# SLIATE

**SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION**

(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

## Higher National Diploma in Building Services Engineering

### Third Year, Second Semester Examination – 2016

### BSE 3205 - Building Acoustics

**Instructions for Candidates:**
Answer four (04) questions
All questions carry equal marks

No. of questions: 05
No. of pages : 02
Time : Two hours

**Q1.**

(a) Define the word " Noise" and state the frequency range of human hears. (in Hz) (04 marks)

(b) Mention what is the unit of Noise is and convert the 1000Hz to noise unit. (05 marks)

(c) Define following terms
i. Threshold of hearing
ii. Threshold of pain
iii. Subsonic range
iv. Ultrasonic range (08 marks)

(d) Discuss the existing CEA (Central Environmental Authority) regulations on Noise in industries. (08 marks)

**(Total 25 marks)**

Q2.

(a) Explain the 04 different types of noise pollution control techniques at the source. (08 marks)

(b) Define the term " Room Acoustics" . (03 marks)

(c) **Reverberation** is a basic acoustic property of a room. Briefly explain this term as possible. (10 marks)

(d) What are the sound absorbing materials in a room? (04 marks)

**(Total 25 marks)**

Q3.

(a) Discuss the different control methods of Generator Noise. (10 marks)

(b) It is a common observation that employees who work in high noise environments (like generator rooms) are not keen to use ear protection even if provided. What are the reasons for this in your opinion? (06 marks)

(c) What are the health aspects and environmental aspects of sound pollution. (09 marks)

**(Total 25 marks)**

Q4.

(a) Briefly describe the term **Sound Reduction Index (SRI)** (05 marks)
(b) What are governing factors of SRI? (06 marks)
(c) What are the meanings of " Vibration Isolation" and "Impact Insulation Class (IIC)" (08 marks)
(d) Briefly discuss the purpose of IIC. (06 marks)

**(Total 25 marks)**

Q5.

Today the trend is to open office planning. While employers believe that an open office plan promotes collaboration and teamwork, employees often have other views. But sound to one person, may be noise to another. Well planned acoustics are crucial to the success of any open office situation and should be a part of the initial planning and design.

(a) Briefly describe the effects of poor office acoustics on employees. (07 marks)

(b) What are the main components to be considered when designing an open office space with acoustic? (08 marks)

(c ) Briefly discuss five (05) solutions to reduce the noise in an open office space

(10 marks)

**(Total 25 marks)**