**Audio System Engineering (ET60006)**

**Assignment-1 (15 Marks)**

***Name-*  *Roll No***

1. An auditorium has the following specification.

(a) Prepare the bill of material for the acoustic treatment of the auditorium.

(b) Design the auditorium acoustic treatment by selecting proper material in proper position.

(c) Calculate the reverberation time, critical distance and number of reflection within the reverberation time of the auditorium when it 70% seat is full.

(d) If three loudspeakers are placed in two side of the front wall and center of the stage front wall, find out the distance from the source where the Articulation Loss of Consonants (%ALCON) is 15%.

**Auditorium specification**

Total number of Seat =160

Approximate acoustic volume=723.9 m2

Vacant Seat absorption =0.4/seat and when people are present, each adding 0.5 Sabin to its total absorption.

The area of different part is as given below

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S/l** | **Location** | **Quantity** | **Write the material name** | **Total Absorption**  **[in Sabin’s]** |
| 1 | People on Upholstered seat |  |  |  |
| 2 | Vacant Seat |  |  |  |
| 3 | Wall in the front of the stage | 17.48 m2 |  |  |
| 4 | Area of floor without seat | 104.18 m2 |  |  |
| 5 | Rear interior wall | 45.33 m2 |  |  |
| 6 | Rear ceiling | 31 m2 |  |  |
| 7 | Ceiling near the side wall | 37.50 m2 |  |  |
| 8 | Ceiling | 144.96 m2 |  |  |
| 9 | Stage front wall | 19.15 m2 |  |  |
| 10 | Diffusive side wall | 52.08 m2 |  |  |
| 11 | Stage floor | 38.10 m2 |  |  |
| 12 | Stage side wall | 36.40 m2 |  |  |