



17328

21415

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 the following pipe supports
 - i) Saddle
 - ii) Bracket supported anchor.
- b) Draw conventional symbols for following riveted joints
 - i) Snap head
 - ii) Flat head.
- c) Draw orthographic views of globe valve.
- d) Draw conventional representation of following types of weld.
 - i) Double bevel butt
 - ii) Spot.
- e) Write the nature of intersection in the following cases, show with sketches :
 - i) Prism to cylinder
 - ii) Prism to prism
- f) Draw a freehand sketch of double r-butt weld with a depth of penetration 10 mm on arrow side and 12 mm on other side with a flush finish on arrow side.

P.T.O.



- g) Figure No. 1 shows a double line orthographic view of a piping layout. Convert it into single line orthographic layout.

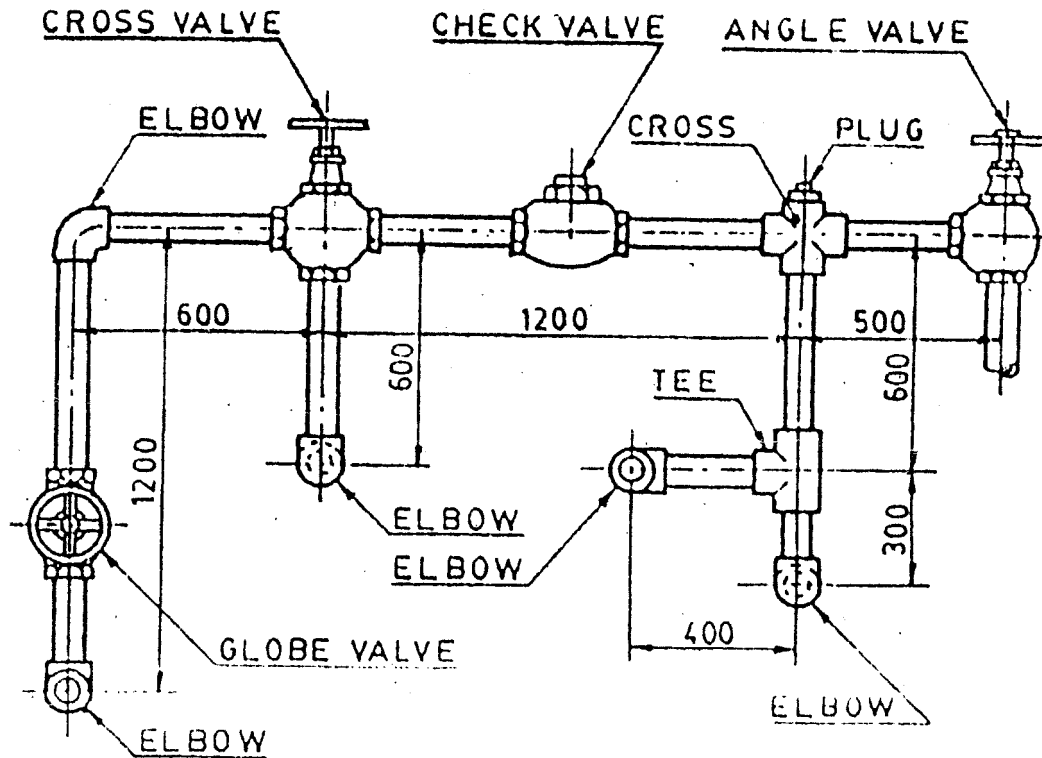


Figure1. Que. 1(g)

2. Attempt **any two** :

16

- A vertical cylinder of 60 mm diameter and 90 mm long is completely penetrated by another cylinder of 40 mm diameter and 90 mm long. The axis of horizontal cylinder is parallel to both H.P. and V.P. and is 5 mm away from the axis of vertical cylinder. Draw the curves of intersection.
- 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.
- A vertical square prism, base 50 mm side has its faces equally inclined to V.P. It is completely penetrated by another square prism base 30 mm side, the axis of which is parallel to both the planes and 6 mm away from the axis of vertical prism. The faces of horizontal prism are also equally inclined to V.P. Draw the projections of the solid showing lines of intersections. Assume suitable length of axis.



