GUJARAT TECHNOLOGICAL UNIVERSITY

BE-7 SEMESTER – OLD PAPER – S22 TO S25 – QUESTION BANK

Subject Name & Code:

Design of Industrial Structures- 3170626

Unit 1: Industrial Building

Repeated Questions:

1. **Describe the importance of Bracings in industrial structures.**
   - Appeared in: W22 (Q1b, 04 marks), W23 (Q1b, 04 marks), SUM 23 (Q1a, 03 marks), W24 (Q3a, 04 marks)
2. **Draw the various roofing system provided for industrial building.**
   - Appeared in: W23 (Q2a, 03 marks), SUM 22 (Q1b, 04 marks), SUM 23 (Q2a, 03 marks)
3. **Design a simply supported gantry girder.**
   - Appeared in: SUM 25 (Q4a, 14 marks), W24 (Q4a, 14 marks), W23 (Q4a, 14 marks), SUM 22 (Q4a, 14 marks), SUM 23 (Q4a, 14 marks)
4. **Explain various forces to be considered in the design of a Gantry Girder.**
   - Appeared in: SUM 22 (Q1a, 03 marks)
5. **Give various loads and load combinations for design of steel structures as per codal provisions.**
   - Appeared in: SUM 25 (Q5a, 04 marks), SUM 22 (Q2a, 03 marks), SUM 23 (Q2b, 04 marks)
6. **Why is it necessary to design a truss member for both compression and shear forces?**
   - Appeared in: W23 (Q2c, 07 marks), SUM 22 (Q2c, 07 marks), SUM 23 (Q2c, 07 marks)
7. **Fix the configuration of a roof truss for an industrial building.**
   - Appeared in: SUM 25 (Q3b, 10 marks), W24 (Q2b, 04 marks), W22 (Q5, 07 marks), W23 (Q4a, 14 marks), SUM 23 (Q4b, 04 marks)

Other Important Questions:

8. **Design an angle section for a continuous purlin.**
   - Appeared in: SUM 25 (Q5b, 04 marks), W24 (Q2c, 07 marks), W22 (Q2c, 07 marks)
9. **Calculate Dead Load, Live Load & Wind Load per panel point for a steel roof truss.**
   - Appeared in: W23 (Q4a, 14 marks), SUM 22 (Q4a, 14 marks), SUM 23 (Q4b, 04 marks)

Unit 2: Transmission and Communication Towers

Repeated Questions:

1. **Explain various types of loads acting on the transmission line towers. Under what circumstances do torsional loads occur on them?**
    - Appeared in: SUM 25 (Q2b, 04 marks), W24 (Q3a, 04 marks), W22 (Q1c, 07 marks), W23 (Q1c, 07 marks), SUM 23 (Q5a, 04 marks)
2. **Enlist the different types of communication towers based on their structural action. / Explain different types of transmission tower as per structural action.**
    - Appeared in: SUM 25 (Q1a, 03 marks), W23 (Q3a, 04 marks), SUM 22 (Q3a, 04 marks)
3. **Enlist structural uses of steel towers. / Discuss the structural usefulness of Steel towers.**
    - Appeared in: SUM 25 (Q1b, 04 marks), W22 (Q2a, 03 marks), W23 (Q3a, 04 marks), SUM 23 (Q3a, 04 marks)

Other Important Questions:

4. **Explain in detail about transmission line tower with neat sketches.**
    - Appeared in: W24 (Q3a, 04 marks), SUM 22 (Q3a, 04 marks)
5. **How is the total height of a transmission line tower calculated? Explain in brief the factors governing the height.**
    - Appeared in: SUM 25 (Q2c (OR), 07 marks)

Unit 3: Chimneys

Repeated Questions:

1. **Explain briefly the factors influencing the height of a chimney.**
    - Appeared in: W24 (Q1c, 07 marks), SUM 22 (Q1c, 07 marks), SUM 23 (Q1c, 07 marks)
2. **Write down the design procedure adopted for the foundation of a chimney.**
    - Appeared in: W24 (Q2c, 07 marks), W23 (Q2c, 07 marks), SUM 22 (Q2c, 07 marks), SUM 23 (Q2c, 07 marks)
3. **Give the classification of industrial chimneys.**
    - Appeared in: W24 (Q1b, 04 marks), W23 (Q2b, 04 marks)
4. **Design a chimney of height X m and check the stresses at the base.**
    - Appeared in: SUM 25 (Q3a, 14 marks), W23 (Q5, 14 marks), W22 (Q5, 14 marks), SUM 23 (Q5b, 10 marks)

Other Important Questions:

5. **Briefly explain the procedure adopted in the design of chimneys and draw a typical cross-section showing details of reinforcements.**
    - Appeared in: SUM 25 (Q1c, 07 marks)
6. **A reinforced concrete chimney X m high... Find the stresses developed due to wind and dead load at the base.**
    - Appeared in: W24 (Q5b, 10 marks), SUM 22 (Q5b, 10 marks), SUM 23 (Q5b, 10 marks)

Unit 4: Bunkers & Silos

Repeated Questions:

1. **Give the difference between a Bunker and a Silo. / Differentiate between bunker and silo.**
    - Appeared in: SUM 25 (Q2a, 03 marks), W24 (Q1a, 03 marks), W22 (Q1a, 03 marks), W23 (Q1a, 03 marks), SUM 23 (Q1b, 04 marks), SUM 22 (Q5a, 04 marks)
2. **Design a circular bunker to store X tonnes of coal.**
    - Appeared in: SUM 25 (Q2c, 07 marks), W24 (Q3b, 10 marks), W22 (Q2c, 07 marks), W23 (Q3b, 10 marks), SUM 22 (Q3b, 10 marks), SUM 23 (Q3b, 10 marks)
3. **Explain the differences in the analysis of bunker wall and silo wall.**
    - Appeared in: W24 (Q2a, 03 marks), SUM 22 (Q2b, 04 marks), W23 (Q5a, 04 marks)
4. **Design a square bunker's side walls and hopper bottom.**
    - Appeared in: SUM 25 (Q5b, 10 marks), W24 (Q4a, 14 marks), W22 (Q4, 14 marks)

Other Important Questions:

5. **Draw an appropriate figure of a square or rectangular bunker and show various structural elements.**
    - Appeared in: SUM 25 (Q5a, 04 marks), W22 (Q2b, 04 marks)
6. **What are the parameters which influence the Design of Bunkers?**
    - Appeared in: SUM 22 (Q5a, 04 marks)
7. **Design a cylindrical silo using Janssen’s theory for pressure calculations.**
    - Appeared in: W24 (Q5b, 10 marks), W22 (Q3, 14 marks), W23 (Q3b, 10 marks), SUM 22 (Q5b, 10 marks)

Unit 5: Grid Slabs

Repeated Questions:

1. **Briefly explain the approximate analysis of Grid Floors according to IS 456:2000. / Write requirements for analysis of In-situ Ribbed Slab (Grid Slab) for using IS 456-2000 method.**
    - Appeared in: SUM 25 (Q4a, 04 marks), W24 (Q5a, 04 marks), W22 (Q4a, 04 marks), W23 (Q5a, 03 marks)
2. **Analyze a Reinforced Concrete Grid Floor for a hall of size X m x Y m using the Rankine Grashoff or IS method.**
    - Appeared in: SUM 25 (Q4b, 10 marks), W24 (Q3b, 10 marks), SUM 22 (Q3b, 10 marks), W23 (Q5b, 10 marks)

Other Important Questions:

3. **A grid floor has the following data... Design and detail reinforcement...**
    - Appeared in: W22 (Q4b, 10 marks)

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