15116

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.***

Marks

1. Attempt **any five** of the following : **(5×4=20)**

a) Draw the single line orthographic symbols for following :
   i) 90° Elbow   ii) Tee
   iii) Union   iv) Reducer

b) Draw the following welded joints
   i) Lap joint
   ii) Edge joint

c) Draw the double line orthographic view of check valve.

d) Draw the symbols for the following :
   i) Spot weld   ii) Plug weld

e) Draw ISMT 150 section

   H = 150, tw = 10, tf = 8, b = 140

f) Draw bracket support for vertical vessels.

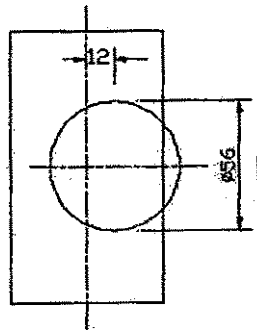g) Fig. No. 1 shows side view of two penetrating solids. State the position of both solids with H.P and V.P.

Fig. No. 1

2. Attempt **any two** of the following : **(8×2=16)**

   a) A vertical cylinder of 70 mm diameter is penetrated by another cylinder of 50 mm diameter. The axis of the penetrating cylinder is parallel to both H.P. and V.P. and is 8 mm away from the axis of the vertical cylinder. Draw its projections showing curves of intersection.

   b) Draw single line developed view of the piping system shown in Fig. No. 2
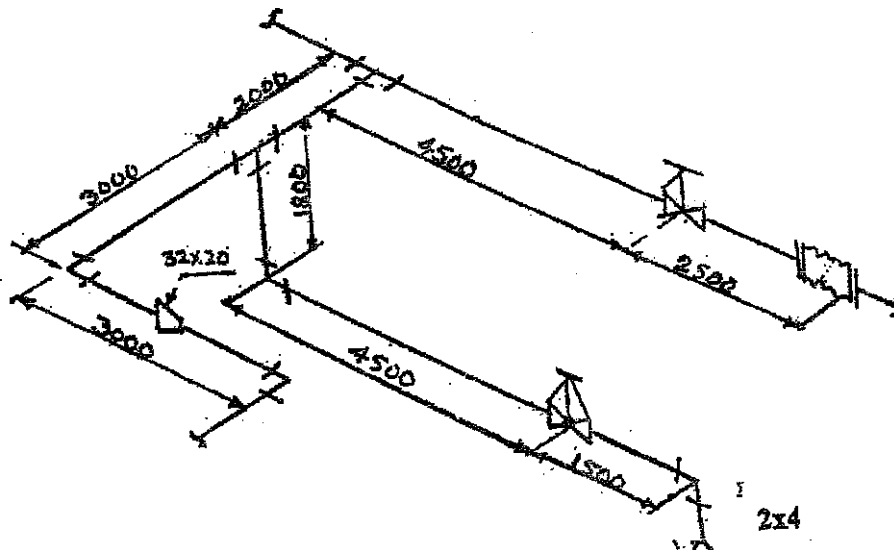

Fig. No. 2

   c) A vertical vessel 10 m height and 4 m diameter is erected at a height of 16 m from the ground. Prepare erection drawing in two views. Assume suitable cross-section for structure. Show welding symbols.

3. Attempt **any two** : **(8×2=16)**

   a) A letter 'E' is to be prepared by four parts of 10 mm cross section height and width of letter is 70 mm and 50 mm respectively. This word is welded on plate of 8 mm thickness. Prepare welding in two views showing welding symbols as per BIS.

   b) A beam of ISMC 200 is connected with a column ISMB 350. Connection is made on web of the column. Prepare the drawing in two views.

   c) Draw the prutt truss made by angle section having span 18 m and height 5 m. Represent riveted and welded joint symbolically.

4. Attempt **any two** of the following : **(2×8=16)**

   a) i) A welded joint symbol is shown as per B.I.S. Draw dimensional cross section view of joint.
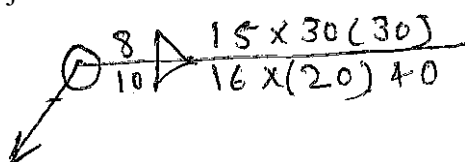
   ii) Draw conventional symbols of (i) Rivet fitted in the workshop with countersunk on one side only. (ii) Rivet fitted on site without countersinking.

b) Horizontal vessel 2 m diameter and 8 m length is erected at a height of 8 m from the ground level. Prepare erection drawing in two views. Assume suitable cross sections for supporting members.

c) Draw the diagram of the following :

   i) Straight skirt support

   ii) Plate and ring type saddle supports.

