MAR ATHANASIUS COLLEGE OF ENGINEERING,
KOTHAMANGALAM-686666.
(GOVERNMENT AIDED AUTONOMOUS ENGINEERING COLLEGE)
DEPARTMENT OF CIVIL ENGINEERING

SECOND SESSIONAL EXAMINATION, OCTOBER 2026
S7CA & S7CB

Design of Steel Structures (CET401)

Time: 1hour 30 minutes **Max. Marks: 40**

Part A (4*3=12 Marks)

1. Differentiate between Lacings and Battens in a compound column. **CO3**
2. Elaborate on the significance of the slenderness ratio in the design of column members **CO3**
3. Why does compression flange of steel beams require lateral support? **CO4**
4. How can we identify a beam is subjected to high shear or low shear? **CO4**

Part B (2*14=28 Marks)

5. Design a laced column using ISMC 200 channel sections placed back-to-back. The member is subjected to a factored axial compressive load of 450 kN and has an effective length of 3 m. Design the lacing members and bolted (not overlapped) connections. Assume suitable end conditions. **CO3**

6. A cantilever beam of length 5.0 m supports a dead load (including self-weight) of 20 kN/m and a live load of 15 kN/m. Assume a bearing length of 120 mm. Design a laterally supported beam. **CO4**

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Question No.	1	2	3	4	5	6	Total Marks
CO Mapping	CO3	CO3	CO4	CO4	CO3	CO4	
Bloom Taxonomy Level	2	2	2	2	4	4	
Max. Marks	3	3	3	3	14	14	40

Prepared By	Scrutinized By	Approved By
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COURSE OUTCOME

CO	Description	Bloom's taxonomy level
CO1	Explain the behavior and properties of structural steel members to resist various structural forces and actions and apply the relevant codes of practice	Understanding(U),Analyzing(A)
CO2	Analyses the behavior of structural steel members and undertake design at both serviceability and ultimate limit states	Applying(P),Analyzing(A)
CO3	Explain the theoretical and practical aspects of Design of composite Steel Structure along with the planning and design aspects	Understanding(U),Applying(P)
CO4	Apply a diverse knowledge of Design of Steel engineering practices applied to real life problems	Applying(P)
CO5	Demonstrate experience in the implementation of design of structures on engineering concepts which are applied in field Structural Engineering	Applying(P)

VISION OF CIVIL ENGINEERING DEPARTMENT

A department that is proficient in all aspects of civil engineering education, blending theory and practice.

MISSION OF CIVIL ENGINEERING DEPARTMENT

To impart the right combination of civil engineering fundamentals and use of modern tools to the students. To encourage learning with due emphasis given to professional ethics and traditional norms. To enhance the knowledge base of students in liaison with practice and research. To encourage life-long learning