



Final Exam: 1 page

Date: 21 /1/2019

Time allowed: 2 h

This exam measures the ILOS (a3, a4, b2, b3, and c1)

Answer the following questions

[1] Question One: (15 Mark)

- A) Explain in details, the mechanism of sound wave propagation through an acoustic medium [3 marks (a4.2, b3.2)]
- B) Classify the sound waves according to the frequency content. [3 marks (a4.2)]
- C) Two sound sources radiate 0.005 watts and 0.004 watts respectively, Determine the sound intensity level at a microphone located at a distance of 2 meters from the sources. [5 marks (b2.1)]
- D) a sound wave travelling in a medium with bulk modulus of  $1.42 \times 10^5$  pa. the sound wave has a frequency of 4kHz and velocity of 334 m/s. find  
A- sound wave length      B- density of the medium [4 marks (b2.1)]

[2] Question Two: (20 Mark)

- A) Define the following items [6 marks (a4)]  
i) Acoustic materials    ii) Ray diagram    iii) Reverberation    iv) Reverberation time
- B) State the steps which can be followed to design class rooms with acceptable acoustic performance, (sound intelligibility). [4 marks (a3.1, a4.2)]
- C) write down the equation that is used to determine the distance between the listener and loud speaker in case of electronic sound amplification. [4 marks (a3.1, b2.1)]
- C) A small room 10ft by 10ft by 10ft has all walls and floor finished in exposed concrete while the ceil is completely covered with absorbing spray. The sound absorbing coefficients are 0.02 for concrete and 0.7 for spray both at 500Hz. Find the noise reduction level if sound absorbing panels, with absorbing coefficient of 0.85 at 500Hz, are added to two adjacent walls. [6 marks (b2.1, b3, c1.1)]

Best Wishes

Committee of Correctors and Testers

Dr. Shamia Ghamry

*Shamia Ghamry*