Question Paper For Internal Assessment Examination (Theory) - Credit 4 / 48 / SET 1

Instructions for Students/FacultyMid Term I (Total 80 Marks, 2 HRS. Syllabus from Unit-1)

- Part A: Total number of questions to be given are ten (5 from CO1 and 5 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 20 marks.
- Part B: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 5 marks. Total 20 marks.
- Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question)** *, each carrying 10 marks. Total 40 marks.

Mid Term II (Total 120 Marks, 2.5 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 4 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 40 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)**, each carrying 7 marks. Total 28 marks.
- Part C: 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 numerical answer type / fully elaborative type (**Not More Than 70 Words For Question)** *, each carrying 13 marks. Total 52 marks.

Mid Term III (Total 120 Marks, 2.5 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 4 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 40 marks.
- Part B: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are long answer type (**Not More Than 50 Words for Question)**, each carrying 7 marks. Total 28 marks.
- Part C: Total number of questions to be given are six (3 from CO5 and 3 from CO6), out of which student must answer four (2 from CO5 and 2 from CO6). They are numerical answer type / fully elaborative type (**Not More Than 70 Words for Question)** *, each carrying 13 marks. Total 52 marks.

*** LIST OF ELABORATIVE THEORY QUESTION SUBJECTS**: NO SUBJECT UNDER CREDIT FOUR

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 AND STUDENTS DETAILS

Type of Exam	Mid Term 3	**Date of Submission**	17/08/2021
Name of Faculty	GOURAV SARDANA	**Date of Examination**	25/08/2021
Course	B.Tech (Aeronautical Engineering)	**Semester**	SEMESTER : 4
Batch	Eighteenth (18)	**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	CO5 :Solve problems in column buckling and carry out stability analysis. CO6: Use appropriate failure theories for structural mechanics problems.		
Email I'd	gouravsardana@soneemraa.org	**Phone No.**	925-566-9668
Student Name		**Student Reg No.**	

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.			5
Question : 1	Define slenderness ratio of a column .		
31	Columns	strength of Material by Sadhu singh	
Question : 2	Define eccentricity of column.		
32	Columns	strength of Material by Sadhu singh	
Question : 3	Explain the function of beam column .		
33	Columns	strength of Material by Sadhu singh	
Question : 4	Explain the limitations of Euler theory .		

30	Columns	strength of Material by Sadhu singh	
Question : 5	Explain buckling occur in columns .		
33	Columns	strength of Material by Sadhu singh	
2. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6
Question : 6	Explain maximum principal stress and minimum principal stress .		
35	Failure Theories:	strength of Material by Sadhu singh	
Question : 7	Explain maximum stress theory .		
36	Failure Theories:	strength of Material by Sadhu singh	
Question : 8	Explain von Mises theory		
37	Failure Theories:	strength of Material by Sadhu singh	
Question : 9	Explain thermal stress formula		
38	Induced Stresses	strength of Material by Sadhu singh	
Question : 10	Explain the three stages of fatigue		
39	Induced Stresses	strength of Material by Sadhu singh	

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 must 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 must 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.			5
Question : 1	Drive the expression for Column fixed at one end and Hinged at other ends.		
33	Columns	Strength ofMaterial by Sadhu singh	
Question : 2	Drive the expression of Beam column Uniform distributed load .		
34	Columns	Strength of Material by Sadhu singh	

Question : 3	Explain the process to draw the south well plot .		
32	Columns	Strength of Material by Sadhu singh	
4. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6
Question : 4	Drive the expression for Composites system of equal length subjected to variation of temperature		
39	Induced Stresses	Strength of Material ,Sadhu singh	
Question : 5	Explain the use distortion energy theory of failure .		
39	Failure Theories	Strength of Material ,Sadhu singh	
Question : 6	Explain in details stress relaxation .		
40	Induced Stresses	Strength of Material ,Sadhu singh	
Question : 7 (Old Pattern)			

Part C

FOR MIDTERM 1 - Part C: Total number of questions to be given are six (3 from CO1 and 3 from CO2), out of which student must answer four (2 from CO1 and 2 from CO2).
FOR MIDTERM 2 - Part C: Total number of questions to be given are six (3 from CO3 and 3 from CO4), out of which student must answer four (2 from CO3 and 2 from CO4).
FOR MIDTERM 3 - Part C: 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).

5. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			5
Question : 1	A built up beam as in fig is simply supported at ends .Compute its length given that when it is subjected to a load of 40KN per meter length ,it deflects by 1CM .find ot the safe load if this beam is used in a column with both ends fixed. assume factor of safety 4 and E = 210Gpa use Euler's Formula		
32	COLUMN	Strength of material by Sadhu Singh	
Question : 2	Drive the expression of Beam column Concentrated load at Centre.		
33	COLUMN	Strength of material by Sadhu Singh	
Question : 3	Drive the expression for long column hinged column subjected to eccentric load.		
34	COLUMN	Strength of material by Sadhu Singh	

6. CHOOSE COURSE OUTCOME (CO) NUMBER ACCORDING TO THE TYPE OF MIDTERM, AS PER INSTRUCTIONS ABOVE.			6
Question : 4	A mild Steel hollow shaft 10cm external diameter and 5cminternal diameter is subjected to a twisting moment of 8kN-m and a bending moment of 2.5 KN-m .Poisson's ratio is 0.25 . Calculate the Principal Stresses and find the direct stress which acting alone ,would produce the same . a. Maximum elastic strain energy b. Maximum elastic shear strain energy as that produced by Principal stresses acting together.		
36	Failure Theories	Strength of Material by sadhu Singh	
Question : 5	Explain in detail temperature Stresses.		
38	Induced Stresses	Strength of Material by sadhu Singh	
Question : 6	Explain in detail Impact loading with diagram.		
39	Induced Stresses	Strength of Material b sadhu Singh	
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=0d869f0fefa9de438bbf76d9e4d0d647	
I have scrutinized the question paper. There is no spelling mistake or any type of irrelevant question.			

Part C

Q 5.1