

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Midterm Examination Semester 2

Academic Year 2004

Date : 23 December 2004

Time : 09.00-12.00

Subject : 226-211 Welding and joining technology

Room: A400

ทฤษฎีในการสอบโทษขั้นต่ำ คือ ปรับตกในรายวิชาที่ทฤษฎี และพักการเรียน 1 ภาคการศึกษา

Instructions

1. Attempt all questions whose total marks are 100.
2. No other materials except dictionaries are allowed.

1. Describe the nature, causes, and prevention of the Stress Relieved Annealing cracking of weld zone. (10 marks)
2. One of the causes of cold cracking in the heat affected zone (HAZ) is the diffusion of hydrogen in the weld zone into HAZ . Discuss how this happens, the source of hydrogen generation, as well as methods of prevention. (10 marks)
3. Discuss factors that influence the microstructure, and consequently the toughness of the steel weld. (10 marks)
4. Explain the similarity and the difference between solidification of the weld and that of the casting. (10 marks)
5. Explain the purposes of coating flux on the electric arc welding electrode; also describe one type of coated electrode. (10 marks)
6. Give a critical comparison between the mechanical fastening and adhesive joining for the fabrication purpose. (10 marks)
7. Describe concisely about the following topics:
 - 3.1 Effect of grain size on the mechanical properties of alloys.
 - 3.2 Critical current of MIG welding.
 - 3.3 Characteristics of Submerged arc welding.
 - 3.4 Explosive welding.
 - 3.5 Spot welding. (30 marks)
8. For TIG welding, one can employ 3 types of currents, namely, AC, DC straight polarity, or DC reversed polarity. Describe the characteristics, as well as the reasons for each type of current. (10 marks)

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