**Lab 1**

***Orientation microbiology lab (Tools and Equipment)***

***Prepared by***

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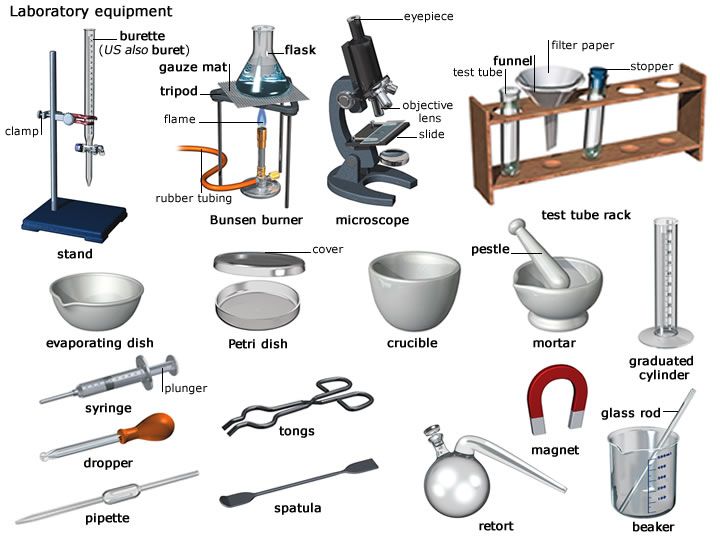
***Lab-1-***

*Medical Microbiology classified into:*

1. Bacteriology is Study of bacteria
2. Mycology is study of fungi
3. Virology is study of viruses
4. Parasitology is study of protozoan & helminthes

5- Immunology is study of resistance to disease

*Tools and Equipment*

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***Tools***

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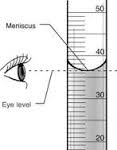
***1-Loop***

***The loop is used in the cultivation of microbes on plates by***

***Transferring inoculums for***[***streaking***](https://en.wikipedia.org/wiki/Streaking_(microbiology))***. Touching a broth or***

***a culture plate will gather enough microbes (0.01ml) for***

***Inoculation. The inoculation loop is***[***sterilized***](https://en.wikipedia.org/wiki/Sterilization_(microbiology))***with flame or another heat source.***



***2-Can***

***Used for preserve the pipette from any contamination, sterilized with pipettes by autoclave***

***3-Pipette***

***Used for transfer of cultured and uncultured broth from tube or flask to other and placed in can sterilized by autoclave inside the can.***

***4-Spreader (L-shape)***

***Used for spreading bacterial cell on surface of solid medium in petriplate ,before using placed in alcohol and then sterilized by flame of burner.***

***5-Petri-Dish(Petri-plate)***

***Used for place the solid medium in it, glass petri-dish used for many times and sterilized by oven or autoclave ,while sterilized plastic plates used for one time.***

***6-Swab***

***Used for swabbing bacterial cells on the surface of solid medium in Petri plate, must be placed in test tube and sterilized by autoclave, it used for one time.***

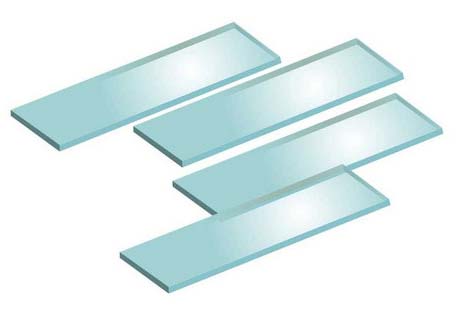
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***7-Test tube***

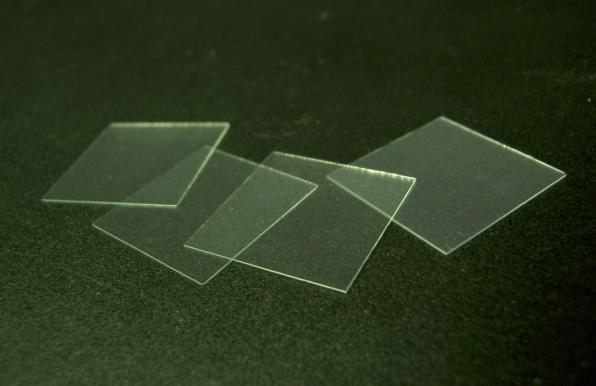
***Used to place the liquid or solid or semisolid medium for stabbing or placed as slant for culture of bacteria ,it sterilized by autoclave.***

