Experiment No. 4 – Lung Function Test(Spirometry)

Reading(ml)	Standing	Sitting	Recumbent
1. Tidal Volume	520	500	480
2.Inspiratory Reserve Volume	2300	2100	1900
3.Expiratory Reserve Volume	900	800	700

1. **What is the average normal value of vital capacity? Figure out vital capacity in males and females?**

Ans: (a) The normal value of vital capacity is 60-70 ml/Kg.

(b) In females, it is normally 20% less than males.

2. **Name the five important conditions in which vital capacity is reduced.**

Ans: Important conditions affecting vital capacity are:

- In supine positions
- In old age
- Destruction of lung tissues i.e. carcinoma
- Potency of lung passages i.e. Asthma
- Conditions of lungs i.e. loss of elasticity in Emphysema

3. **Name the physiological factors that influence vital capacity.**

Ans: Physiological conditions affecting the vital capacity are:

- Size of lungs and chest wall
- Condition of lungs and chest wall
- Magnitude of compressing force

- Age
- Sex

4. **Define Residual Volume.**

Ans: Residual volume is volume of air left out in lungs even after forceful expiration.

5. **Define Functional Residual Capacity.**

Ans: Functional Residual Capacity is the volume of air left out in after normal expiration.

$$FRC = RV + ERV$$

6. **Define**
   - **(a) Total Lung Capacity:** It is total volume of air lungs can accommodate.
   - **(b) Minute Volume:** It is the volume of air inspired or expired per minute.
   - **(c) Dead Space:** Dead space air is the portion of minute ventilation that does not take part in the exchange of gases.
   - **(d) Alveolar Ventilation:** Out of the tidal volume of 500ml, 150 ml remains in upper respiratory passages up to respiratory bronchioles while only 350ml reaches respiratory zone. Thus, alveolar ventilation would be (500-150) × 12 = 4200ml.
   - **(e) Timed Vital Capacity:** It is the largest volume of air a person can expel from the lungs with maximum effort after first filling of lungs fully by deepest possible inspiration.
     - ➢ It is useful in distinguishing between Restrictive and Obstructive lung disease.

PEFR Table:

Trial	PEFR(L/min)
1.	510
2.	540
3.	525

Mean = (510 + 540 + 525)/3 = 525 L/min

7. **What are the factors which affect PEFR?**

Ans: Factors affecting PEFR are:

- ❖ Age
- ❖ Sex
- ❖ Height
- ❖ Weight
- ❖ Airway resistance
- ❖ Environmental factors

8. **Give examples of restrictive and obstructive lung diseases.**

Ans: (a) Obstructive: Bronchial asthma

(b) Restrictive: Kyphoscoliosis, Spondylitis