**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

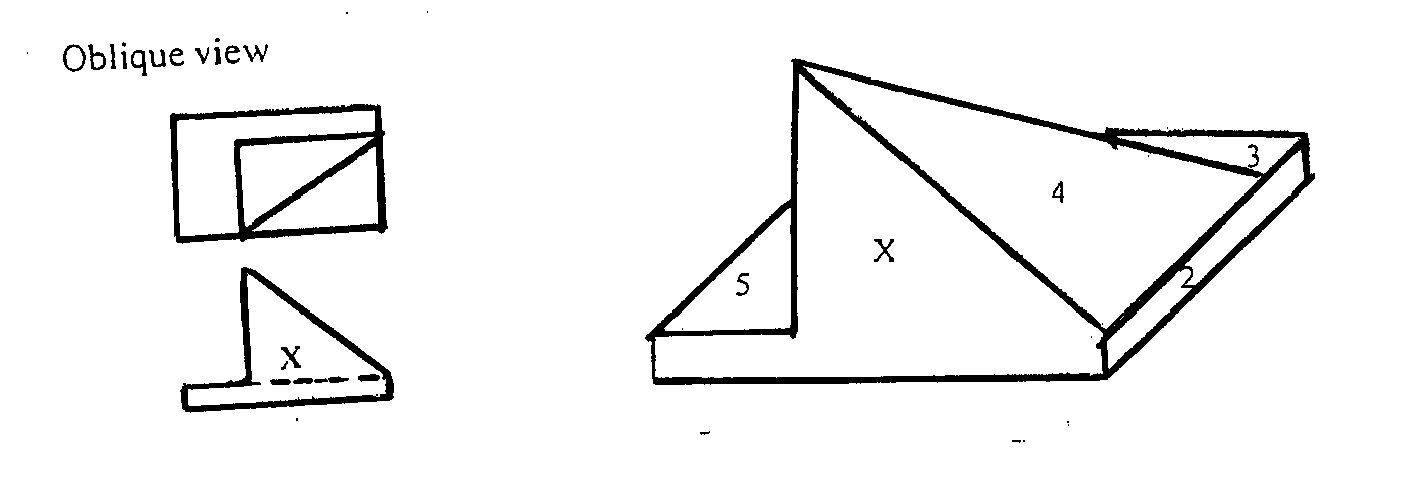
melts at a lower temperature than the parent metal.

(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.

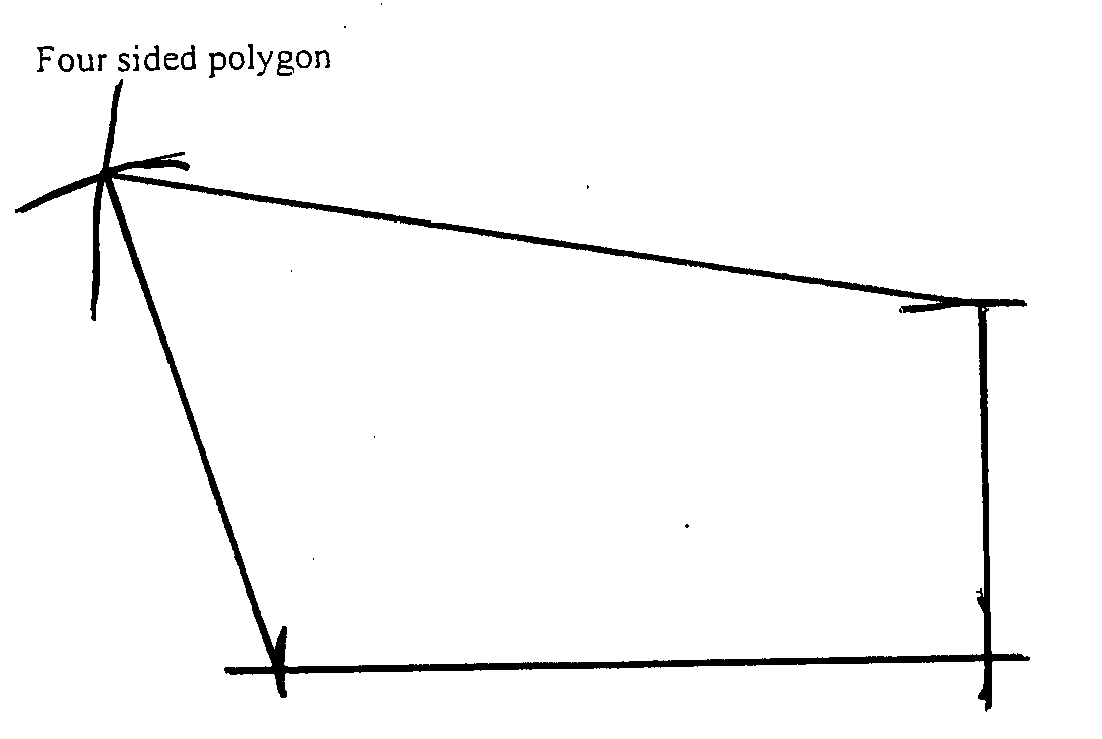
(c) ***Welding:*** joining by melting base metals and allowing them to fuse together.

***(3 ×1=3 marks)***

4.

