter Theory, Maintenance of Airframe and System Design, Avionics-II, Airlines and Airport Management, Maintenance of Power Plant & Systems

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

Name of Faculty*	Sidhartha Sondh	**Date of Submission of QP**	26/11/2020
Subject*	4AN3 - Fluid Mechanics (Old)	**Date of Examination***	03/12/2020
Email Id of Faculty:*	sidharthasondh@soaneemrana.org	**Course***	B.Tech (Aeronautical Engineering)
Phone Number of Faculty*	963 455 7511	**Semester***	Semester : 4

Student Name		**Student Reg No.**	

Part A

Question : 1*

Write short notes on the following. Draw neat diagrams wherever necessary.
a) Different stages of transition from laminar to turbulent
b) Effect of turbulence
c) Metacenter and Metacentric Height
d) Rotation and vorticity

Lesson Plan*	14	**Topic***	Fundamentals	**Source***	Self

Question : 2*

Prove the intensity of the pressure at a point in a fluid at rest is the same in all the directions.

Lesson Plan* 11 **Topic*** Pressure intensity **Source*** Self

Question : 3*

Differentiate between:
(i) Gauge pressure and Vacuum pressure
(ii) Stress and Pressure
(iii) Vorticity and Circulation

Lesson Plan* 4 **Topic*** Basics **Source*** Self

Question : 4*

Explain the relationship between vorticity and rotationality.

Lesson Plan* 11 **Topic*** Rotational flow **Source*** Self

Part B

Question : 1*

For a steady flow taking place through variable cross section duct, derive an expression for the mass continuity equation.

Lesson Plan* 10 **Topic*** Continuity equation **Source*** Self

Question : 2*

Consider the following steady, incompressible, two-dimensional velocity field: V=(u,v)=x^2 i+(-2xy-1)j. Is this flow rotational or irrotational? Justify your answer.

Lesson Plan*	11	**Topic***	Rotational flow	**Source***	Fluid Mechanics- Funda

Question : 3*

A horizontal water pipe of diameter 15cm converges to 7.5cm dia. If the pressure at the two stations is 400Kpa and 150Kpa respectively. Calculate velocity at both stations and the flow rate of the water.

Lesson Plan*	18	**Topic***	Bernoulli Equation	**Source***	Fluid Mechanics- Funda

Question : 4*

The resulting force F of a supersonic plane during flight can be considered as dependent upon the length of the aircraft l, velocity v, air viscosity μ, air density ρ, and bulk modulus of air K. Expess the functional relationship between these variables and the resisting force and show that the resisting force is a function of Reynolds number and Mach number.

Lesson Plan*	35	**Topic***	Dimensional analysis	**Source***	Self

Question : 5

Check whether the flow defined by the stream function ψ=2xy is irrotational? If so, determine the corresponding velocity potential.

Lesson Plan	28	**Topic**	Steam function	**Source**	FMHM by RK Bansal

Question : 6

Air enters a nozzle steadily at 2.21 kg/m3 and 30 m/s and leaves at 0.762 kg/m3 and 180 m/s. If the inlet area of the nozzle is 80 cm2, determine (a) the mass flow rate through the nozzle, and (b) the exit area of the nozzle.

Lesson Plan	10	**Topic**	Continuity equation	**Source**	Fluid Mechanics- Funda

Upload Scanned Document In Case of Numerical or Diagram for any of the above question

Mention question number with relevant fig / numerical / equations. Max 150 KB

Choose files or drag here

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