

DIRECTORATE OF STEAM BOILERS
(MAHARASHTRA STATE)

Examination for certificate of proficiency as a Boiler Operation Engineer
(Under the Boiler Operation Rules, 2021)

Engineering Drawing

26th February 2023

(TIME : 10-00 A.M. TO 1-00 P.M.)

(Max. Marks—100)

Instructions to Candidates.—

- (1) Attempt any *Five* questions.
- (2) All questions carries equal *Marks*.
- (3) Figures to the right indicate full *Marks*.
- (4) Assume suitably missing data if any.

	Marks
1. (a) Draw a schematic drawing of a demineralizer plant. Indicate the part names.	5
(b) Draw the schematic free-hand sketches of the following :—	10
(i) Welding neck raised face flange	
(ii) Steam pipe supports (any <i>two</i> types)	
(iii) Gag screw to position on a safety valve	
(iv) Boiler water sample cooler. Name the parts	
(v) Hexagonal-headed nut and bolt.	
(c) Draw a neat and proportionate sketch of reflex type boiler water level gauge glass assembly. Name the internal parts.	5
2. Figure No. 1 is showing a pictorial view of an object. Draw the following views :—	
(i) Sectional front view, section PQ	5
(ii) Top view	5
(iii) Side view from the left	5
(iv) Indicate all essential dimensions.	5
The arrow indicates the direction to obtain a view from the front.	
3. (a) Draw a neat and proportionate free-hand sketch of a spring-loaded safety valve and name the internal parts.	10
(b) Draw schematic proportionate free hand sketch of the following :—	10
(i) Boiler feed water pump impeller	
(ii) Boiler feed water pump casing ring	
(iii) Steam pipeline expansion loop (any <i>two</i> types)	
(iv) Equal Tee-socket weld	
(v) Elementary welding symbols of Fillet weld and Single-V butt weld.	

[Turn over

	Marks
4. (a) Fig. No. 2 is showing two views of a plain shaft bearing housing. Make a full-size isometric drawing of the bearing housing. Corner 'A' should be the lowest point in your drawing.	10
(b) Draw a neat and proportionate free-hand sketch of stop valve and indicate all the parts.	10
5. (a) Draw typical arrangement showing steam safety valve discharge piping set up.	5
(b) Draw proportionate sketch of a resistance temperature detector (RTD) and thermowell.	5
(c) Draw proportionate free-hand sketch of drum internal assembly and name the parts.	5
(d) Draw proportionate free-hand sketch of bag-filter dust collection system.	5
6. (a) Draw GA drawing of a typical pressure-reducing valve station. Name all the parts.	5
(b) Draw GA drawing of furnace membrane waterwall tie-bar and backstay arrangement.	5
(c) Draw P&ID for fuel supply systems and safety controls for gas or oil burner. Indicate all parts, controls, and interlocks with standard legends and symbols.	10

OR

Draw typical schematic general arrangement of coal or bagasse-based steam power plant. Indicate all the essential parts.

Fig. No. 1

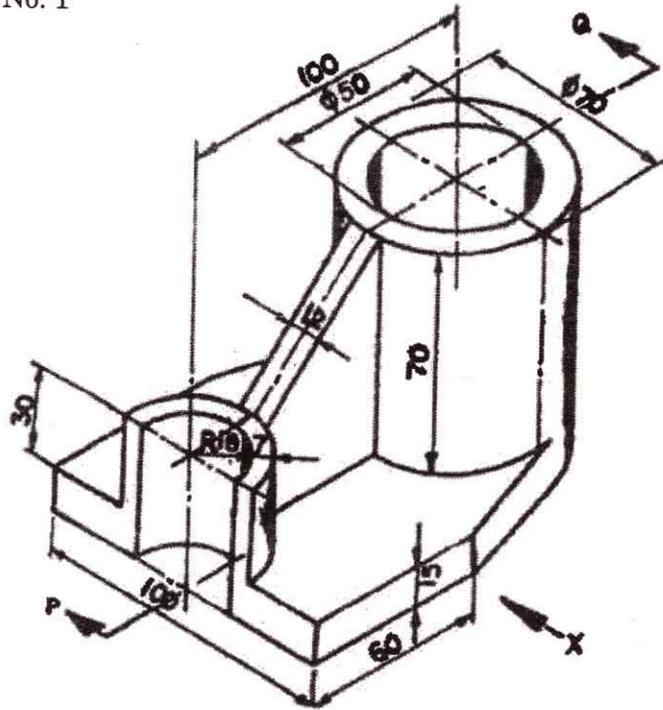


Fig. No. 2

