



**B.Tech Degree VII Semester (Supplementary)
Examination in Civil Engineering (HE & CM)
March 2003**

**CE 706(B) ARCHITECTURAL ACOUSTICS
(1995 Admissions)**

Time: 3 Hours

Maximum Marks: 100

(Answers to be supplemented with necessary sketches wherever essential)

- I. (a) What are the audible range frequencies of sound? Explain how sensitive are the human ears to these frequencies? (15)
(b) With the help of sketch explain the working of human ear? (10)
OR
- II. What is sound? How is it propagated? With the help of sketch show how the principles of sound propagation can be positively incorporated in the design of open-air theatre? (25)
- III. (a) Explain the 'Sabine's formula' for calculating Reverberation time? (10)
(b) Calculate the RT for a multipurpose hall, which is in the shape of a hexagon of side 10m and height 5m with the following as the finish given to the hall. Ceiling with acoustic tiles of co-efficient 0.4. Floor and wall cement plastered. Opening area 20% of the floor area. Suggest the necessary treatment recommended of the hall, to be used as lecture room for 80 persons. (15)
OR
- IV. (a) You are commissioned to design an 'open plan office'. What are the criteria you adopt for good acoustic in an 'open plan office'? (15)
(b) Sketch and show the location, type of acoustic treatment you suggest for an office consisting of a director's cabin, manager's cabin, general office zone and area of office machines. (10)
- V. What are the sources of noise in ventilation systems? Explain the method you adopt to control the noise in ventilating ducts in multistoreyed buildings? (25)
OR
- VI. (a) What are the different sources of noises in industrial buildings? Enumerate the use of unit absorbers in controlling the noise? (15)
(b) An Engineering college is located in an area adjoining to a railway line where is a frequent traffic of train during daytime. What are measures you recommend to control the various noises from reaching the building? (10)
- VII. Write short notes on :
(a) acoustic impedance.
(b) panel absorbers.
(c) acoustic tile.
(d) floating floor construction.
(e) acoustic plaster. (5 x 5 = 25)
OR
- VIII. What are the different type of acoustic material used in acoustic design? Explain the methods and construction details adopted for reducing acoustic defect in different rooms with suitable sketches. (25)