



MINISTRY OF EDUCATION AND CULTURE
UNIVERSITAS NEGERI PADANG
MAJORING IN MECHANICAL ENGINEERING

Address: Jl. Prof. Dr. Hamka, Air Tawar UNP Campus, Padang 25131
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MIDDLE SEMESTER EXAM

Courses : Heat Transfer
Code / SKS : MES1.61.5101
Nature of the Exam : Closed Book
Lecturer : Dr. Arwizet K., ST, MT, and Andre Kurniawan, MT
Time : 90 minutes
Maximum Grade : 35 points

No.	Question	Grade
1.	Describe each heat transfer mechanism with examples	5
2.	Explain what is meant by thermal resistance and give examples of each of the heat transfer mechanisms	5
3.1.	Calculate the amount of conduction heat transfer on a flat wall	5
3.2.	Calculate the efficiency of using fins on the expanded surface	5
4.	Calculate the Biot number and the Fourier number for the transfer of heat for conduction	5
5.1.	Calculate the amount of forced convection heat transfer at the rate of laminar flow over a flat plate	5
5.2.	Calculate the amount of heat transfer at the rate of laminar flow over a flat plate	5
Total Score		35



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FINAL SEMESTER EXAM

Courses : Heat Transfer
Code / SKS : MES1.61.5101
Nature of the Exam : Closed Book
Lecturer : Dr. Arwizet K., ST, MT, and Andre Kurniawan, MT
Time : 90 minutes
Maximum Grade : 35 points

No.	Question	Grade
1.	Explain the basic concepts of heat transfer between non-black bodies	5
2.	Describe the effect of radiation on temperature measurement	5
3.	Calculate the heat transfer that occurs in the boiling of a vessel	5
4.	Explain the difference between film and dropwise condensation	5
5.	Describe the types of heat exchangers and their applications in Mechanical engineering	5
6.	Describe the physical properties of a material	5
7.	Describe the radiation properties of a material	5
Total Score		35



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ASSIGNMENT PROBLEMS

Courses : Heat Transfer
Code / SKS : MES1.61.5101
Lecturer : Dr. Arwizet K., ST, MT, and Andre Kurniawan, MT
Maximum Grade : 20 points

No.	Question	Grade
1.	Explain what is meant by thermal resistance and give examples of each of the heat transfer mechanisms	2
2.	Calculate the amount of conduction heat transfer on a flat wall	2
3.	Calculate the efficiency of using fins on the expanded surface	2
4.	Calculate the Biot number and the Fourier number for the transfer of heat for conduction	2
5.	Calculate the amount of forced convection heat transfer at the rate of laminar flow over a flat plate	2
6.	Calculate the amount of heat transfer at the rate of laminar flow over a flat plate	2
7.	Explain the basic concepts of heat transfer between non-black bodies	2
8.	Describe the effect of radiation on temperature measurement	2
9.	Calculate the heat transfer that occurs in the boiling of a vessel	2
10.	Explain the difference between film and dropwise condensation	2
Total Score		20
