

LAST NAME :

Name :

Group :

**INSA**  
LYON  
FIMI - SCAN 1st

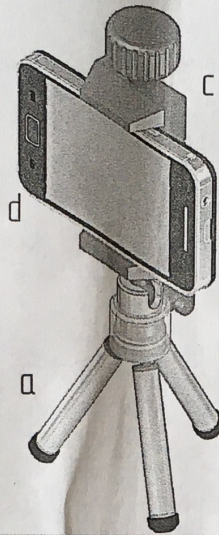
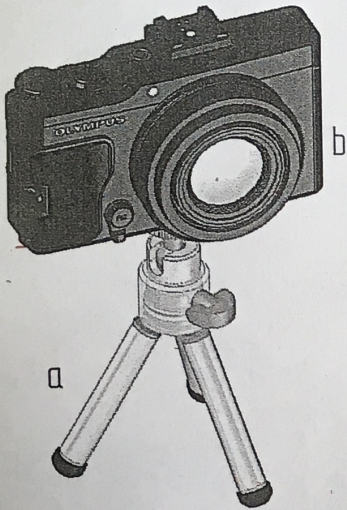
# DESIGN TEST

January 2021 duration : 2h00  
No document allowed  
Standard calculator allowed

Test content :  
2 sheets A3 recto-verso  
All questions are independant

Approximate grading :  
- DR1 ~ 7 points  
- DR2 ~ 2 points  
- DR3 ~ 6 points  
- DR4 ~ 5 points

Grades will account for :  
the quality of each edge  
the care of your drawing.



The camera supporting system consists of :

- a) Mini-Tripod (see DR1 and DR2)
- b) Camera
- c) Smartphone adaptator (see DR3 and DR4)
- d) Smartphone

Q1.1 : Choose the 4 views among a, b, c, d, e, f, g, h and i to fill-in the drawing of the mini-tripod, with front view already given in the bottom-right frame.

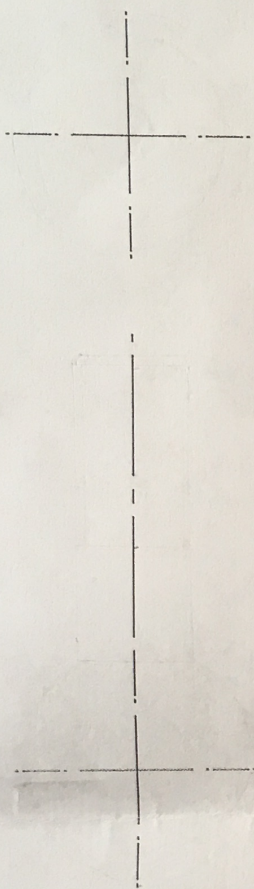
Views for Q1.1:

- a: Top view of the tripod head.
- b: Front view of the tripod head.
- c: Side view of the tripod head.
- d: Top view of the tripod head from a different angle.
- e: Side view of the tripod head from a different angle.
- f: Side view of the tripod head with legs.
- g: Top view of the tripod head with legs.
- h: Side view of the tripod head with legs from a different angle.
- i: Front view of the tripod head with legs.

Q1.1 Answer : [A drawing of the tripod head with four empty boxes for views a, b, c, and d, and a scale bar labeled 'scale 0,4' at the bottom right.]