MARKS

3. Attempt **any two** :

16

- A vertical tank of 2 m diameters and 8 m high is elevated at a height of 6 m from the ground to center of the tank. Prepare erection drawing by using bracket support (4 Nos.) of I section.
- Draw the fink truss made by angle section having span 18 m and height 5 m. Represent riveted joints and welded joints symbolically.
- i) Draw single line developed view for the piping system shown in Figure 2.

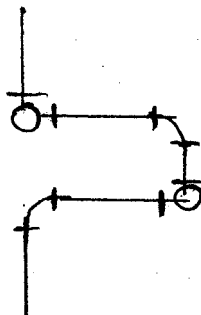
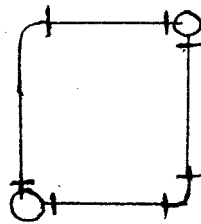


Figure 2 Que. 3 c(i)

- Draw double line orthographic symbols for
 - Check valve
 - Cross valve.

4. Attempt **any four** :

16

- Draw free hand sketch of riveted base gusseted for a column (two views).
- Make a proportionate sketch of plate girder.
- Prepare structural drawing of beam to beam connections as per B.I.S.
- Draw the sketch of
 - Column support
 - Angular skirt support.
- Draw ISNL 150, $b = 80$, $t = 10$. Give suitable corner radius.
- i) List the areas of application for penetration of solids.



- ii) Figure 3 shows side view of two penetrating solids. State the position of both solids with H.P. and V.P.

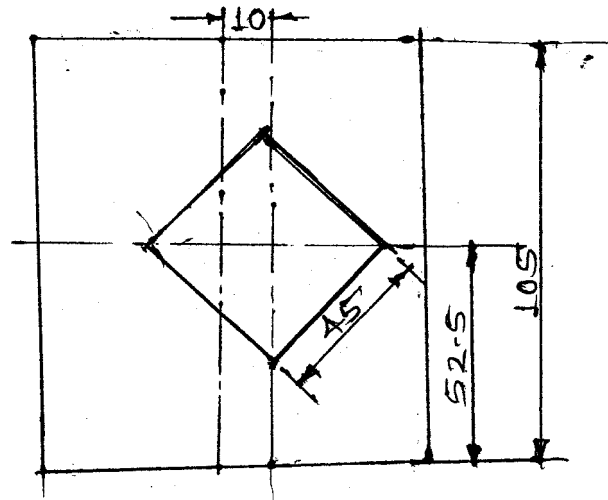


Figure 3 Que. 4 f(ii)

5. Attempt **any two** :

16

- a) i) A beam 15 MB 200 is to be connected to a column of 15 MB 300, at the flange. Show the joints in two views with free hand proportionate sketch.
- ii) Prepare structural drawing of column to column connections as per BIS.
- b) i) Prepare erection drawing for vertical pressure vessels assume suitable data.
- ii) Referring Figure no. 2 prepare bill of material.
- c) i) A double riveted 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.
- ii) Two shafts of equal diameter, welded end to end by a square butt weld with convex contour on site. Prepare symbolic drawing of welding.

6. Attempt **any two** :

16

- a) i) Draw single line orthographic symbols for flanged joints.
- ii) Draw the following pipe supports :
 - i) Roller
 - ii) Hanger.
- b) i) A T-section formed by welding two MS. plates by fillet weld of 4 mm leg length. The welding is continuous on arrow side and regular intermittent on the other side, starting with a welded length of 30 mm. The total number of weld elements are three, followed by unwelded length of 25 mm. Prepare of unwelded length of 25 mm. prepare a free hand sketch.
- ii) Draw conventional symbols for following riveted joints :
 - i) Conical head
 - ii) Rounded counter sunk head.
- c) i) Write the application of flink truss, plate girders, plate type saddle supports, straight skirt support.
- ii) Prepare erection drawing of beam to column connection, use suitable dimensions.