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Question Paper Code: U3908

M.E. DEGREE EXAMINATION, DEC 2023

Professional Elective

Structural Engineering

21PSE508 – DESIGN OF FORM WORKS

(Regulations 2021)

(IS 14687: 1999, False work for Concrete Structures - Guidelines, BIS

IRC:87-2011 Guidelines For Formwork, False work and Temporary Structures)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1. (a) Summarize timber formwork with its advantages and limitations CO1- U (20)
Or
(b) Classify formwork based on the materials with their advantages, CO1- U (20)
disadvantages and applications.
2. (a) Each stud is spanning between the top and bottom plates of CO2- App (20)
50.8 mm 101.60 mm in a simply supported manner. Here again the
maximum safe span of studs shall be determined based on
bending, shear, and deflection consideration. Area of the stud $A = 5,161.28 \text{ mm}^2$
Moment of inertia of the stud $I = 44,39,801.87 \text{ mm}^4$
Section modulus of the stud $Z = 87,397.67 \text{ mm}^3$.
Or
(b) Compute the lateral pressure on formwork for a 3.0 m high wall CO2- App (20)
where ordinary concrete is to be placed at 10°C progressively over
a 1 hour period. (C1) Shape co-efficient -1.0, (C2) Material co-
efficient -0.3, (D) Concrete density -25 kN/m^3 , (H) Vertical height
of form 3 m.

3. (a) Design and also basic criteria for construction the below mentioned structural elements: CO3- App (20)
- (i) Over head water tanks
 - (ii) Natural draft cooling towers
 - (iii) Nuclear reactor
- Or
- (b) Design and construct the folded plates. CO3- App (20)
4. (a) Explain the methods of crew organization in precast construction and give some case studies for extensive precasting of different types of concrete elements. CO1- U (20)
- Or
- (b) Discuss the characteristics of the following types of moulds. CO1- U (20)
- (i) horizontal and vertical.
 - (ii) stationary and mobile system.
 - (iii) brick and masonry moulds.
 - (iv) wooden and steel moulds
5. (a) Recommend some of the safety measures in the aspect of safety, health and environment while execution of formwork in site. CO4-Ana (20)
- Or
- (b) What are the issues to be faced out while executing formwork activity in multi-storey building? CO4-Ana (20)