Duration 03 Hr   Marks 80

N.B.   1) Question No.1 is compulsory.
       2) Answer any three out of five question.
       3) Assume suitable data wherever necessary and state them clearly.
       4) Figure to the right indicate full marks.

Q.1
   a) Explain water hammer in pipeline.   **05**
   b) Explain low point drain of steam piping.   **05**
   c) Name and draw figures of various types of piping supports. **(Any Five)**   **05**
   d) Explain desirable properties for selecting piping material.   **05**

Q.2a) Explain various types of expansion joint with suitable neat diagram   **10**
   b) Write short notes on ASME B 31.3.   **10**

Q.3a) Explain with figure IRON –CARBIDE phase diagram.   **10**
   b) What kind of stresses occur in piping system? What induces these stresses? Are they   **10**
      calculated?

Q.4a) Discuss the important factors in the selection of material of construction of pipes.   **10**
      Explain with examples.
   b) Name various types of valves with their application .Explain with neat diagram the   **10**
      construction, working and application of Globe valve.

Q5 a) A crude oil of kinematic viscosity 0.4 stoke is flowing through a pipe of diameter   **10**
       300 mm at a rate of 300 litres/sec. Find the head lost due to friction for a length of
       50 m of the pipe.
   b) A 8"NB Carbon steel pipeline is used to convey steam at a design pressure of 22   **10**
       kg/cm2(g). Determine the minimum thickness of pipe needed for the system based
       on the following :—
                     Allowable Stress = 1500 kg/cm2
                     Outer diameter = 219 mm
                     Corrosion Allowance = 15 mm
                     Weld factor = 0.4
                     Allowable tolerance = 12.5%
                     Joint efficiency = 0.90

Q6 a) Explain Non Destructive Test for finding out defects in welding.   **10**
   b) Write short notes on **(any two)**   **10**
          i)   Plot Plan
          ii) Steam Traps
          iii) Insulation and Paining in pipeline

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