DR 1/4

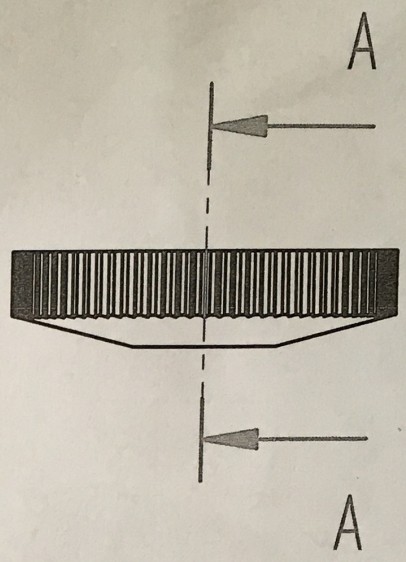
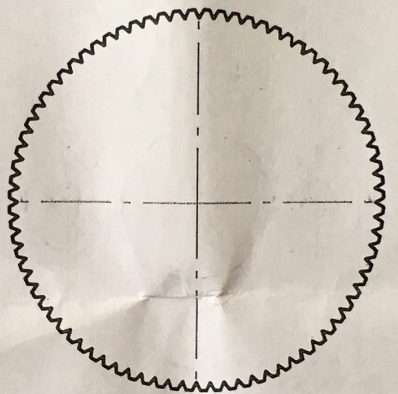
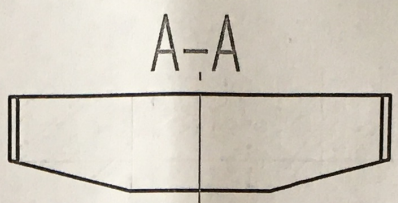
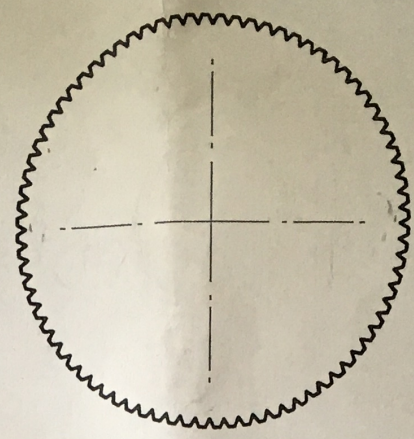
Q1.2 : For the sphere (10), complete the drawing at scale 2:1 with 2 views, *without hidden edges* :  
 - front view (same orientation as cross-section A-A from the assembly drawing in DR2)  
 - bottom view



scale 2:1

Q1.3 : For the top tray (11), fill-in *without hidden edges* :

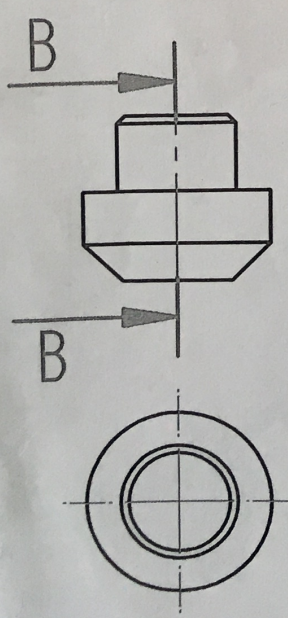
- front view in cross-section A-A
- bottom view
- top view



scale 2:1

The nomenclature for A20 (Leg assembly) is not detailed. One of the part of A20 is a base, whose front and top views are given below.

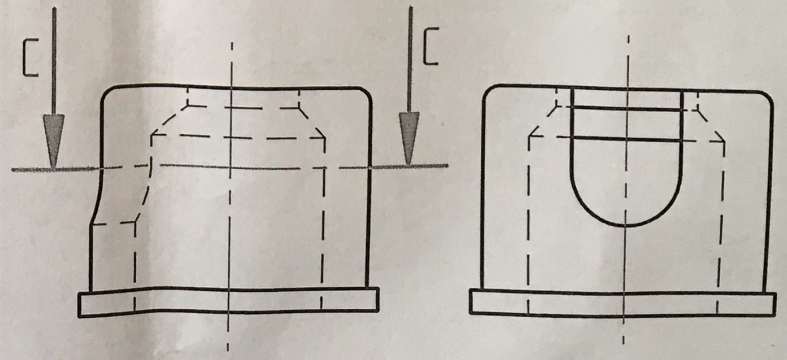
Q1.4 : Draw the left view in cross-section B-B, *without hidden edges*.



