Points:[**2**](https://mycourses.purdue.edu/webapps/assessment/do/authoring/modifyAssessment?blackboard.platform.security.NonceUtil.nonce=11328b85-3d6f-4a93-9474-f131c92cff18&method=modifyAssessment&copyAlignments=false&course_id=_465915_1&assessmentId=_24259798_1&sectionId=&questionId=&saveAsNew=false&createAnother=false&assessmentType=Test&isLinkedQuestion=&referencingQuestionId=)



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| **Question 1** | Which of the following are NOT objectives of Lab 4?  Select all that apply. |
| **Answers** | a. Measure the pressure distribution along the nozzle of a supersonic wind tunnel.  b. Use pressure sensitive paint to measure pressure on a supersonic test model.  c. Measure the oblique shock angles using schlieren or shadowgraph visualization.  d. Measure the pressure across oblique shocks and expansion fans.  e. Use Bernoulli's equation to calculate pressure vs. velocity in supersonic wind tunnel flow. |

ANSWERS Q1: a, c, d

Points:[**3**](https://mycourses.purdue.edu/webapps/assessment/do/authoring/modifyAssessment?blackboard.platform.security.NonceUtil.nonce=11328b85-3d6f-4a93-9474-f131c92cff18&method=modifyAssessment&copyAlignments=false&course_id=_465915_1&assessmentId=_24259798_1&sectionId=&questionId=&saveAsNew=false&createAnother=false&assessmentType=Test&isLinkedQuestion=&referencingQuestionId=)

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| **Question 2** | The reservoir/tank pressure for a supersonic wind tunnel is 90 psi.  A pressure tap in  the test section reads 10 psi.  Using the equations from the Background document or  Isentropic Flow Tables, calculate the Mach number in the test section. |
| **Answers** | a. M = 2.1  b. M = 1.5  c. M = 5.2  d. M = 0.01  ANSWERS Q2: a |

Points:[**2**](https://mycourses.purdue.edu/webapps/assessment/do/authoring/modifyAssessment?blackboard.platform.security.NonceUtil.nonce=11328b85-3d6f-4a93-9474-f131c92cff18&method=modifyAssessment&copyAlignments=false&course_id=_465915_1&assessmentId=_24259798_1&sectionId=&questionId=&saveAsNew=false&createAnother=false&assessmentType=Test&isLinkedQuestion=&referencingQuestionId=)

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| **Question 3** | You now put a wedge, with a half angle of 20 degrees, in the test section and observe  an oblique shock wave form on the nose of the wedge.  Assuming the same Mach  number as calculated in Question 2, calculate the oblique shock angle.  You can use  equations in the Background document or the Oblique Shock Table. |
| **Answers** | a. β = 50.6 degrees  b. β = 38.5 degrees  c. β = 90 degrees  d. β = 20.4 degrees |

ANSWERS Q3: a

Points:[**3**](https://mycourses.purdue.edu/webapps/assessment/do/authoring/modifyAssessment?blackboard.platform.security.NonceUtil.nonce=11328b85-3d6f-4a93-9474-f131c92cff18&method=modifyAssessment&copyAlignments=false&course_id=_465915_1&assessmentId=_24259798_1&sectionId=&questionId=&saveAsNew=false&createAnother=false&assessmentType=Test&isLinkedQuestion=&referencingQuestionId=)

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| **Question 4** | For the same wedge and flow conditions given in Question 3, calculate the pressure  after the oblique shock wave.  Assume the pressure before the shock is 10 psi as stated  in Question 2. |
| **Answers** | a. p2 = 29 psi  b. p2 = 8.5 psi  c. p2 = 12 psi  d. p2 = 41 psi |

ANSWERS Q4: a