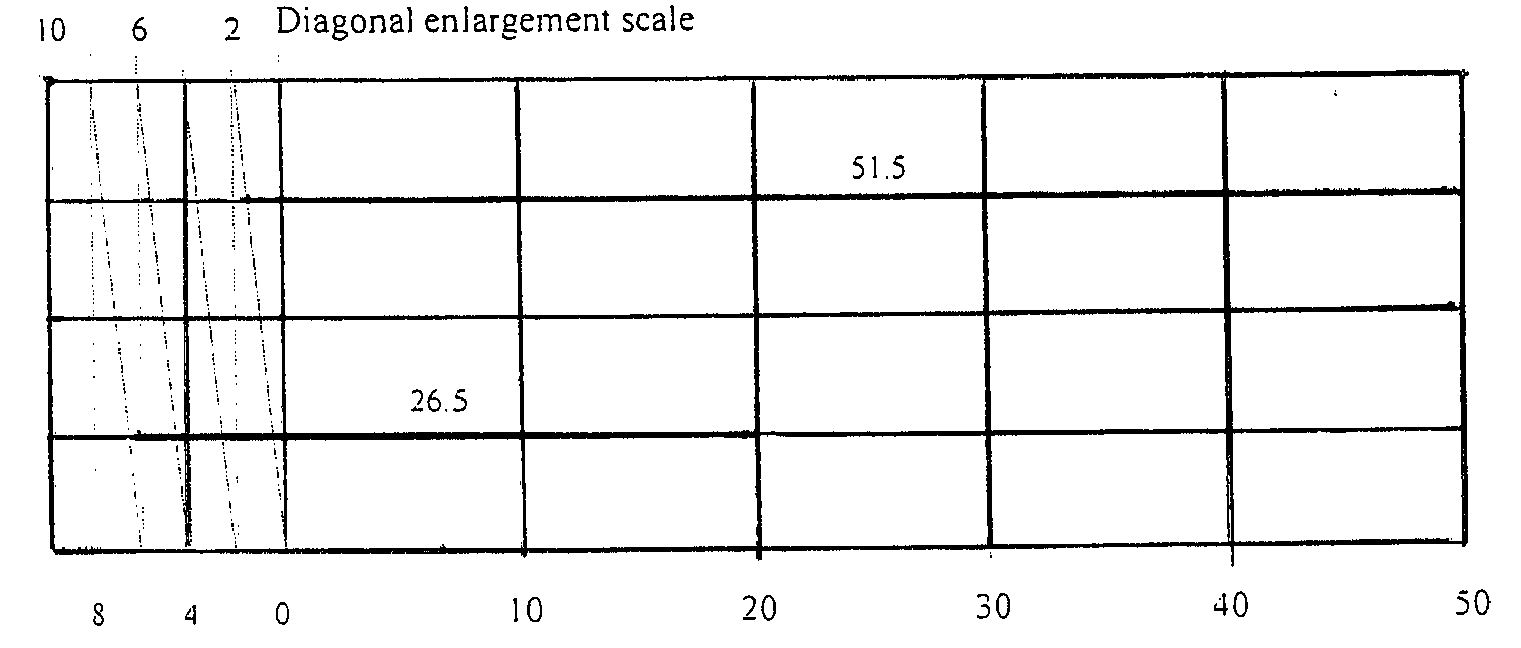
**** ***(4 marks)***

5.

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***(3 marks)***

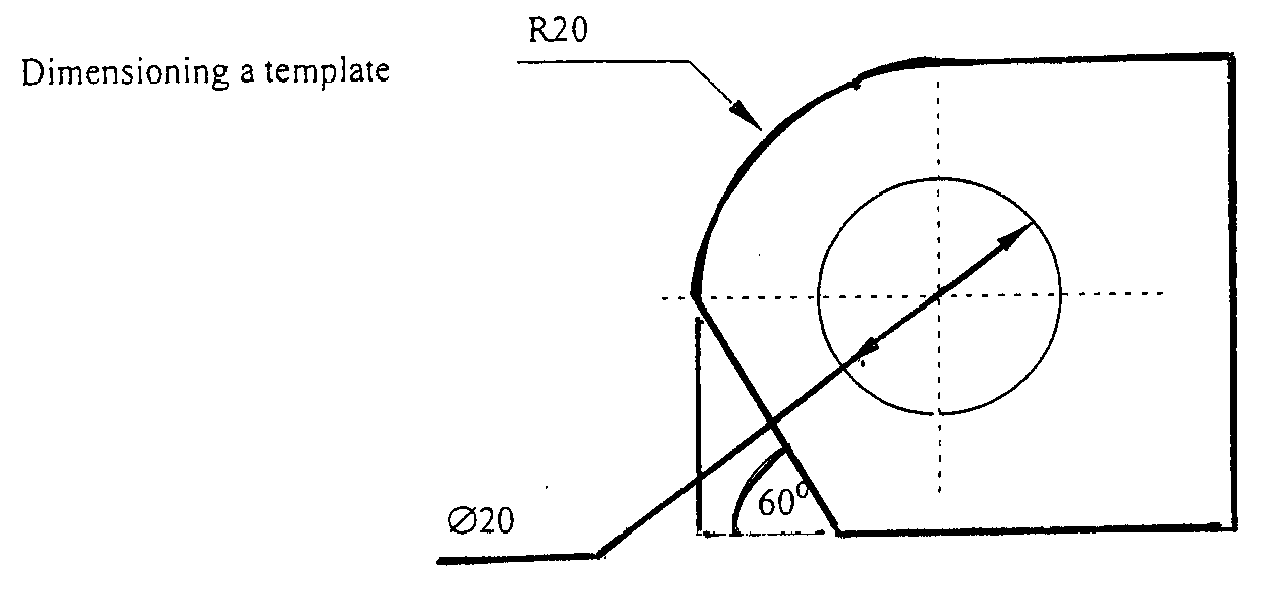
6.