5. Attempt **any two** of the following :   **(2×16=32)**

   a) A vertical cone, base 100 mm diameter and axis 110 mm long is completely penetrated by a cylinder (base diameter 48 mm) the axis of the cylinder is parallel to both the reference planes, 30 mm above the base of cone and 8 mm in front of the axis of the cone. Draw its projections, showing curves of intersection.   **16**

   b) i) Show by neat proportionate sketches when a column ISLB 200 is connected to similar column.   **8**

       ii) Show by free hand proportionate sketches in two views beam to beam connections for I section for ISMB 500 and ISLB 400 connection is made on web. Use rivets for making the connections.   **8**

   c) i) Convert the single line orthographic piping drawing in the Fig. No. 3 into double line orthographic piping joint.   **8**
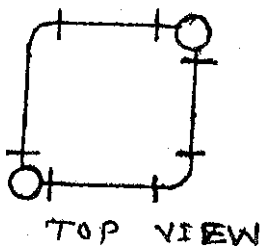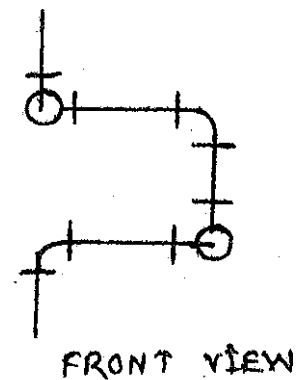   (Assume suitable data)

FRONT VIEW

TOP VIEW

Fig. No. 3

ii) Fig. No. 4 shows a double line orthographic view of a piping layout. Convert it into single line orthographic layout. **8**

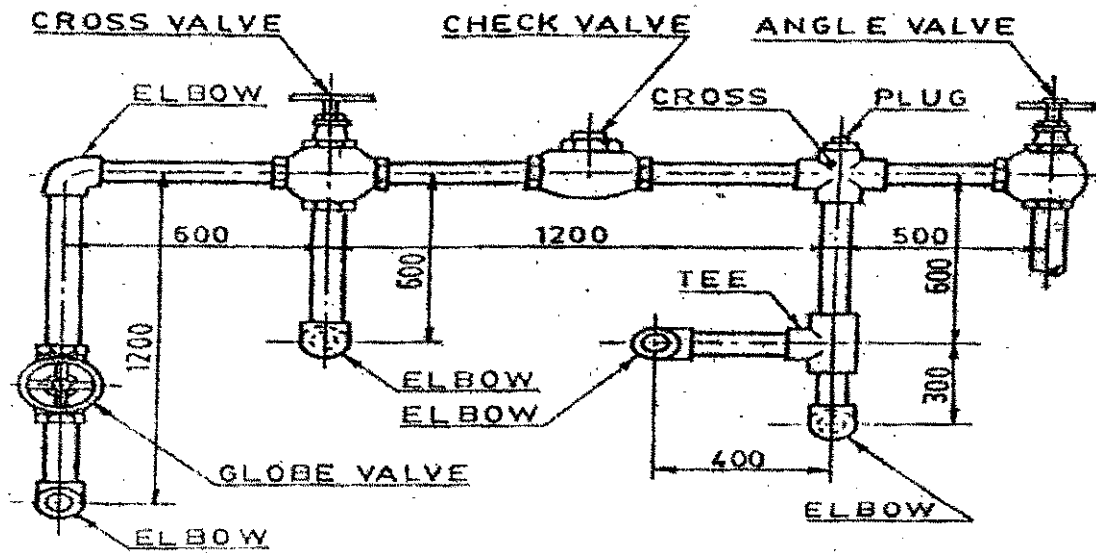CROSS VALVE   CHECK VALVE   ANGLE VALVE

ELBOW   CROSS   PLUG

600   1200   500

600   600

TEE

300

ELBOW

ELBOW   400

ELBOW   ELBOW

1200   GLOBE VALVE

ELBOW

Fig. No. 4