**30.20 DRAWING AND DESIGN (449)**

**30.20.1 Drawing and Design Paper 1 (449/1)**

1. (a) ***Grid paper*** : used in the initial setting of a drawing by tracing. It saves time.

 ***Tracing paper:*** used for copying or developing existing drawings. It saves time.

 ***(2 ×1=2 marks)***

 (b) ***Engineer***

* Designs structures and components.
* Makes engineering and management decisions.

***Technician***

* Implements management and engineering decisions.
* Draughts and details drawings. ***(2 ×1=2 marks)***

2. (a)

* Identification of needs.
* Definition of problem.
* Search for possible solutions.
* Analysis.
* Decisions and specifications. ***(Any 3 ×*** ½ ***=1*** ½ ***marks)***

(b)

* North point orientation.
* Stop valve.
* Cartridge fuse.
* Power point. ***(Any 4 ×*** ½  ***=2 marks)***

3. (a) ***Soft soldering:*** process of joining thin metal using filler material (solder) that

 melts at a lower temperature than the parent metal.

(b) ***Brazing:*** joining base metals together using a filler rod which has a lower melting point than the metals. The filler rod is made to flow into the joint to provide a strong bond.

(c) ***Welding:*** joining by melting base metals and allowing them to fuse together.

 ***(3 ×1=3 marks)***

4.

**** ***(4 marks)***

5.

 ****

 ***(3 marks)***

6.

 ****

 ***(4 marks)***

7.

 (a)

 ****

 ***(3 marks)***

(b)

 ****

 ***(3 marks)***

8.

 ****

 ***(4 marks)***

9.

 ****

 ***(3*** ½ ***marks)***

10.

 ****

 ***(5 marks)***

11.

 ****

 ***(30 marks)***

12.

 (a)

 ****

 (b)

 ****

 ***(15 marks)***

13.

 ****

 ***(15 marks)***

14.

(a) (b)

****

 ***(15 marks)***