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NPTEL

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Courses » Introduction to Finite Volume Methods II

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Unit 7 - week 6 - Temporal discretisation + Discretisation of the Source Term, Relaxation and Other Details

Register for Certification exam

Course outline

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Assignment 6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment. **Due on 2019-03-13, 23:59 IST.**

1) Which of these statement is true for the Downwind Weighing Factor (DWF) method ***1 point***

- The value of DWF_f is always between 0 and 2
- The value of DWF_f is always between 0 and 1
- The value of DWF_f is always between -1 and 1
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
The value of DWF_f is always between 0 and 1

2) In the Normalized Weighing Factor (NWF) method, which term is treated using deferred correction approach? ***1 point***

- Term involving upwind cell value (ϕ_C)
- Term involving downwind cell value (ϕ_D)
- Term involving far upwind cell value (ϕ_U)
- All of the above

No, the answer is incorrect.

- Parabolic in nature
- Hyperbolic in nature
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Parabolic in nature

4) For time stepping procedure **1 point**

- Uses initial condition($t = t_0$) to find solution at next time ($t = t_0 + \Delta t$)
- Solution obtained at previous time step is used as initial condition for next time step
- Both of the above
- None of the above

No, the answer is incorrect.
Score: 0

Accepted Answers:
Both of the above

5) For a stable numerical solution of **transient-advection** flow using **forward Euler** time discretisation, CFL number should be **1 point**

- $CFL_{conv} \leq 1$
- $CFL_{conv} \geq 1$
- $CFL_{conv} \leq 2$
- $CFL_{conv} \geq 2$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$CFL_{conv} \leq 1$

6) For a stable numerical solution of **1-D transient-diffusion** flow using **forward Euler** time discretisation, CFL number should be **1 point**

- $CFL^{diff} \leq 1$
- $CFL^{diff} \geq 1$
- $CFL^{diff} \leq \frac{1}{2}$
- $CFL^{diff} \geq \frac{1}{2}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$CFL^{diff} \leq \frac{1}{2}$

7) For a stable numerical solution of **transient-advection** flow using **backward Euler** time **1 point**

discretisation, CFL number should be

- $CFL_{conv} \leq 1$
- $CFL_{conv} \leq 2$
- $CFL_{conv} \leq \frac{1}{2}$
- No restriction

No, the answer is incorrect.
Score: 0

Accepted Answers:
No restriction

8) For a stable numerical solution of **1-D transient-diffusion** flow using **backward Euler** time ***1 point*** discretisation, CFL number should be

- $CFL^{diff} \leq 1$
- $CFL^{diff} \leq 2$
- $CFL^{diff} \leq \frac{1}{2}$
- No restriction

No, the answer is incorrect.
Score: 0

Accepted Answers:
No restriction

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