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***(4 marks)***

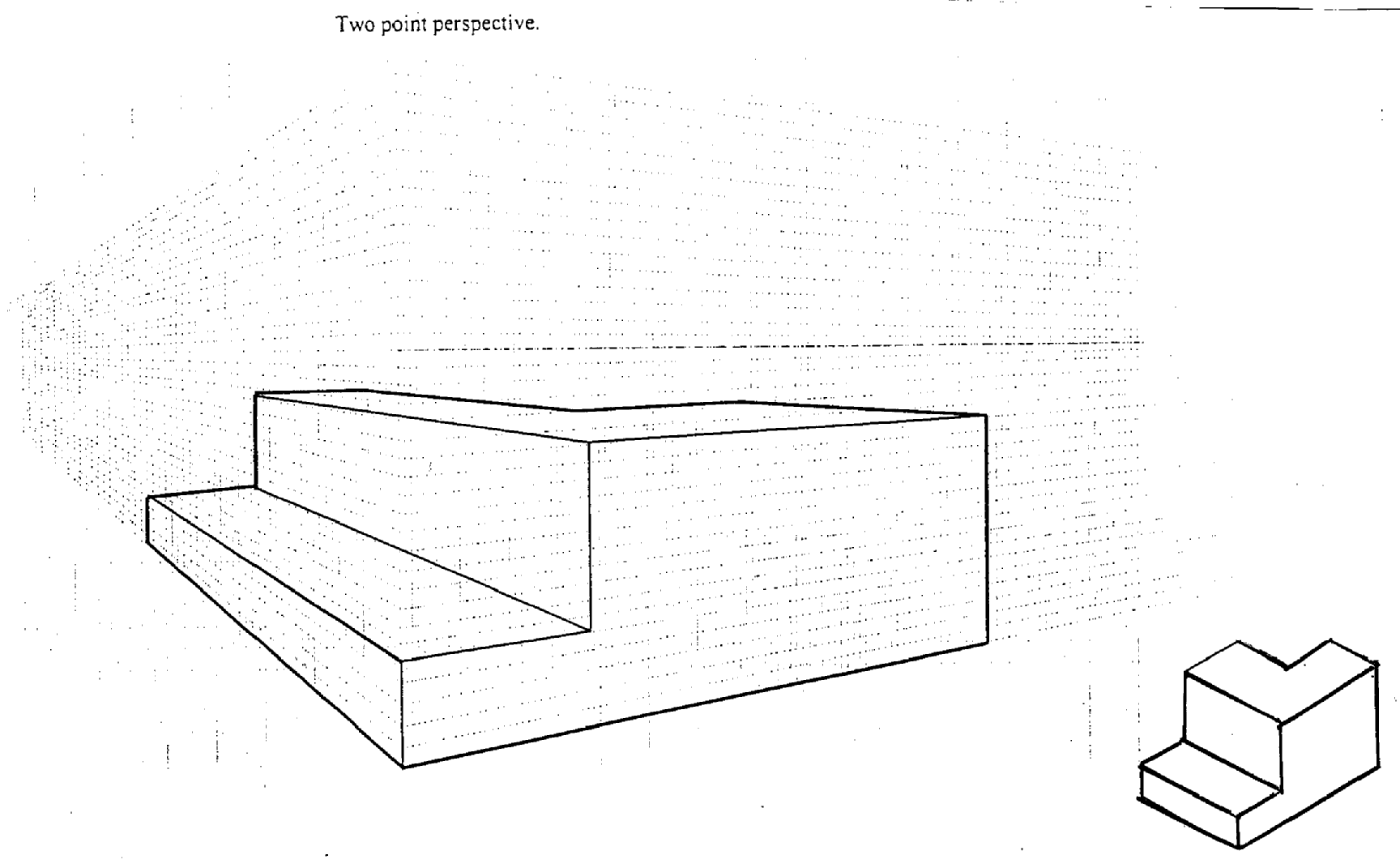
7.

(a)

