

Prince of Songkla University

✓The Faculty of Engineering

Final Examination Semester II

Academic Year: 2004

Date: February 23, 2005

Time: 13.30-16.30

Subject: 227-514 Human Factors Engineering

Room: R200

DIRECTIONS

1. Only a sheet of notes (size A4), non-programmed dictionaries and calculators are allowed.
2. There are 8 questions. Answer all of the questions in the exam book.
3. Your answers can be in English or Thai and written by pen or pencil.
4. Total score is 100.
5. Please check all questions before start working.

Good Luck

Dr. Angoon Sungkhapong

Dr. Jaruwan Klamklay



Part A

1. Sketch the spine (or vertebral column) and show me five groups of vertebrae (the position and number of vertebrae in each group must be shown). (10 points)
2. What type of each joint shown in Figure 1(A-E)? (10 points)

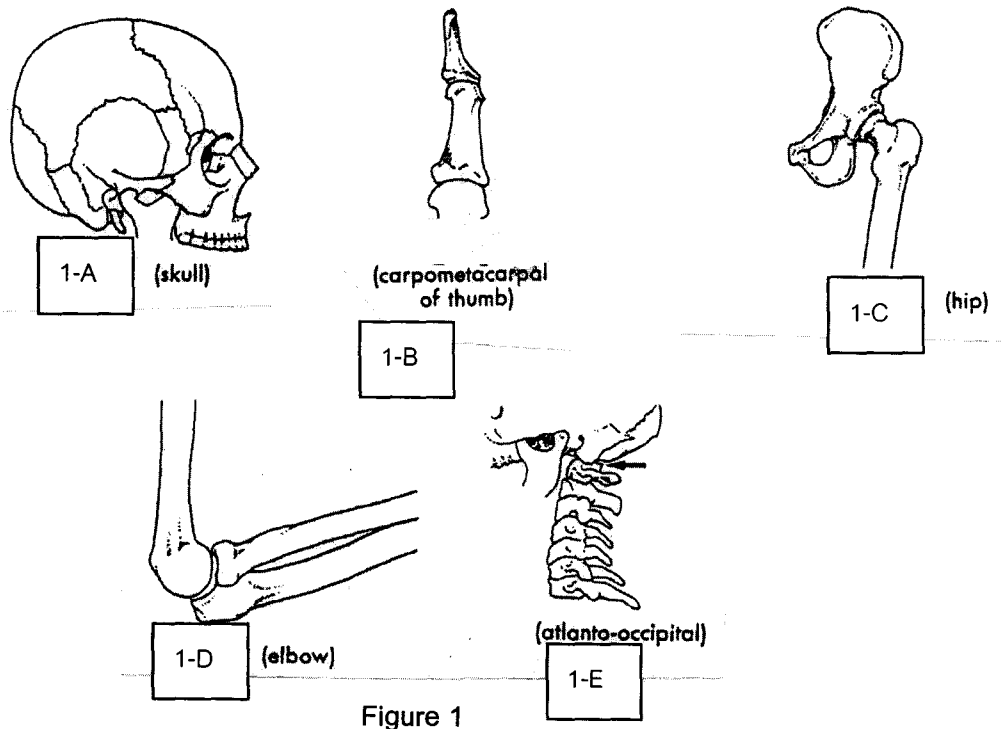


Figure 1

3. (10 points) Sketch the skeletal system of human being and show me the position of :-

- 3.1 Clavicle
- 3.2 Humerus
- 3.3 Radius
- 3.4 Ulna
- 3.5 Carpals
- 3.6 Femur
- 3.7 Tibia
- 3.8 Fibula
- 3.9 Hip bone
- 3.10 Scapula

Scapula

4. Explain the roles of glucose, fat, proteins and oxygen on muscular work. (Hint: diagram or chart should be shown.) (10 points)

5. Anthropometry, the measurement of a human body, is a widely applied scientific discipline. It is used both in measuring the bones of early people and in assessing the body sizes and proportions of contemporaries. The standard reference planes used in anthropometry are defined. Question: Give me the name and characteristic of each reference plane. (10 points)

6. List the essential type of muscular effort and its location for each posture in Figure 2 (A-B) and describe the relationship between posture at work and workstation design. (20 points)

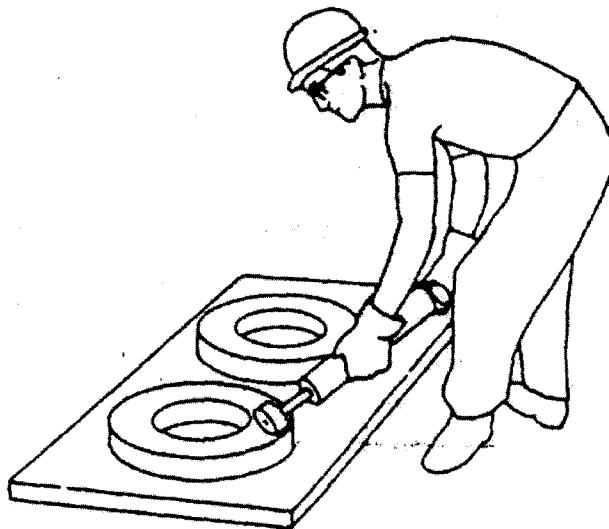


Figure 2 (A) Strongly bent posture while cleaning a casting in a foundry.

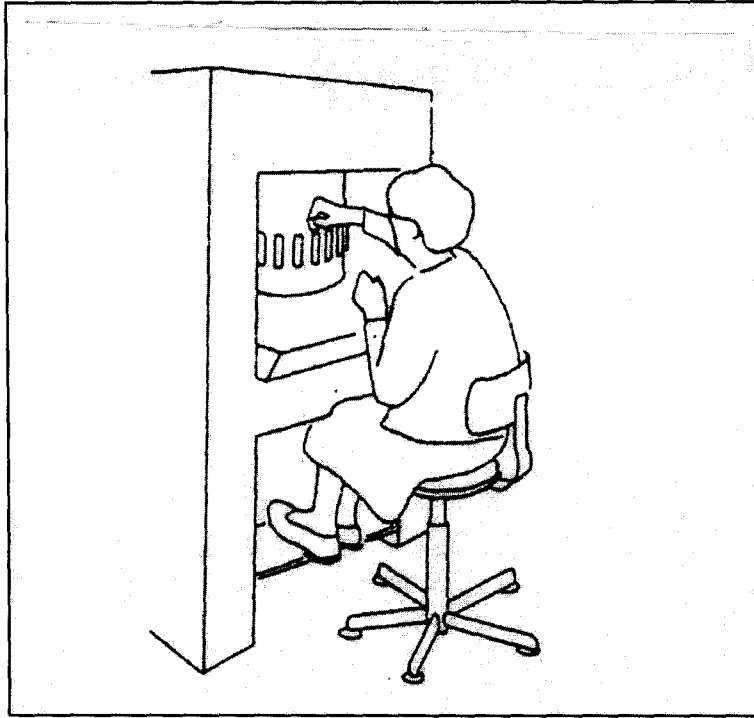


Figure 2 (B) Fitting component onto a machine with the arm continuously outstretched.

Signature

Part B

(The exam part B is worth 10% of the course grade)

7. According to your class project (GoPai Co-Op @ Klong Prea),
 - a. Please describe all the possible work related injuries that could be found at that work place. (5 points)
 - b. Explain how such work-related injuries could possibly occur. Show concepts, theories, and calculations to support your arguments. (15 points)

8. Explain how and why Human Information Processing should be applied in the design of road signs. Give examples from everyday life to support your arguments. (10 points)

Scappia