



InSem Examination-IISummer2024		
Exam Seat No.:		
Academic Year:2023-2024	Semester: II	
Name of Programme: F.Y. M.Tech (Structural Engg.)	Pattern:2022	
Name of Course: Advanced Design of Concrete Structures	Course Code:CIV225109	
Max. Marks: 30	Duration: 1 Hr.	

<p><b>Instructions:</b> Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.</p> <ol style="list-style-type: none"><li>1. This question paper contains 2 pages.</li><li>2. Answer to each new question is to be started on a new page.</li><li>3. Assume suitable data wherever required, but justify it.</li><li>4. Draw the neat labelled diagrams, wherever necessary.</li><li>5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.</li><li>6. IS 456:2000 is allowed in examination.</li></ol>
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**Question No. 1 Attempt following Question**

- a) What are the characteristic features of yield lines? (5) CO1, CO2

**OR**

- b) Explain the “yield line” analysis and sketch the yield line pattern for a rectangular slab with (5) CO1, CO2  
(i) All sided simply supported condition;  
(ii) Two sided simply supported and two sides fixed condition
- c) Determine the permissible service load of a simply supported circular slab of radius 3m and reinforced with 10 mm dia bar @ 150 mm c/c. The overall depth of slab is 130 mm and effective cover is 25 mm. Use M20 concrete and Fe 415 steel. (10) CO1, CO2

**OR**

- d) Design of Rectangular slab of size 3.5m×5m in size simply supported at all edges. The slab is expected to carry a service live load of 3 KN/m<sup>2</sup> and floor finish load of 1 KN/m<sup>2</sup> Use M20, Fe415. Design of slab is isotropically reinforced with  $\mu=1$  (10) CO1, CO2

**Question No. 2 Attempt following Question**

- a) Write short note on different types of flat slabs. (5) CO1, CO2

**OR**

- b) Discuss the role of drop panels in enhancing the performance of a grid slab. (5) CO1, CO2

- c) A R.C. grid floor is to be designed to cover a floor area of 12m x 18m. The spacing of the ribs in mutually perpendicular directions is 1.5m c/c live load on floor is 3kN/m<sup>2</sup>. Adopt M20 grade concrete and Fe 415 HYSD bars. Assume ends are simply supported. (Analysis by approximate methods) (10) CO1, CO2

**OR**

- d) Design an interior panel of a flat slab of size 5 m x 5 m without providing drop and column head. Size of columns is 500 x 500 mm and live load on the panel is 4 kN/m<sup>2</sup>. Take floor finishing load as 1kN/m<sup>2</sup>. Use M20 concrete and Fe 415 steel. (Shear check and R/F detailing not required) (10) CO1, CO2

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