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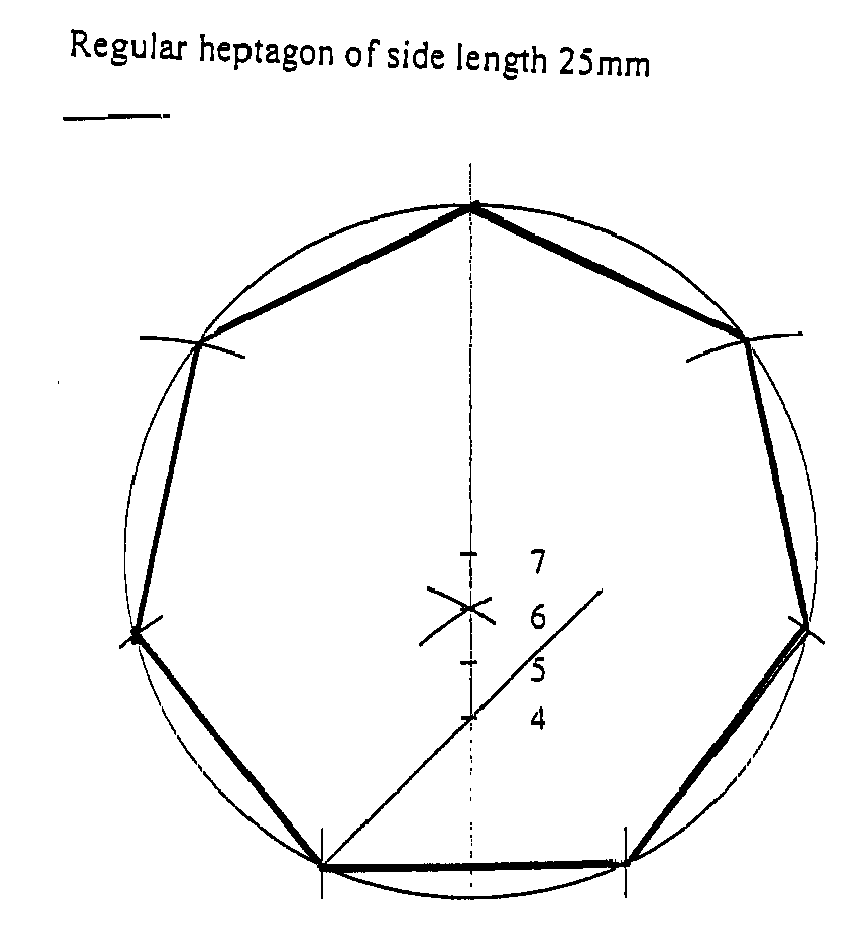
***(3 marks)***

(b)

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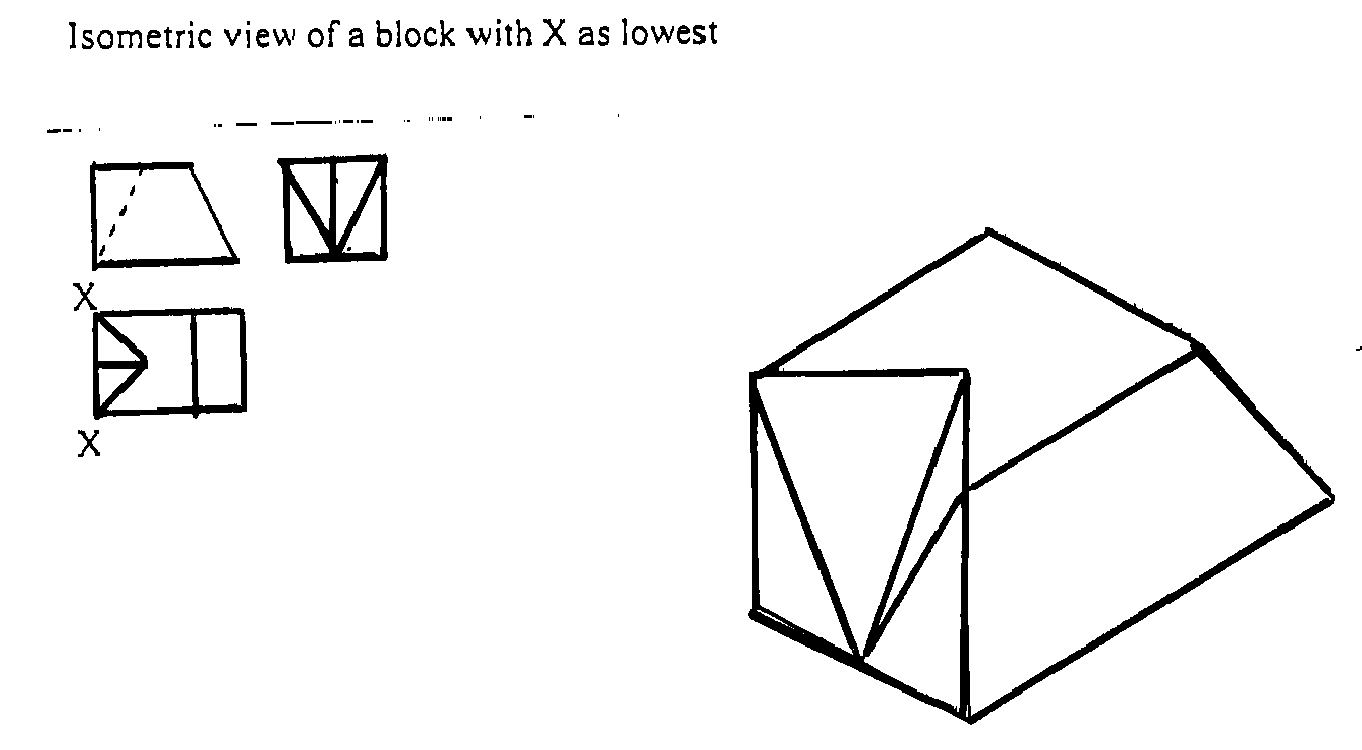
***(3 marks)***

8.

