

**21718**

**4 Hours / 100 Marks**

Seat No.

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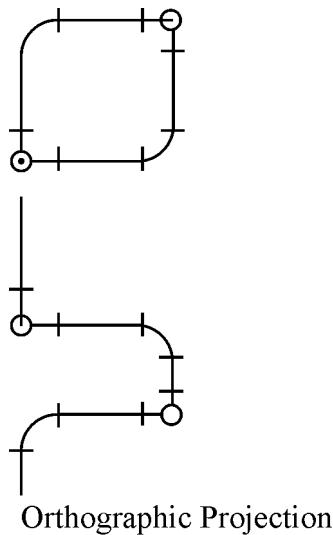
- Instructions :**
- (1) All Questions are *compulsory*.
  - (2) Illustrate your answers with neat sketches wherever necessary.
  - (3) Figures to the right indicate full marks.
  - (4) Assume suitable data, if necessary.
  - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (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 orthographic symbols for flanged and screw pipe fittings of 90° elbow & 45° elbow.
- (b) Draw the following pipe supports :  
Bracket supported anchor
- (c) Figure No. 1 shows orthographic layout of a piping system. Draw the single line isometric view.



**Fig. 1**

- (d) Draw conventional representation of following welded joint :
  - (i) Tee
  - (ii) Edge joint
- (e) Draw conventional symbols for following riveted joints :
  - (i) Conical head
  - (ii) Snap head
- (f) Draw conventional symbols of
  - (i) Flat single V-butt weld
  - (ii) Concave fillet weld
- (g) Draw the single line orthographic view of
  - (i) Globe valve
  - (ii) Cross valve

**2. Attempt any TWO :****16**

- (a) A square prism of 40 mm side of base stands vertically with its rectangular faces equally inclined to V.P. It is penetrated by a horizontal triangular prism of 30 mm side of base, such that axes of two prisms bisect each other at right angles. Draw the projections of the solid showing lines of intersection. Assume that rectangular face of triangular prism is parallel to V.P.
- (b) A cone base diameter 70 mm and axis height 65 mm is kept on the H.P. on its base. It is penetrated by a horizontal cylinder of 35 mm diameter with its axis parallel to V.P. and intersecting the axis of the cone at a distance of 20 mm above the base of the cone. Draw the projections of solids showing curves of intersection.
- (c) A vertical square prism of 50 mm side and axis 70 mm long has all the faces equally inclined to V.P. It has a horizontal hole of 50 mm diameter. The axis of the hole is parallel to both H.P. and V.P. It is 6 mm away from the axis of prism. Draw the projections of prism showing curves of intersection.

**3. Attempt any TWO :****16**

- (a) A vertical tank of 2 m diameters and 8 m high is elevated at a height of 6 m from the ground to centre of the tank. Prepare erection drawing by using bracket support (4 Nos.) of I-section.
- (b) Draw the fink truss made by an angle section having span 20 m and height 5 m. Represent riveted joints and welded joints symbolically.
- (c) Show by neat proportionate sketches when a column ISLB 200 is connected to similar column. Show two views.

4. Attempt any TWO :

- (a) A beam ISMB 200 is to be connected to a column of ISMB 300, at the flange. Show the joints in two views with freehand proportionate sketch.
- (b) (i) A letter 'H' is to be prepared from three steel pieces of 12 mm square cross section. This 'H' is to be welded on a plate of 8 mm thick. Prepare welding drawing showing appropriate symbols. Size of letter H is 80 mm in height and 60 mm in width.
- (ii) A welded joint symbol is shown as per B.I.S., draw dimensional cross-section view of the joint.

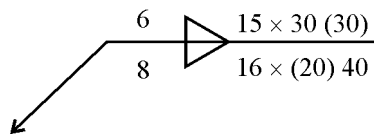


Fig. 2

- (c) Figure No. 3 shows a double line orthographic view of a piping layout. Convert it into single line orthographic layout.