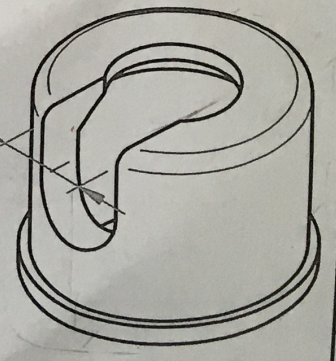
B-B

scale 2:1

Q1.5 : For the sphere support (02), draw the extracted section C-C



Extracted Section C-C



scale 2:1

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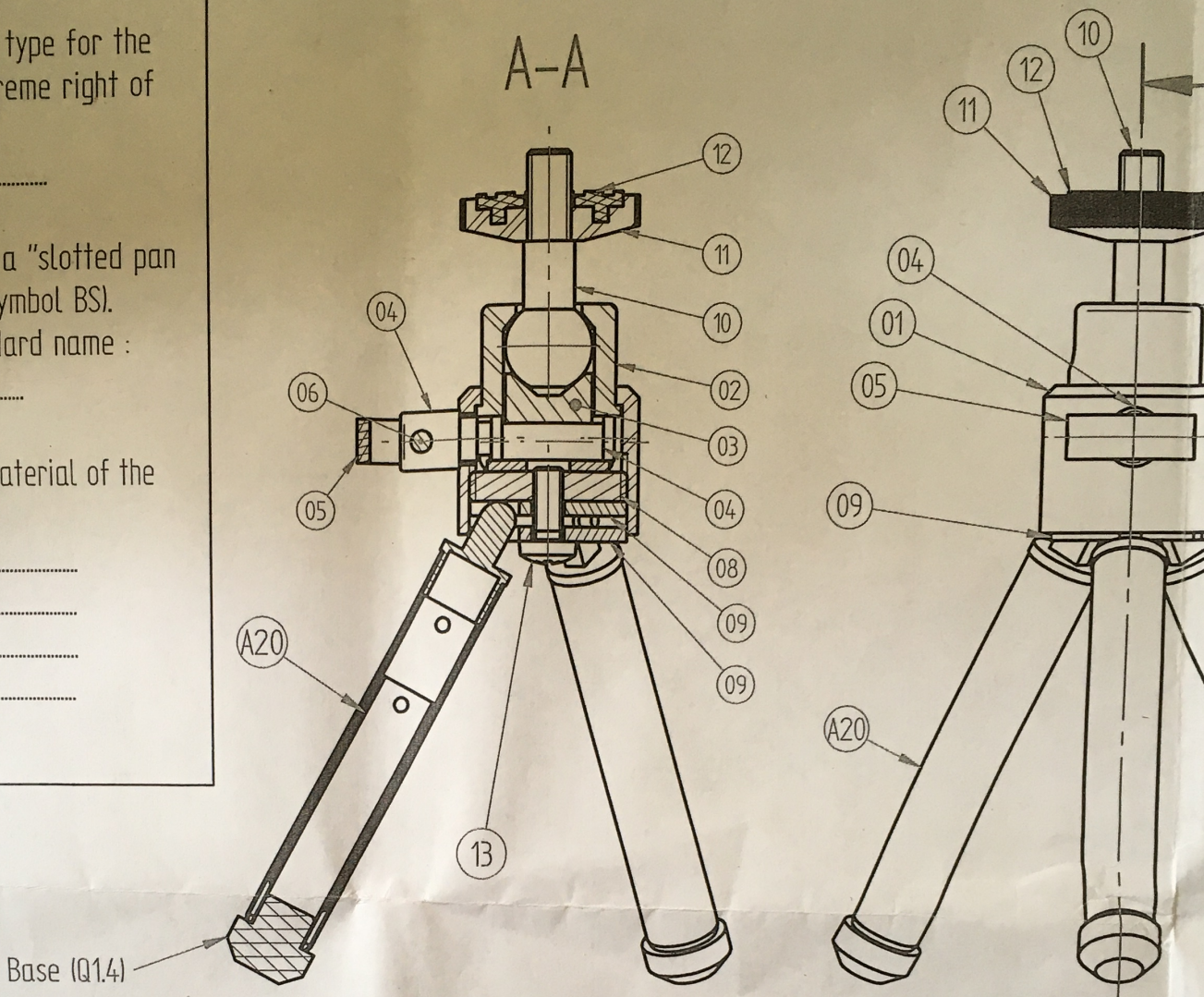
grp :

Q2.1 : Give the view type for the view located at extreme right of this document :

Q2.2 : Screw (13) is a "slotted pan head" screw (with symbol BS).  
Fill-in its full standard name :  
- Vis BS .....