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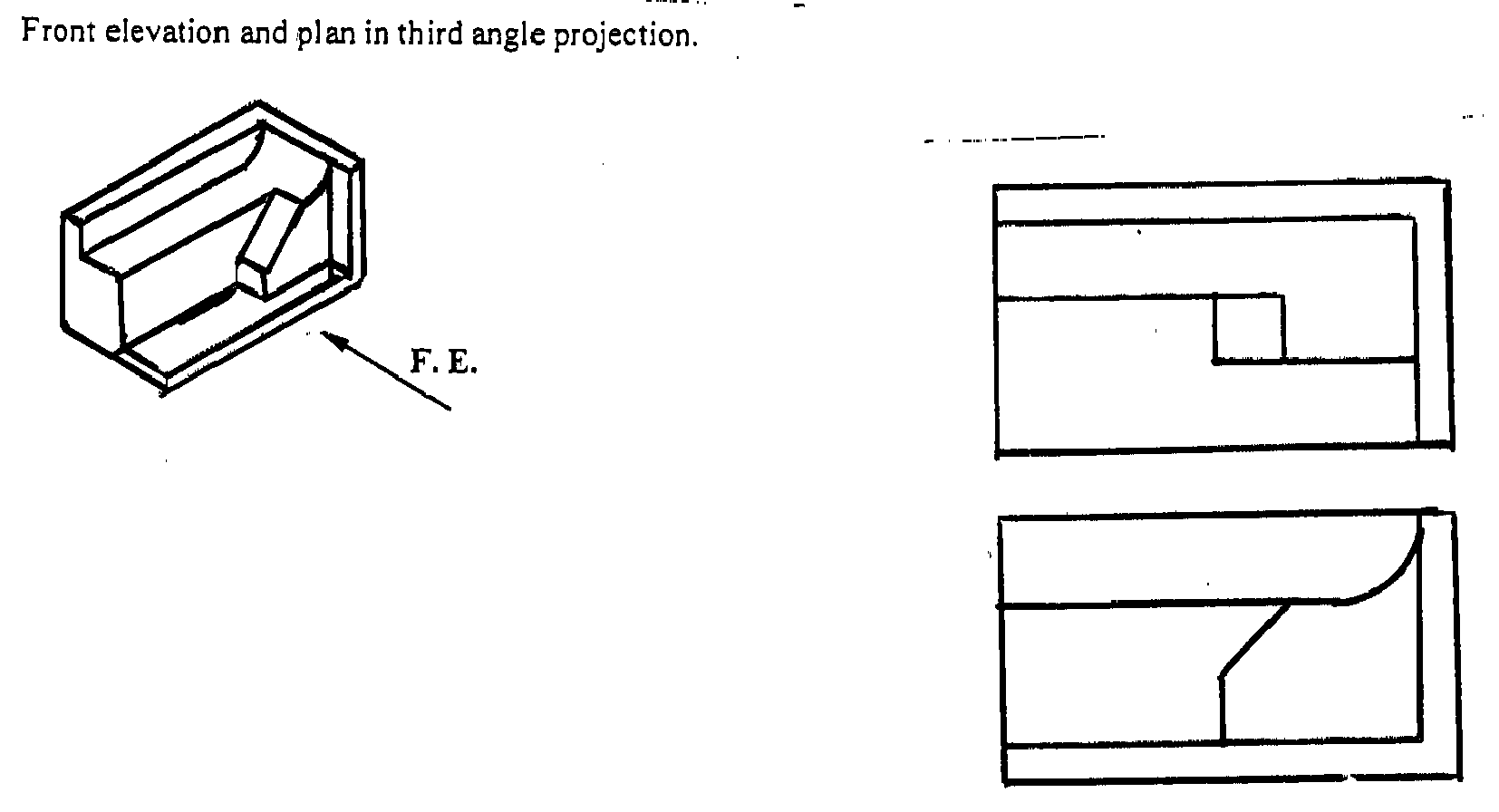
***(4 marks)***

9.

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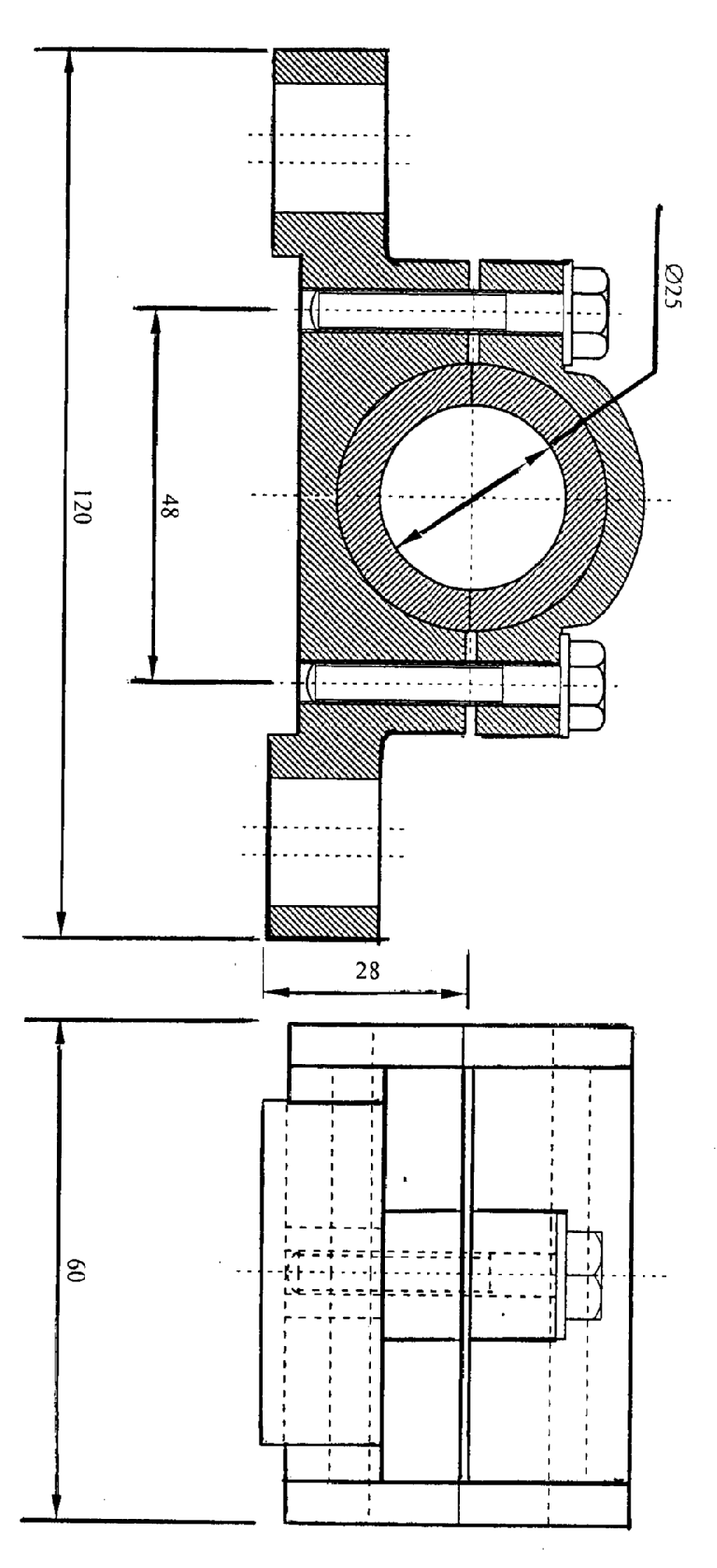
***(3*** ½ ***marks)***

