PROBLEMS

1. Find the average absorption coefficient and the reverberation time for the data: volume of a room $=1500$ m^3, wall area of the room $= 260$ m^2, floor area $= 1400$ m^2, the ceiling area $= 140$ m^2 and average sound absorption coefficient for wall $= 0.03$ for the ceiling $= 0.80$ and the floor $= 0.06$. **[Ans: 0.237 sabins; 1.93 s]**

2. A hall has a volume of 12500 m^3 and reverberation time of 1.5 s. If 200 cushioned chairs of absorption of 1.0 O.W.U are further more added in the hall, find the new reverberation time of the hall? **[Ans: 1.31 s]**

3. For a room of volume $= 600$ m^3, wall area $= 220$ m^2, floor area $=120$ m^2, ceiling area $= 120$ m^2 and average sound absorption coefficient for the walls $= 0.03$, for the ceiling $= 0.8$ and for the floor $= 0.06$, find the average sound absorption coefficient and the reverberation time. **[Ans: 0.24, 0.875 s]**

4. Find the total absorption in the hall of a volume of 7500 m^3 if the reverberation time of 1.5 s. **[Ans: 825 sabins]**

5. Reverberation time is found to be 3 sec for an empty reverberation chamber and an acoustic sheet of 15 m^2 is suspended at the center of the reverberation hall. Calculate the coefficient of sound absorption of acoustic sheet if the volume of the chamber is 600 m^3.

6. Find the average absorption coefficient for a hall of volume 5500 m^3 with a sound absorbing surface of 750 m^2 and reverberation time of 2.3 s. **[Ans: 0.513]**

7. Reverberation time for a cubical chamber of 10 m width is 2.68 s. Calculate its average absorption coefficient. If one of the walls is covered with acoustic tiles the reverberation time will decrease to 2 s. Calculate the sound absorption coefficient of acoustic tiles.

8. The average reverberation time of a hall of volume 1200 m^3 is 1.5 s and area of interior surface is 3340 m^2. If the, find the absorption coefficient. **[Ans: 0.2 sabins]**

9. The volume of a hall is 475 m^3. The area of the wall is 200 m^2, area of the floor and ceiling each is 100 m^2. If the absorption coefficients of the wall, ceiling and floor are 0.025, 0.020 and 0.550 respectively, find the reverberation time for the hall. **[Ans: 1.264s]**

10. For a hall of volume 1, 20,000 m^3 and reverberation time of 1.5 s find the average absorbing power of the surface if the total absorbing surface area is 25,000 m^3? **[Ans: 0.524 O.W.U/m^2]**

11. A hall has a volume of 2265 m^3 and its total absorption of 92.9 m^2. How many persons should be accommodated in the hall so that the reverberation time becomes 2 s? Given that the absorption area of one person is 18.6 m^2 of open window. Find the reverberation time of the empty hall also. **[Ans: 500 persons, 4s]**

12. A hall of volume 1586 m^3 has reverberation time of 2 s. If the area of the sound absorbing surface is 650 m^2, find the average absorption coefficient. **[Ans: 0.195]**