***8-Needle***

***Used for transfer of bacterial cells to a solid medium or semi-solid medium by stabbing, sterilized by the flame of burner before and after use.***

***9-Slide***

***Used for examination of bacterial smear under microscope, it used for one time.***

***10-Cover-Slips***

***Placed on the slide, the bacterial smear may be between the cover and the slide, it used for one time.***

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***11-Flask***

***Used for place cultured and uncultured broth in it ,***

***sterilized after plugs with cotton by autoclave.***

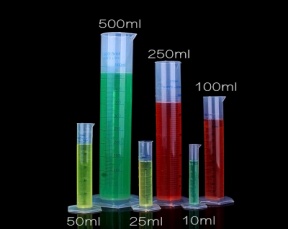
***12-Cotton plugs***

***A piece of coiled cotton used to close the upper part of flasks and tubes.***

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***13-Beaker***

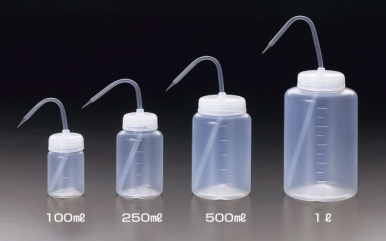
***Used for graduated the volume of liquids. Sterilized by oven.***

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***14-Cylinder(Graduated Cylinder)***

***Used for graduated the volume of liquids, sterilized by oven.***

***15-Washing bottle***

***Used to fill with liquid (specially distilled water)for washing***

***and homogenizing the glass wares and washing the slide***

***during staining , don’t need sterilization.***

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***16-pH paper***

***Used to know the pH of the medium or any liquids***

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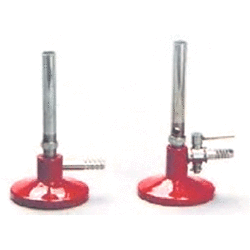
***17-Rack***

***May be wooden, metallic or plastic used to stand and hold the tube.***

***18-Burner***

***May be gaseous or alcoholic , used for sterilized the loop , needle***

***and other metallic tools by flame (dry heat sterilization).***

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***Equipments***

***1-Autoclave***

***Wet heat sterilization= death by protein denaturation***

***It’s an equipment with:***

***High temperature (121C˚)***

***High pressure 1 atm(15 pound/inch2) used to sterilize media***

***(With sugar for 10min)***

***(Uncultured media for 15min),***

***(Cultured media and contaminated glass wares for 30 min)***

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***2-Oven***

***Dry heat sterilization=death by oxidation***

***Equipment with high temperature only (180C˚) for (90 min)***

***used to sterilized some of metallic tools and glass wares***

***3-Incubator***

***Is a device used to grow and maintain***[***microbiological cultures***](https://en.wikipedia.org/wiki/Microbiological_culture)***or [cell](https://en.wikipedia.org/wiki/Cell_culture" \o "Cell culture)***

***[cultures](https://en.wikipedia.org/wiki/Cell_culture" \o "Cell culture). The incubator maintains optimal***[***temperature***](https://en.wikipedia.org/wiki/Temperature) ***,[humidity](https://en.wikipedia.org/wiki/Humidity" \o "Humidity) and***

***other conditions such as the***[***carbon dioxide***](https://en.wikipedia.org/wiki/Carbon_dioxide)***(CO2) and***[***oxygen***](https://en.wikipedia.org/wiki/Oxygen)***content***

***of the atmosphere inside***

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***4-Refrigerator***

***Used to maintain the sterilized media and broth when not***

***used to avoid the contamination , and also to preserve the***

***bacterial culture for long time by preventing the growth at 4C˚.***

***5-Biosafety cabinet (BSC)***

***Also called a biological safety cabinet or microbiological safety cabinet is aenclosed,ventilated***[***laboratory***](https://en.wikipedia.org/wiki/Laboratory)***workspace for safely working with materials contaminated with (or potentially contaminated with)***[***pathogens***](https://en.wikipedia.org/wiki/Pathogen)

***6-Waterbath***

***Is laboratory equipment made from a container filled with heated water. It is used to incubate samples in water at a constant temperature over a long period of time***

***7-Centrifuge***

***A machine with a rapidly rotating container that applies***

***Centrifugal force to its contents.***