10.

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***(5 marks)***

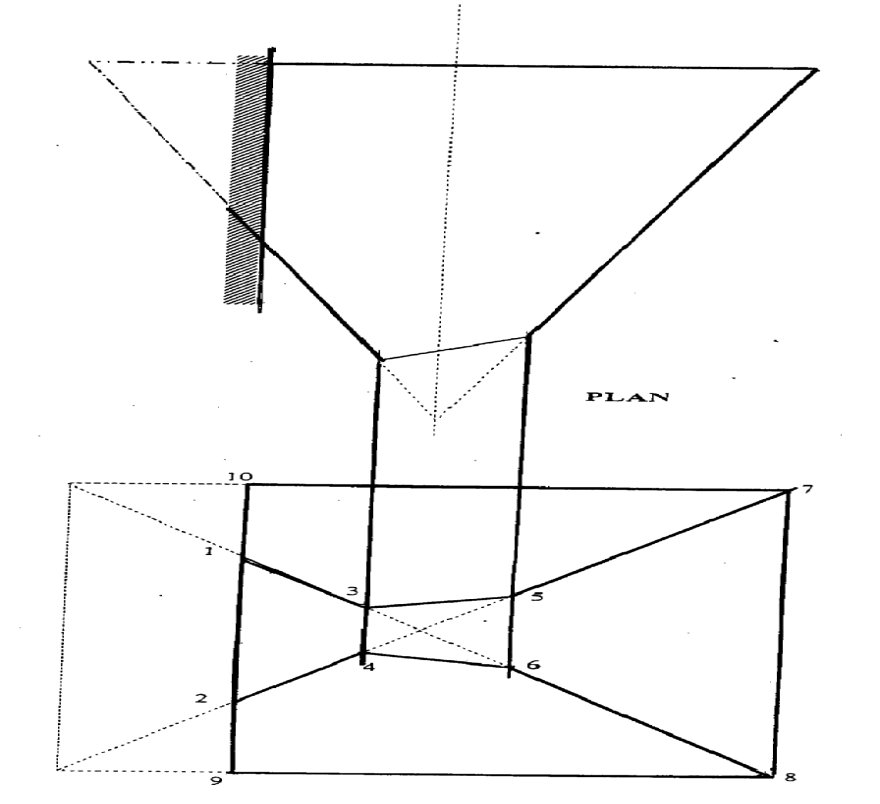
11.