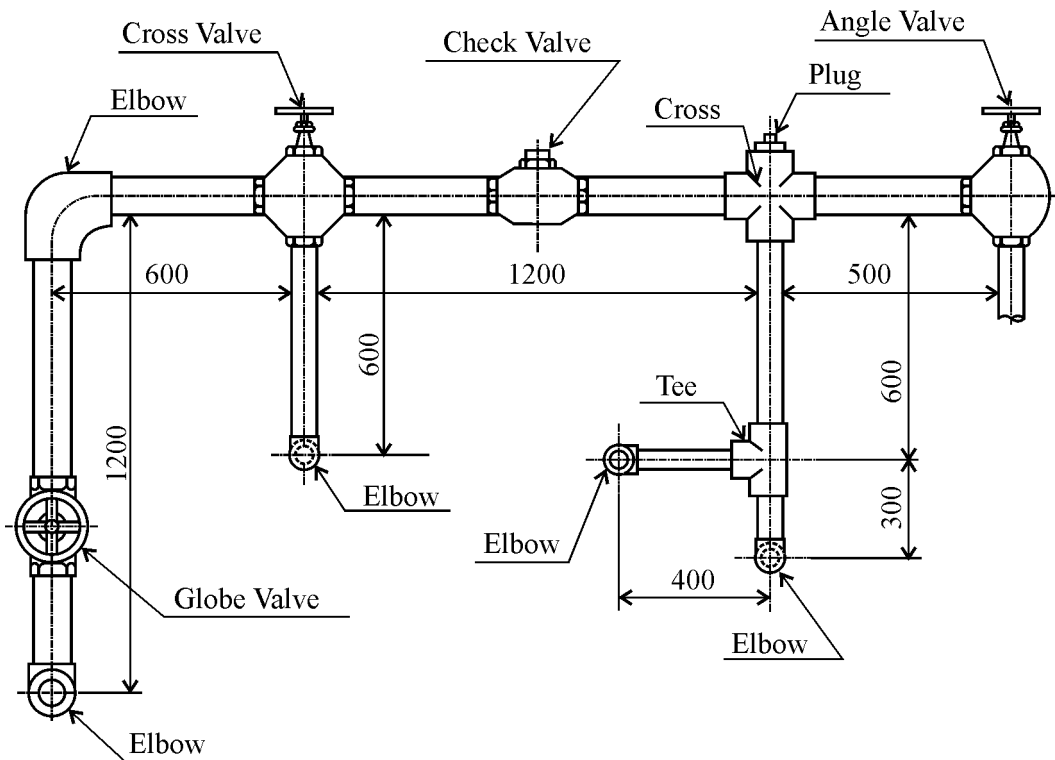


Fig. 3

**5. Attempt any TWO :****16**

- (a) A double riveted double strap zigzag butt joint is made for 6 mm thick plates, strap thickness is 4 mm. Hole for rivets are drilled at site and rivets are also fitted at site. Prepare the symbolic drawing for the joint.
- (b) Draw neat sketch of beam to beam connection with appropriate dimension in any two view.
- (c) Draw neat sketch of :
  - (i) Howe truss
  - (ii) Pratt truss, showing main tie principle rafter & span.

**6. Attempt any FOUR :****16**

- (a) Write the nature of Intersection in the following cases :
    - (i) Prism to cylinder
    - (ii) Cylinder to coneAlso state the areas of application for penetration of solids.
  - (b) Draw the following pipe support :
    - (i) Saddle support (plate type)
    - (ii) Hanger support
  - (c) Prepare beam to beam connection structural drawing as per BIS with freehand sketch. (Only one view)
  - (d) Referring figure-1. Prepare bill of material.
  - (e) Draw bracket support.
  - (f) Write the application of the following :
    - (i) Howe trusts
    - (ii) Plate girders
    - (iii) Straight skirt support
    - (iv) Plate type saddle support
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