16172

4 Hours / 100 Marks   Seat No.

Instructions :   (1)   All Questions are *compulsory.*

(2)   Illustrate your answers with neat sketches wherever necessary.

(3)   Figures to the right indicate full marks.

(4)   Assume suitable data, if necessary.

(5)   Use of Non-programmable Electronic Pocket Calculator is permissible.

(6)   Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1.   **Attempt any FIVE :**   **20**

(a)   Draw single line and double line symbols for

(i)   Gate valve

(ii)   Globe valve

(b)   Draw symbols for

(i)   Single U-butt

(ii)   Plug weld

(iii)   Edge weld

(iv)   Fillet weld

(c)   Draw bracket support for vertical vessels.

(d)   Draw hanger type pipe support.

(e)   Draw ISNL 150, b = 80, t = 10. Give suitable corner radius.

(f)   Draw conventional representation for following rivetted joints :

(i)   Snap head

(ii)   Flat head

(iii)   Conical head

(iv)   Pan head

(g)   Prepare a sketch of Pratt truss & name parts.

(h)   Draw single line & double line symbols for.

(i)   Plug

(ii)   Reducing coupling

2. Attempt any TWO : 16

(a) A square prism with a base side of 40 mm and a height of 100 mm is kept on H.P. on its base with a side of base inclined at 30° to V.P. It is completely penetrated by a cylinder having a 40 mm diameter and 100 mm length whose axis is parallel to both reference planes and bisects the axis of prism. Draw projections showing curves of intersections.

(b) A vertical square prism (side of base 50 mm) has its vertical faces equally inclined to V.P. It is penetrated by another square prism (side of base 50 mm), so that, its axis is parallel to H.P. and V.P. and is 12 mm in front of the axis of the vertical prism. The faces of penetrating prism are equally inclined to H.P. Draw projections of prism, showing curves of intersection. Take suitable heights of prisms.

(c) Draw a fink truss made by angle section having span 18 m and height 5 m . Represent rivetted joints and welded joints symbolically.

3. Attempt any TWO : 16

(a) A vertical cylinder if 75 mm diameter is penetrated by another cylinder of 50 mm diameter, the axis of which is parallel to both the H.P. and V.P. The two axes are 9 mm apart. Draw the projections of two cylinders showing curves of intersection. Assume suitable axis lengths for both the cylinders.

(b) Show by free hand proportionate sketches (T.V. and F.V.) of beam to column connections for I-section for ISMB 300 and ISLB 200 connection is made on web by rivetting.

(c) Fig. No. 1 shows single line orthographic layout of piping system. Convert it into double line orthographic layout views of the piping system. Also prepare bill of materials.
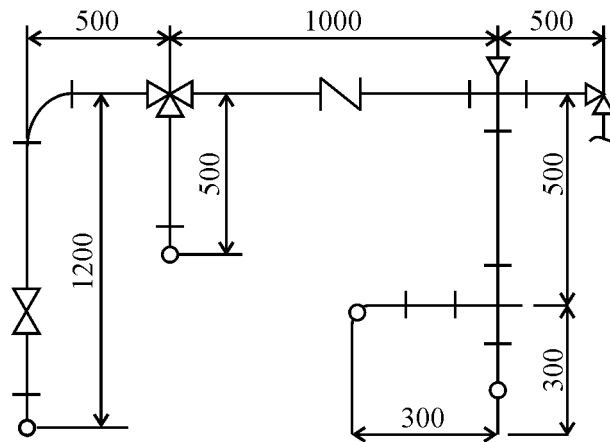

Fig. 1

4. **Attempt any TWO :** 16

(a) Draw saddle support and roller support used for pipes.

(b) Horizontal vessel 2 m diameter and 9 m length is erected at a height of 6 m from the ground level. Prepare erection drawing in two views. Assume suitable cross sections for supporting members.

(c) Sketch column support and skirt support & show detailing.

5. **Attempt any TWO :** 16

(a) Draw Howe truss for 5 m span and height 1.5 m. Also show gusset plate, rafter, strut, main tie and sling.

(b) (i) A welded joint symbol is shown as per B.I.S. Draw dimensional cross section view of joint.
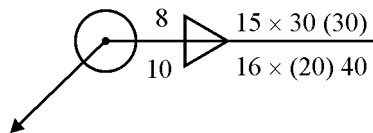
(ii) Draw conventional symbols for rivet fitted in the workshop with countersunk on one side only.

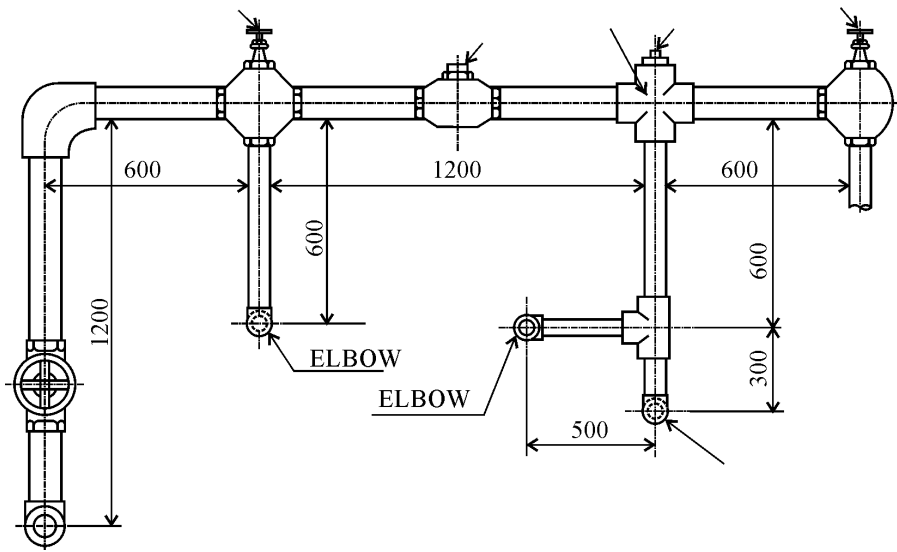(c) Fig. No. 2 shows a double line orthographic view of piping layout convert it into single line orthographic layout.

Fig. 2

6. **Attempt any TWO :** 16

(a) A vertical tank of 1.5 m diameter and 6 m high is elevated at a height of 5 m from the ground to centre of tank. Prepare erection drawing by wing bracket support (4 Nos.) of I – section.

(b) (i) A beam of ISMB 200 is to be connected to a column of ISMB 300, at the flange. Show the joints in two views with proportionate sketch.

(ii) Prepare structural drawing of column to column connection as per BIS.

(c) A letter 'H' is to be prepared by 3 pieces of 10 mm cross section. The height and width of letter is 70 and 50. This letter is to be attached on a plate of 8 mm thickness. Prepare welding drawing as per BIS.

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