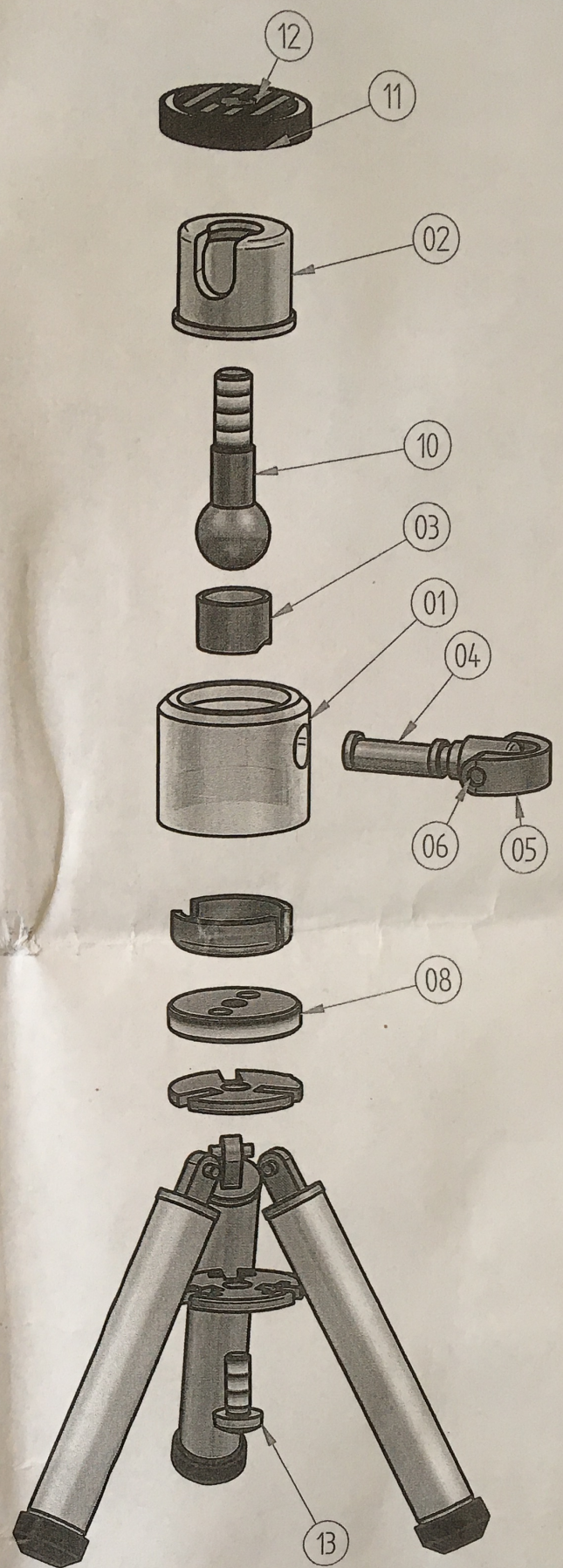
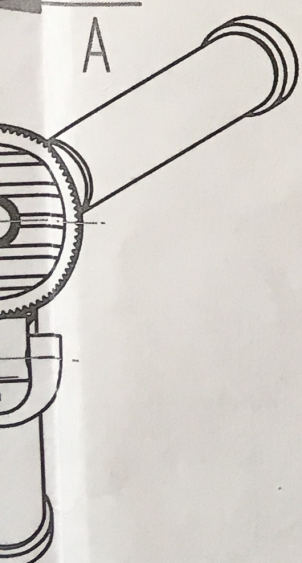
