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Courses » Fire Protection, Services and Maintenance Management of Building

Announcements **Course** Ask a Question Progress Mentor FAQ

Unit 4 - Week 3

Course outline

How to access the portal

Week 1

Week 2

Week 3

- Design for Fire Resistance: Steel
- Design for Fire Resistance: Concrete
- Fire Safety: Urban Planning
- Fire Safety: Escape and Refuge
- Fire safety: Internal planning, Detection and Suppression
- Fire Safety: Detection and Suppression
- PDF of lecture slides for week 3
- Quiz : Assignment 3

Assignment 3

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment. **Due on 2018-09-05, 23:59 IST.**

Please follow the following instructions while answering the questions:

- Question 1 to 4 have only one correct answer.
- For numeric type answers, questions 5 and 6, please do not write units in the answer box. Write only the numeral, otherwise software will evaluate the answer as incorrect.

1) Which of the following is the correct formula for radiation component of heat transfer for **2.5 points** a steel section engulfed in fire from all sides?

$$A_s \epsilon \sigma \left[(T_{g_{i+1}} + 273)^4 - (T_{s_i} + 273)^4 \right] \Delta t$$

$$h_c A_s [T_{g_{i+1}} - T_{s_i}] \Delta t$$

$$\rho_s V C_s (T_{s_{i+1}} - T_{s_i})$$

None of the above

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$A_s \epsilon \sigma \left[(T_{g_{i+1}} + 273)^4 - (T_{s_i} + 273)^4 \right] \Delta t$$

2) Which of the following is the correct formula for convective component of heat transfer **2.5 points** for a steel section engulfed in fire from all sides?

$$A_s \epsilon \sigma \left[(T_{g_{i+1}} + 273)^4 - (T_{s_i} + 273)^4 \right] \Delta t$$

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Week 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

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No, the answer is incorrect.**Score: 0****Accepted Answers:**

$$h_c A_s [T_{g_{i+1}} - T_{s_i}] \Delta t$$

3) Using the graphical approach, find out the temperature at 70 mm depth from exposed face in a slab after being exposed to 4 hours of fire **2.5 points**

- 400°C
- 500°C
- 600°C
- 700°C

No, the answer is incorrect.**Score: 0****Accepted Answers:**

500°C

4) If the floor area at a storey of a residential building is 1250 m² what should be the suitable exit width in m of the stairway from fire life safety point of view. Assume occupant density of residential area as 12.5 m²/person. **2.5 points**

- 1
- 2
- 3
- 4

No, the answer is incorrect.**Score: 0****Accepted Answers:**

4

5) Estimate the change in steel rebar temperatures of a column 400 mm x 400 mm in cross section for a clear cover of 40 mm after 2 hours, given that $a_c = 0.417 \cdot 10^6 \text{ m}^2/\text{s}$, the bar diameter is 25 mm, average thermal conductivity of concrete is 2.0 W/m°K, average density is 2500 kg/m³ and specific heat is 1000 J/kg°K

No, the answer is incorrect.**Score: 0****Accepted Answers:**

(Type: Range) 700,800

5 points

6) Estimate the rise in temperature at the end of two hours of a steel rebar of diameter 25 mm in a concrete slab of thickness 150 mm with a clear cover of 40 mm. given that $a_c = 0.417 \cdot 10^6 \text{ m}^2/\text{s}$, average thermal conductivity concrete as 1.0 W/m°K, average density as 2500 kg/m³, and the specific heat as 1000 J/kg°K

No, the answer is incorrect.**Score: 0****Accepted Answers:**

(Type: Range) 325,425

5 points

