

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.ARCH
BRANCH: ARCHITECTURE & PLANNING**

**SEMESTER : V
SESSION : MO/2022**

SUBJECT: AR301 ACOUSTICS

TIME: 3:00 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
-

- Q.1(a) Briefly explain the acoustical phenomenon of 'Sound Diffusion' within the built structures. [2]
Q.1(b) Show that if sound power level is doubled, the resultant is only 3 dB more. [3]
Q.1(c) Write the equations to define: Sound power level, Sound pressure level, Sound intensity level. [5]
- Q.2(a) Explain the limitations to Sabine's Equation for calculating Reverberation Sound (R.T) [2]
Q.2(b) Briefly explain the general guidelines for acoustical design of auditorium. [3]
Q.2(c) Define and give the solution to avoid the following acoustical defects: [5]
(i) Sound Foci (ii) Sound shadow
- Q.3(a) What is a floating floor? Explain briefly with proper sketches the construction of timber floating floor. [5]
Q.3(b) What are the different components of a sound system with reference to electro acoustics? [5]
Explain with the graphical flow chart.
- Q.4(a) Classify the different sources of urban noise? [2]
Q.4(b) Explain briefly how 'Town Planning' plays important role in reducing the environmental noise? [3]
Q.4(c) Explain how 'Architectural design considerations' can help in reducing the urban noise. [5]
- Q.5 Explain the different types of acoustical materials for the following, emphasizing on their suitability and application details-
Q.5(a) Acoustical Materials for Floors [2]
Q.5(b) Acoustical Materials for Walls [3]
Q.5(c) Acoustical Materials for suspended Ceilings [5]

:::::23/11/2022:::::M