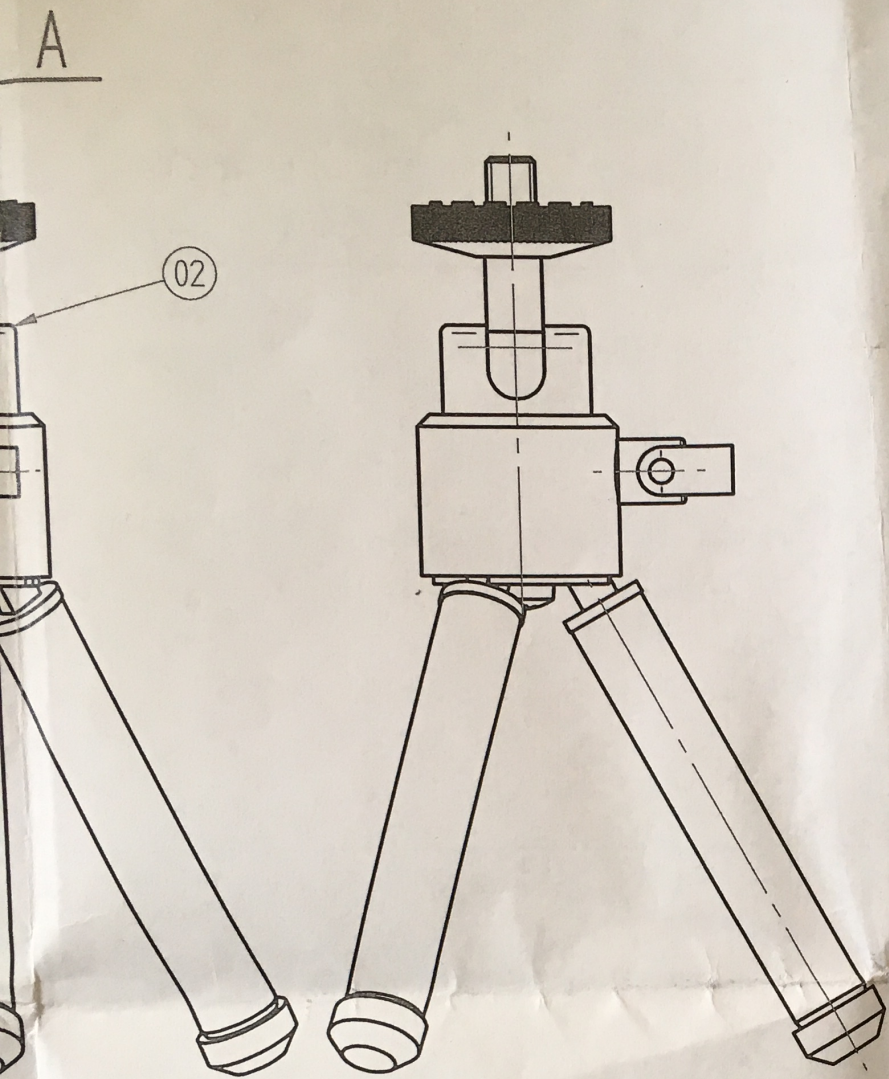
Q2.3 : Specify the material of the various part below :