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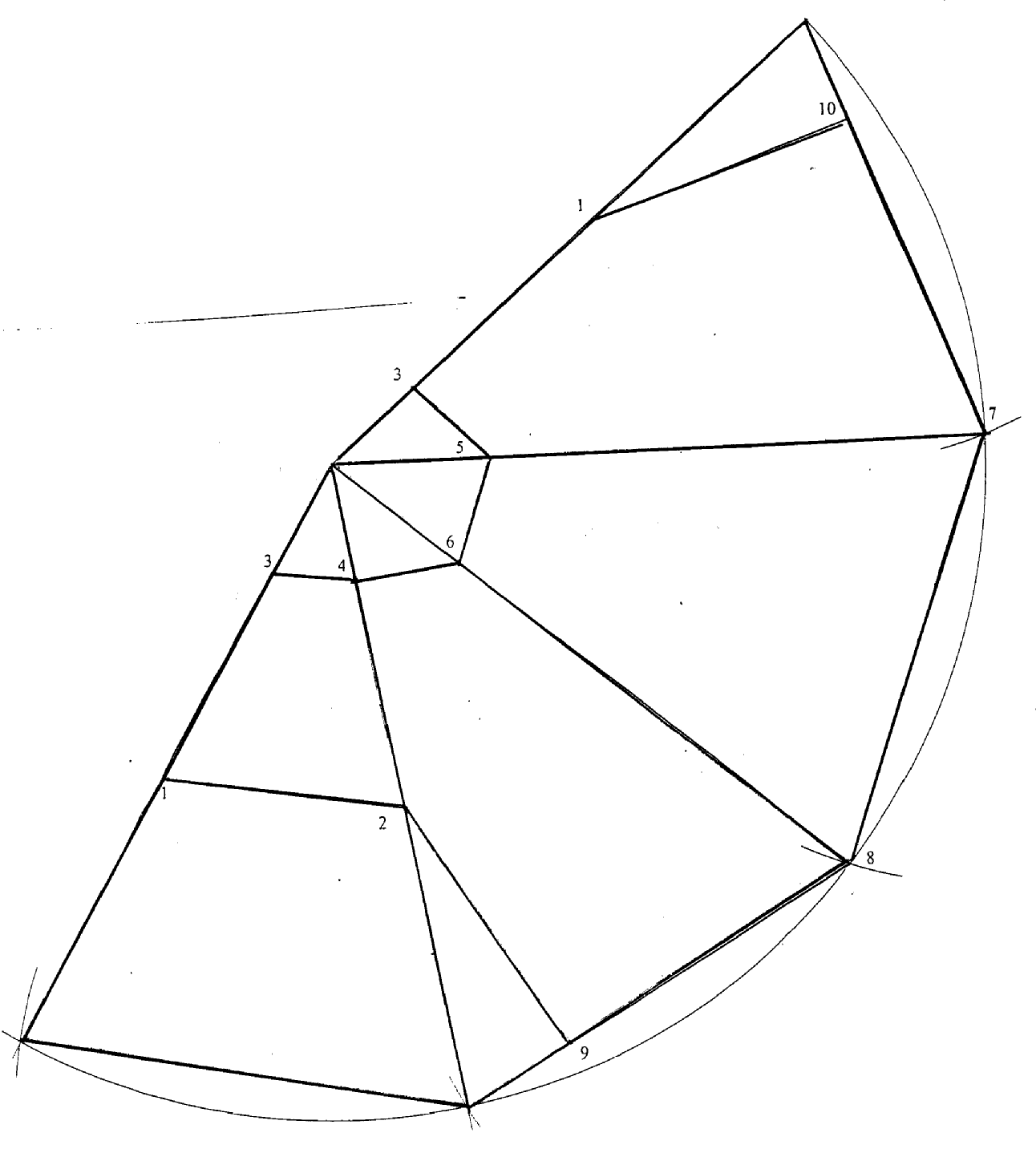
***(30 marks)***

12.

(a)

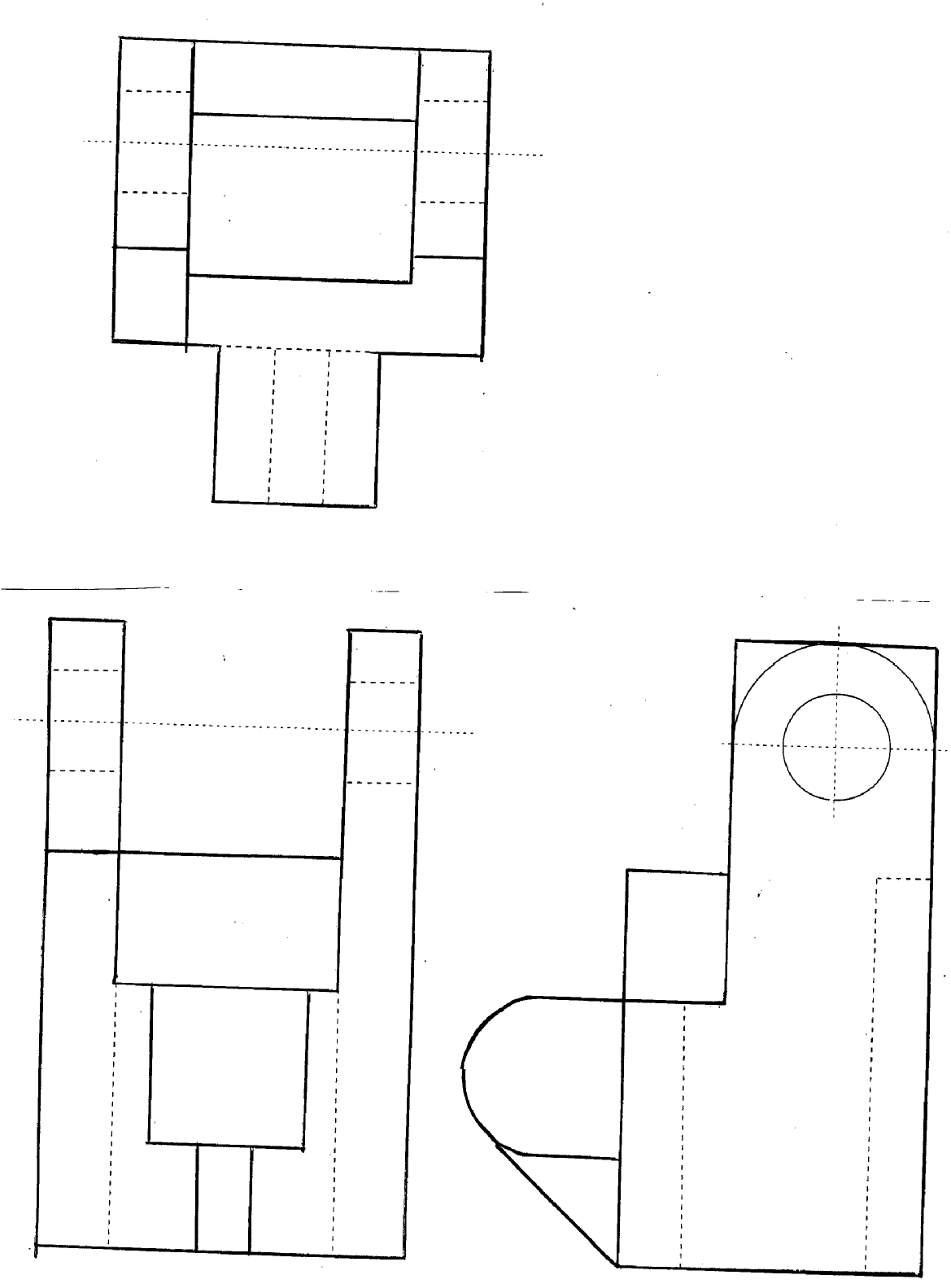
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(b)

