Model Question Paper

13.802 DESIGN AND DRAWING OF STEEL STRUCTURES (C)

(Note: Use of IS. Codes 800-2007, 875 (2&3)-1987, 6533-1989 and Railway loading standards are permitted in the examination hall.)

Time: 4 hours                                                                                     Maximum Total Marks: 150

Part A

Answer all questions (2 × 20 = 40 Marks)

1. Design a purlin for a span of 4m with spacing 2.5m, wind pressure 1.5 kN/m² and slope of principal rafter 26.56°.
2. Sketch the component details of a deck type and through type plate girder railway bridge and differentiate between Deck type and through type bridges

Part B

Answer one full question out of the two from each module. (2 × 55 = 110 Marks)

3. (a) A rectangular pressed steel tank is required to store 0.15 million litres of water at a height 15m above ground level. Also design the supporting structures if wind force is 1.5kN/m². 30 Marks
   (b) Draw to suitable scale
      (1) General elevation of tank showing dimensions and arrangement of structural elements including staging. 15 Marks
      (2) Plan showing the arrangement of stays. 10 Marks

   OR

4. (a) Design a steel roof truss for the following data. Span = 12 m, spacing 4.5m, roofing GI sheets, wind pressure as per IS 875. Place Cochin Kerala. 30 Marks
   (b) Prepare drawing of the truss designed with details of joint at ridge and at the base. 25 Marks
5. (a) Design a lined self supporting chimney of height 75m and diameter 3.5m.  
Wind data  

<table>
<thead>
<tr>
<th>Height</th>
<th>0 -30m</th>
<th>30 -50 m</th>
<th>50 – 75m</th>
</tr>
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<tbody>
<tr>
<td>Design wind speed</td>
<td>40m/s</td>
<td>41m/s</td>
<td>42m/s</td>
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30 Marks  
(b) Draw to suitable scale  
(i) The elevation  
(ii) Section showing the details of plate connections of the above designed stack.  
10 Marks  

OR  

6. Design a plate girder for a deck type railway bridge of span 22m for a modified broad gauge loading. 30 Marks  

(b) Draw plan, elevation and central section of the plate girder.  
25 Marks