- 02 : .....
- 03 : .....
- 05 : .....
- 12 : .....



|     |     |                         |                  |
|-----|-----|-------------------------|------------------|
| A20 | 3   | Leg Assembly            |                  |
| 13  | 1   | Screw BS .....          | Steel            |
| 12  | 1   | Top pad                 |                  |
| 11  | 1   | Top tray                | Aluminum alloy   |
| 10  | 1   | Sphere                  | Stainless steel  |
| 09  | 2   | Leg link washer         | Galvanised steel |
| 08  | 1   | Threaded disc           | Galvanised steel |
| 07  | 1   | Stamped washer          | Galvanised steel |
| 06  | 1   | Small buton axle        | Steel            |
| 05  | 1   | Button                  |                  |
| 04  | 1   | Eccentric shaft         | Steel            |
| 03  | 1   | Sphere tightening piece |                  |
| 02  | 1   | Sphere support          |                  |
| 01  | 1   | Body                    | Aluminum alloy   |
| Num | Qty | Description             | Material         |

DR 2/4



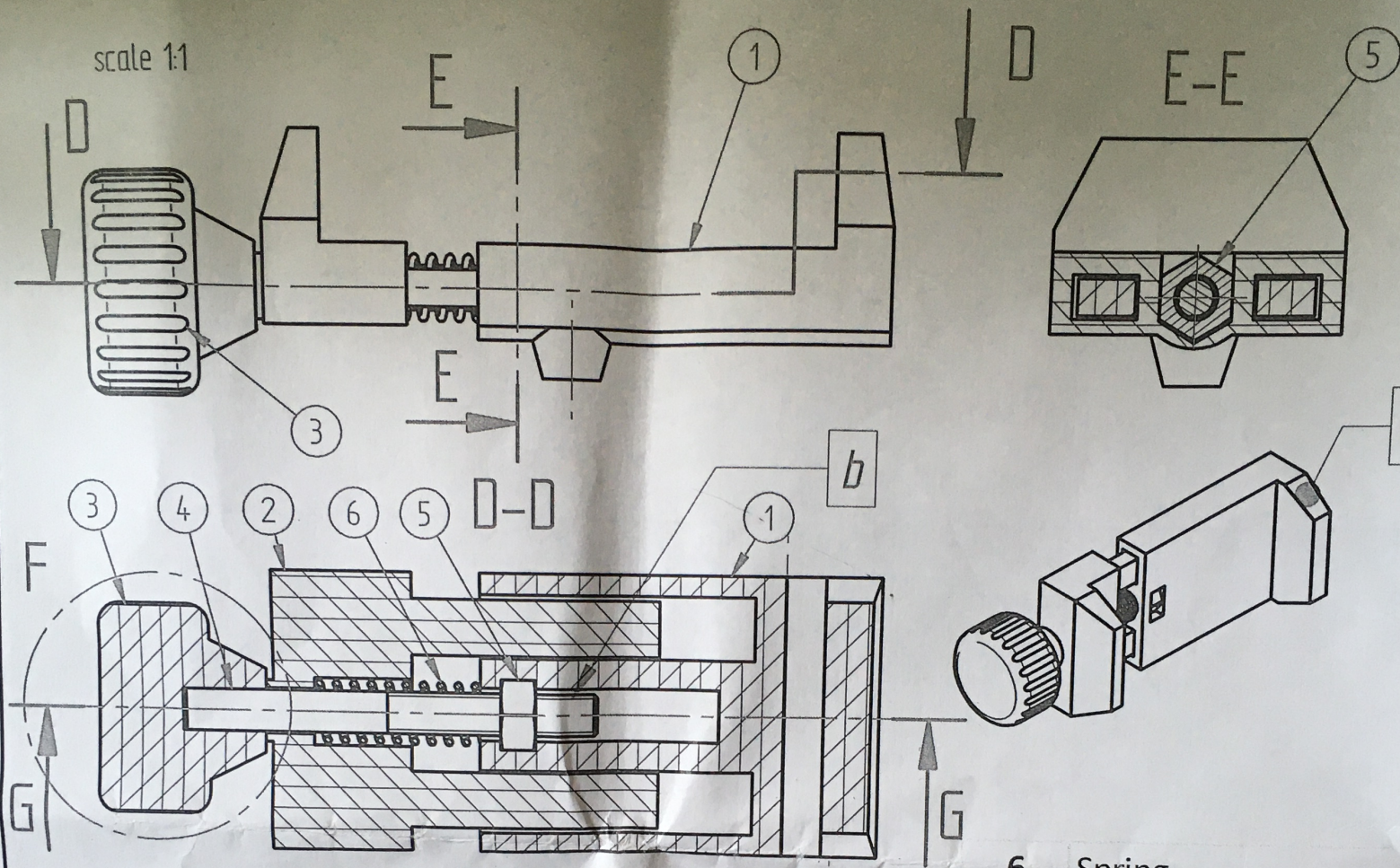
|                          |                   |  |           |
|--------------------------|-------------------|--|-----------|
| Sheet : 2 / 4            | Date : 25/01/2021 | Author : dmjac                               | Grp : GCP |
|                          | Project :         | <b>MINI-TRIPOD</b><br><b>GLOBAL ASSEMBLY</b> |           |
|                          | Title :           |  |           |
| <b>INSA</b><br>LYON FIMI | Format<br>A3H     | Reference : A0                               |           |

LAST NAME :

Name :

grp :

In order to improve the versatility of this camera support, an adaptator can be added to plug a smartphone on it.



