CLASS: MTECH   SEMESTER : I
BRANCH: SER   SESSION : MO/18

SUBJECT: SR509 AEROACOUSTICS

TIME: 3 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)   Derive the linearized acoustic wave equation.   [7]
Q.1(b)   Differentiate between radiation and scattering by a solid body.   [3]

Q.2(a)   Differentiate between monopole and dipole sources.   [5]
Q.2(b)   Comment on Lighthill's acoustic analogy.   [5]

Q.3(a)   Describe the different methods adopted in acoustic wind tunnels to acoustically secure the test   [5]
         section.
Q.3(b)   Point out the differences between a closed test section, an open jet test section and a hybrid test [5]
         section of a wind tunnel.

Q.4(a)   What do you understand by Kevlar Walls in an acoustic wind tunnel? How does it help in   [5]
         measurements?
Q.4(b)   Illustrate the different types of acoustic corrections needed for aeroacoustics measurements in a [5]
         wind tunnel.

Q.5(a)   Describe the characteristics of screech tones in a supersonic jet flow.   [5]
Q.5(b)   Describe the Jet noise reduction techniques   [5]

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