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***(15 marks)***

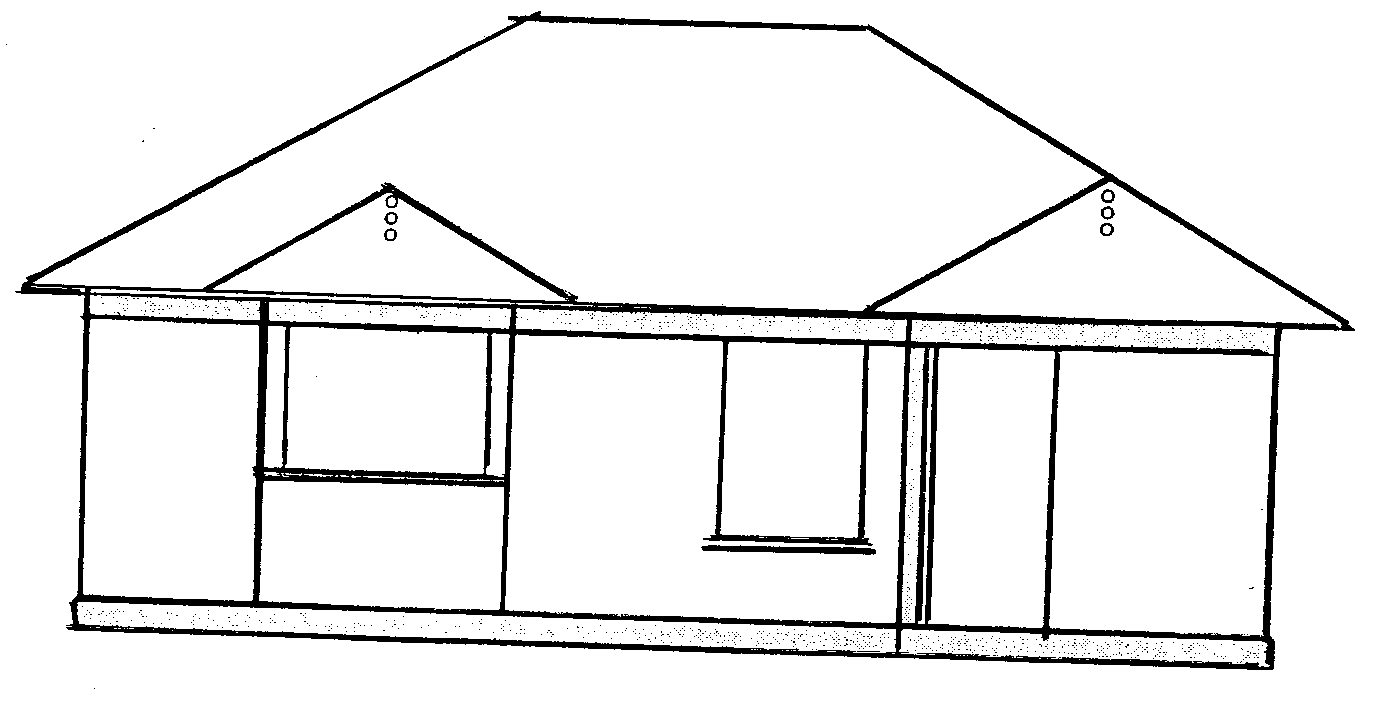
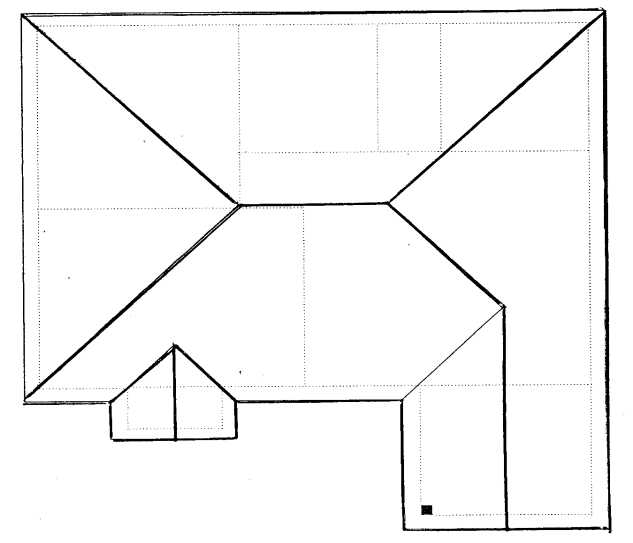
13.

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***(15 marks)***

14.

(a) (b)

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***(15 marks)***