Q3.1 : Give the name of the shapes :

a : .....

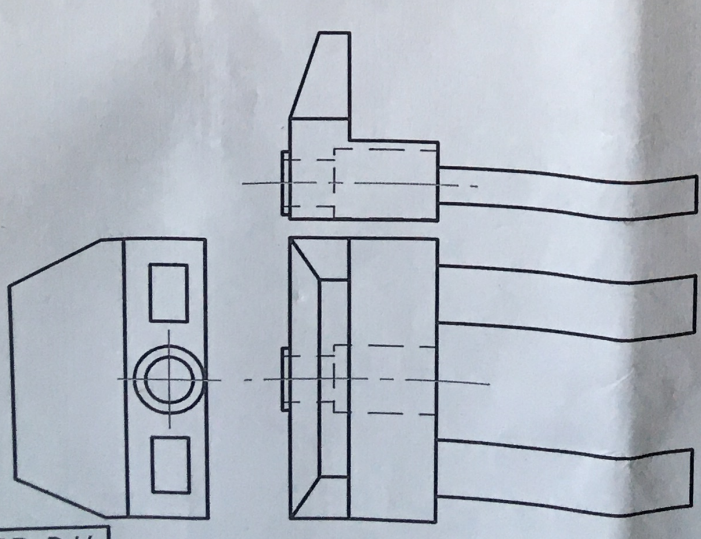
b : .....

Give the name of the specific cross-section D-D :

.....

|            |                    |
|------------|--------------------|
| 6          | Spring             |
| 5          | Nut H-M6           |
| 4          | Threaded axle      |
| 3          | Actuating button   |
| 2          | Mobile jaw         |
| 1          | Fixed jaw          |
| <b>Num</b> | <b>Description</b> |

Q3.2 : Draw by hand (without ruler) a cavaliere or isometric perspective of the mobile jaw (2), without hidden edges.

