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Question Paper Code: U8178

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2024

One credit

Civil Engineering

21UCE878 - BAR BENDING AND DUCTILE DETAILING

(Regulations 2021)

(Common to All Branches)

(SP 34 and IS 13920 Codes Are Permitted)

Duration: 1.30 Hours

Maximum: 50 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. In bar bending schedule, what does the term "stirrups" typically represent? CO1-U
(a) Vertical reinforcement (b) Horizontal reinforcement
(c) Shear reinforcement (d) Tensile reinforcement
2. What is the purpose of bar bending in reinforced concrete structures? CO1 -U
(a) Aesthetic appeal (b) Structural stability (c) Material cost reduction (d) None of the above
3. What is the recommended spacing of ties or stirrups in reinforced concrete columns? CO2 -U
(a) 100 mm to 150 mm (b) 200 mm to 300 mm
(c) 400 mm to 500 mm (d) 600 mm to 700 mm
4. What is the main objective of seismic ductile detailing in buildings? CO2 -U
(a) To increase construction cost
(b) To minimize earthquake damage and enhance occupant safety
(c) To improve visual appeal
(d) To decrease structural stability

5. What role does confinement play in ductile detailing of reinforced concrete structures? CO2 -U
- (a) Increases flexibility (b) Enhances strength
(c) Decreases ductility (d) Reduces stability
6. In seismic design, what is the significance of ductility demand over capacity? CO2 -U
- (a) The structure is overdesigned
(b) The structure may fail under seismic loading
(c) The structure is under-designed
(d) The structure is aesthetically pleasing
7. What is the significance of detailing plastic hinges in ductile design? CO2 -U
- (a) Enhances structural rigidity (b) Reduces structural stability
(c) Allows controlled yielding and dissipates energy (d) Increases construction cost
8. What is the primary function of seismic links in ductile detailing? CO2 -U
- (a) Increase lateral load resistance (b) Enhance compressive strength
(c) Facilitate vertical load transfer (d) Decrease structural stability
9. Which seismic design category is likely to require more stringent ductile detailing requirements? CO2 -U
- (a) Low seismic risk (b) Moderate seismic risk
(c) High seismic risk (d) Very high seismic risk
10. What is the recommended spacing of ties or stirrups in reinforced concrete columns? CO1 -U
- (a) 100 mm to 150 mm (b) 200 mm to 300 mm
(c) 400 mm to 500 mm (d) 600 mm to 700 mm

PART – B (5 x 2 = 10 Marks)

11. Define the term bar bending. CO1 -U
12. Why is bar bending necessary in construction? CO1 -U
13. Explain the purpose of using a bar bending schedule. CO2 -U
14. List out the difference between stirrups and ties in bar bending. CO2 -U
- Mention the significance of maintaining proper lap length in bar bending.

15. Define the term bar bending. CO2 -U

PART – C (2 x 15 = 30 Marks)

16. (a) Elaborate the role of bar bending schedule in construction projects. CO1 -U (15)

Or

(b) Discuss the importance and uses of bar bending schedule. CO1 -U (15)

17. (a) Elaborate the ductile detailing for flexural members with neat sketches CO2 - U (15)

Or

(b) Discuss Longitudinal Reinforcement and Web Reinforcement detailing for flexural members in detail. CO2 - U (15)

