

FOUNDRY SECTION

Experiment Number 2

ME39007

Determination of Grain Fineness number (GFN) of Foundry Base Sand

GFN is an indication of the average size of the sand grains used in moulding. The properties of the mould and hence those of the castings are influenced by the size of the sand grains.

- 1) Place dried AFS clay removed, 50 gm of sand (Rajmahal/ Feko) on the topmost sieve of the assembly of sieve series.
- 2) Place the whole assembly of sieves on the sieve shaker machine and agitate for 15 minutes.
- 3) Weigh the amount of sand remaining on each sieve and record the weight of grains of the various sizes as percentages of the original 50 gm sample.
- 4) Multiply the results obtained for each sieve by the multiplier factor.
- 5) Add the products of the multiplication to give total product.
- 6) Divide the total product by the sum of the grain percentages obtained. This gives the AFS grain fineness number.

**CALCULATION OF AFS GRAIN FINENESS NUMBER**

Us Sieve No.	Aperture (mm)	Multiplier (A)	Weight in gram	Weight in % (B)	Cum Wt in gm	C=A x B
6	3.327	3				
12	1.651	5				
20	0.833	10				
30	0.589	20				
40	0.414	30				
50	0.295	40				
70	0.208	50				
100	0.147	70				
140	0.104	100				
200	0.074	140				
270	0.053	200				
Pan		300				

**AFS GFN =  $\sum C / \sum B$**

- 7) Plot percentage retained in each sieve against Sieve No.
- 8) Plot cumulative percentages retained in each sieve against Sieve No.
- 10) Repeat the experiment with the other sand.

Annexure 1 Sieve shaker operations

Annexure 2 Electronic balance operations

## FOUNDRY SECTION

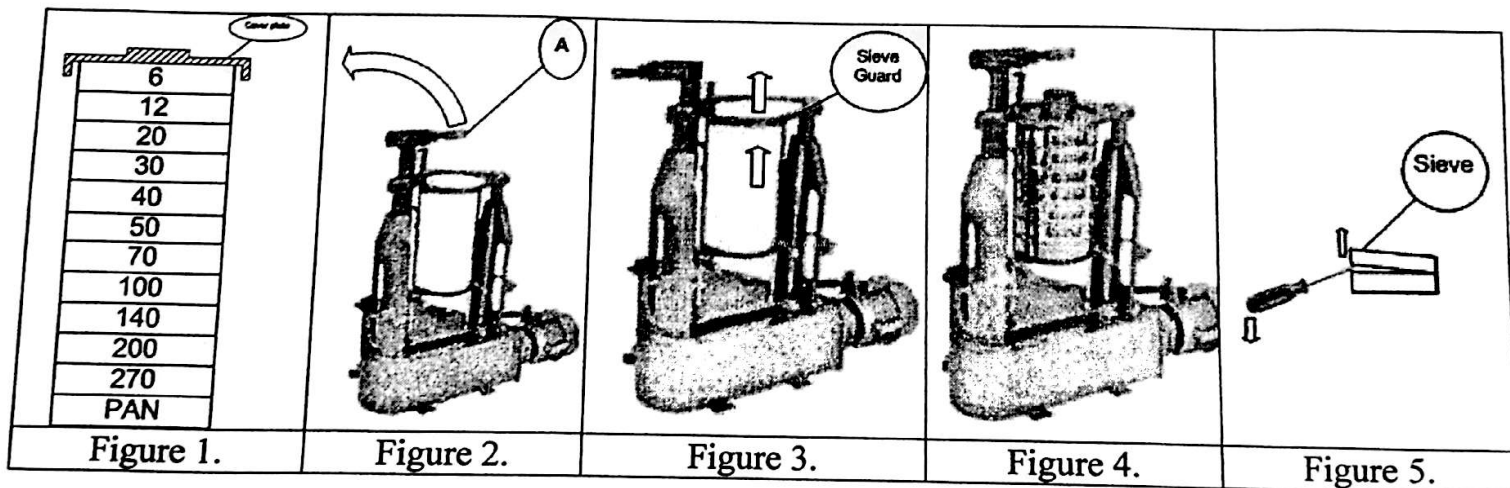
### Experiment Number 2

ME39007

Annexure 1

#### Instructions to operate Ro-Tap sieve shaking machine.

- Step 1 Assemble the 11 *sieves* and *pan* as per Figure 1. All the sieves should be stacked with the mesh downwards. Pour 50 gm of sand (see annexure 2 to weigh) in the sieve number 6. Place the cover plate on sieve number 6.
- Step 2 Move the Rammer of the machine, marked *A* in backward direction as shown in Figure 2.
- Step 3 Lift and hold the Sieve Guard of the machine upwards in the direction of the arrows as shown in Figure 3.
- Step 4 Push the assembly of sieves along with the cover plate on the sieve holder.
- Step 5 Release the Sieve Guard to its original position.
- Step 6 Bring the rammer to its original position as it was in Figure 1.
- Step 7 The assembly, as shown in Figure 4, is ready for operation.
- Step 8 Switch on the power and run the machine for 15 minutes.



- Step 9 Switch off the machine. Move the rammer back as in Step 2
- Step 10 Lift and hold the Sieve Guard of the machine upwards in the direction of the arrows shown in Figure 3.
- Step 11 Remove the sieve assembly from the machine. Place them on a table and remove the sieves slowly as is illustrated in Figure 5.
- Step 12 Empty sand of each sieve in the plastic cup duly marked with sieve number.

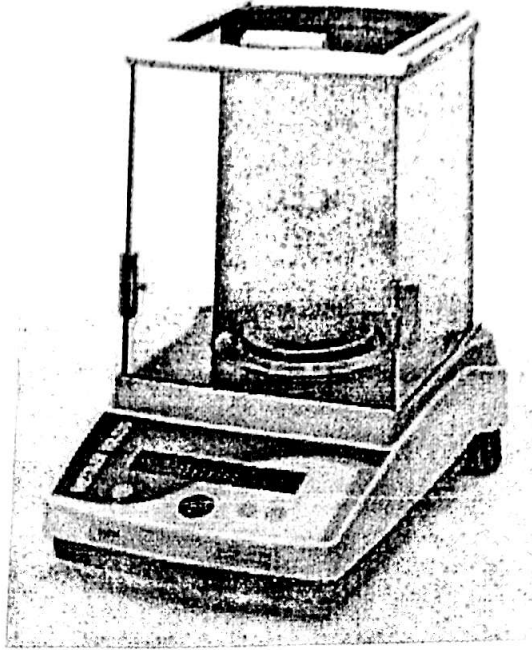
## FOUNDRY SECTION

Experiment Number 2

ME39007

Annexure 2

**Instructions to operate Afcoset FX-300 electronic balance.**



1. Switch on the mains
2. Switch on the ON/OFF key of the balance. All the display segments will switch on and then the display will zero in preparation for you to place a weight on the pan.
3. The readability of the machine is up to mg.
4. To weigh sand a container is to be used for weighing. Place the empty container on the balance and press the TARE button once. This brings the display back to zero.
5. Do not operate MODE, PRINT and SAMPLE buttons.
6. Do not put more than 250 gm on the balance.
7. Switch off the mains once the use of the machine is over.