

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

CLASS:MTech
BRANCH:SER(Aerodynamics)

SEMESTER : II
SESSION : SP/22

SUBJECT: SR 579 Experimental Aerodynamics

TIME:2 Hrs

FULL MARKS: 50

INSTRUCTIONS:

1. The missing data, if any, may be assumed suitably.
2. Before attempting the question paper, be sure that you have got the correct question paper.

- Q.1 Differentiate between an indraft and a blowdown supersonic wind tunnel. [2]
- Q.2 Write the purpose of a kiel tube. [2]
- Q.3 What is the trend of Energy ratio with contraction ratio for a typical divergence angle [2]
- Q.4 Why a second throat is required for a supersonic tunnel. [2]
- Q.5 Define signal to noise ratio. [2]
- Q.6 Show the temporal and spatial resolution differentiation of CTA, LDA and PIV. [2]
- Q.7 Mention the differences between constant current and constant temperature hot wire system [2]
- Q.8 What are the special requirements of a good ADC card [2]
- Q.9 State the significance of Jorgensen Law in the directional response of hot wire probes [2]
- Q.10 Describe about a manometer and give features affecting its performance. [2]
- Q.11 Define calibration and state some methods for the static and dynamic calibrations [2]
- Q.12 State the significance of non-dimensional parameters in wind tunnel testing. [2]
- Q.13 Differentiate between stationary and non-stationary random data. [2]
- Q.14 What is the basic difference between a differential and an absolute pressure sensor [2]
- Q.15 Mention the different methods to increase the test Reynolds number in a wind tunnel [2]
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- Q.16 Describe the principle of schlieren technique. [5]
- Q.17 Write down and explain about the different components of subsonic wind tunnel. [5]
- Q.18 Briefly discuss the different types of flow visualization techniques. [5]
- Q.19 Explain a typical advanced flow diagnostic method giving quantitative result [5]

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