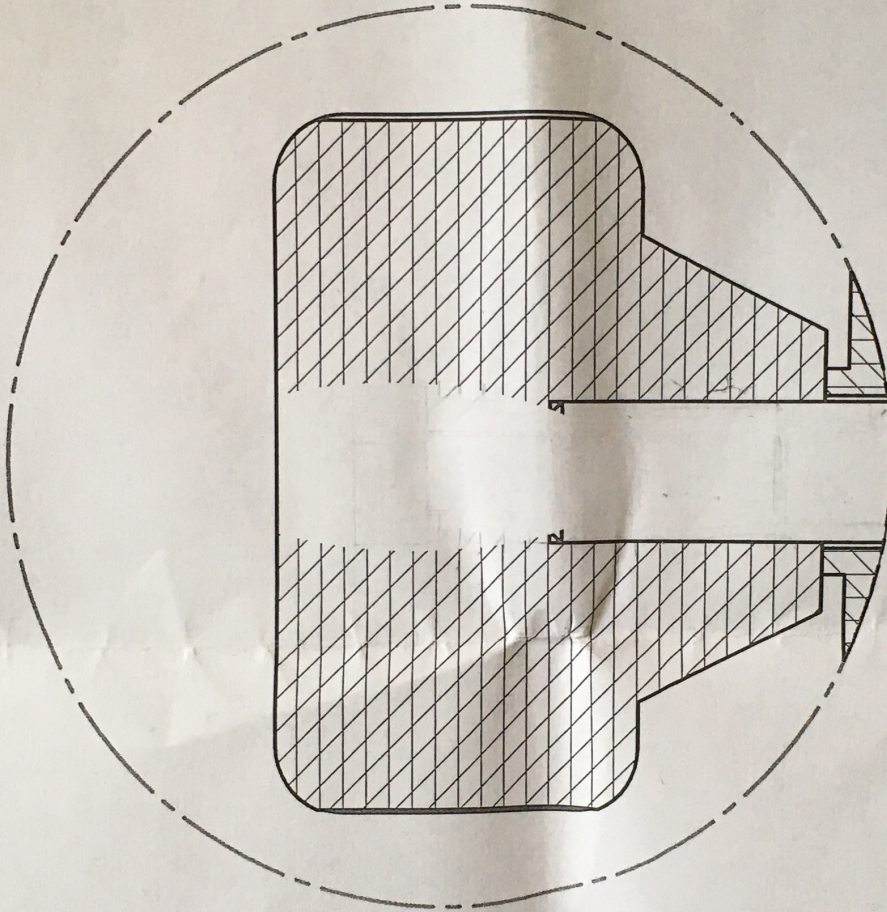


DR 3/4

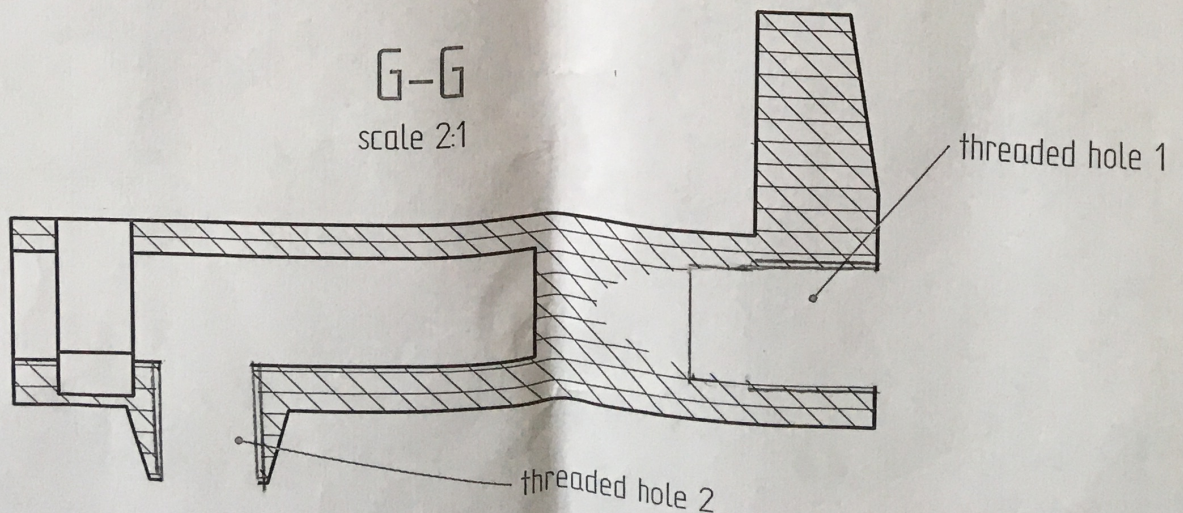
- Q3.3 : On the assembly drawing on the right, the actuating button (3) is fixed to the threaded axle (4) by glueing. In order to reinforce this assembly, we propose to modify this button/axle joint using a screw instead.
- complete the detailed view F at scale 3:1 by adding a screw [Chc M3 15
  - the threaded hole in the theaded axle consists of a drilling deep of 15 mm and and a thread of 10 mm lenght
  - the screw head will be hidden in the actuating button (spot facing in the button)
  - in your drawing, draw a local cross-section in the threaded axle.

## DETAIL F

scale 3:1



- Q3.4 : Represent, on view G-G of the fixed jaw (1), the 2 threaded holes M6, allowing to fix the adaptor on the camera support. Threaded hole 1 (right side) : M6 12 -8  
Threaded hole 2 (bottom) : M6 through



- Q4.1 : Realize the drawing of the fixed jaw (1) at scale 2:1 :
- Fill-in the front view (specified by the arrow F) with missing visible and hidden edges
  - Fill-in the bottom view in cross-section H-H (without hidden edges)
  - Fill-in the left view in cross-section I-I (without hidden edges)

