Unit 10 - Turbulence-Chemistry Interaction

Assignment-9

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Turbulence-Chemistry interaction is an important aspect which plays role in:
   - wrinkling of flame surface.
   - increase rate of conversion.
   - flame front disruption.
   - All of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above.

2) With respect to the chemical time and length scales, choose correct statement:
   - ratio of the integral time scale to the Kolmogorov time scale is proportional to Reynolds number.
   - ratio of flow time scale to the chemical time scale is Damkohler number.
   - ratio of flow time scale to the chemical time scale is Karlovic number.
   - None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
None of the above.

3) LES of premixed flames needs special attention because of:
   - energy containing length scales are not resolved by the LES filter.
   - Laminar flame thickness is smaller than Kolmogorov scale.
   - Flame speed is always independent of the grid size.
   - All of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
None of the above.

4) Choose correct statement related to the transport numbers:
   - Schmidt number is ratio of the momentum diffusivity to mass diffusivity.
   - Peclet number is ratio of the momentum diffusivity to mass diffusivity.
   - Lewis number is ratio of the mass diffusivity to thermal diffusivity.
   - None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
None of the above.

5) Unresolved terms that need to be modeled:
   - Turbulent scalar flux
   - Reynolds stress term
   - Mass source term
   - All of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above.

6) Models applicable to any mode of combustion:
   - Eddy Dissipation Concept
   - Non-premixed flamelet model
   - Flame speed closures model
   - All of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above.

7) Disadvantage of Eddy Dissipation Model (EDM):
   - Controlled by reaction mechanism.
   - Captures only chemical equilibrium effects.
   - Finite rate Reactions are considered.
   - It is simple and robust.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Captures only chemical equilibrium effects.

8) Finite rate Reactions are important when:
   - Chemical time scales are more than mixing time scales.
   - When the combustion is controlled by reaction kinetics.
   - For studying NOx.
   - All of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
All of the above.