

ERGONOMICS – DOMAIN I (Management)

QUESTIONS:

(Domain 1 : Responsibility 2)

1. The measures and dimensions of human body members, motions and muscles is called:
 - a) Anthropomorphy
 - b) Anthropometry
 - c) Ergonomics
 - d) Anthropodiatry

(Domain 1 : Responsibility 1)

2. “90 percentile man” means:
 - a) The equipment is designed for 10% of the male population.
 - b) The equipment is designed for 90% of the total (male and female) population.
 - c) The equipment is designed for 10% of the total (male and female) population.
 - d) The equipment is designed for 90% of the male population.

(Domain 1 : Responsibility 3)

3. Man can do more things than a machine because he is:
 - a) accurate
 - b) fast
 - c) flexible
 - d) more careful

(Domain 1: Responsibility 1)

4. You are the safety supervisor on a construction project, a worker who has been running a jack hammer for most of the day reports to you he has numbness and tingling in his fingers. The worker could be suffering from:
 - a) Carpel tunnel syndrome
 - b) DeQuervains disease
 - c) Raynauds syndrome
 - d) Anthropometry

(Domain 1: Responsibility 1)

5. Another worker later in the day informs you that he has been using a hammer for most of the day and his wrist is swollen and hurting. The worker could be suffering from:
- a) DeQuervains disease
 - b) Raynauds syndrome
 - c) Biomechanical inflammation
 - d) Carpel tunnel syndrome

(Domain 1 : Responsibility 1)

6. In the industrial environment, female workers do many jobs that were designed for males. Which of the following activities would provide the greatest compatibility between males and females?
- a) Lowering
 - b) Pushing
 - c) Pulling
 - d) Carrying

(Domain 1 : Responsibility 1)

7. Signs/symptoms of various cumulative trauma disorders were first formally recognized in the:
- a) Construction Industry
 - b) Secretarial Workers
 - c) Meat Packing Industry
 - d) Electronics Industry

(Domain 1 : Responsibility 1)

8. You are the safety director for a large office complex. A data entry technician comes to you complaining of severe pain and swelling in her hand and wrist that has gotten progressively worse over the past few weeks; you suspect carpal tunnel syndrome. One likely cause of this condition could be:
- a) The fact that she is overweight
 - b) Inadequate work station design
 - c) She has been previously diagnosed with rheumatoid arthritis
 - d) She plays cards once a week with friends

(Domain 1 : Responsibility 2)

9. Ergonomics is most successfully applied:
- a) After the accident investigation is complete
 - b) During employee training
 - c) At the planning and early design stages
 - d) After poor workmanship is discovered
10. Carpal tunnel syndrome will not result in:
- A. numbness in the little finger
 - B. pain in the wrist upon exertion
 - C. pain in the second & third fingers
 - D. all of the above

Domain 1 Responsibility 1
Plog, Barbara A. and Quinlan, Patricia J. (Eds). "Fundamentals of Industrial Hygiene (5th Edition)." National Safety Council, 2002. Pages 409-410.

ANSWERS:

1. "B" "Anthropometry" is the study of human body measurement. "Anthropomorphy" is not a word. If it were, it would derive from the root "anthropomorphic," which has to do with ascribing human attributes to objects or animals. "Anthropodiatry" is not a word either. Ergonomics is an approach which puts human needs and capabilities at the focus of designing technological systems.
2. "D" "90 percentile man" means that the design can properly accommodate 90% of the male population. However, designing to include the ranges between the 5th and 95th percentiles of anthropometric data still doesn't fit everyone. If you design for 90% man, you'll fit only nine out of 10; 90 out of 100; or 900 out of 1000 male users. In other words, 10% of your male population will be less than well served by your design.
3. "C" Machines are typically faster and more accurate than human workers – particularly on repetitive tasks. Machines, however, lack the flexibility that humans have to switch tasks, modify tasks, and reprioritize tasks on request.
4. "C" Raynaud's syndrome is a disease associated with the use of hand-held vibrating tools. It results in loss of feeling, numbness, and tingling in the fingers and hands. Raynaud's is characterized by white spots on the fingers and hands of the affected worker.
5. "D" "Carpal Tunnel Syndrome" occurs when the median nerve, running from the forearm into the hand, gets compressed or squeezed at the wrist. This median nerve controls sensation in the palm side of the thumb and fingers (except the little finger), and signals to small muscles in the hand that allow the fingers' and thumb's movement. The "carpal tunnel" is a narrow, rigid passageway of ligament and bones at the base of the hand. Thickening or swelling narrows the tunnel and compresses compression. The result can be pain, weakness, or numbness in the hand and/or wrist, radiating up the arm.
6. "B" The task of pushing allows women to do a greater percentage of the work that men can than any of the other tasks listed. This is because men typically have superior upper body strength. The task of pushing is done primarily with the legs.
7. "B" Secretarial workers were among the first to be consistently diagnosed with cumulative trauma disorders (CTDs). In the early 1980s, when IBM compatible computers were just coming on the scene, less than 20% of all illnesses reported to the Bureau of Labor Statistics (BLS) and OSHA were CTDs. By the mid 1980s that figure grew to almost one-third; in the early 1990s, half; and CTDs are now more than two-thirds of all reported occupational illnesses.

8. “B” Poor work posture is a typical cause of carpal tunnel syndrome. The work station should be properly designed so that the employee’s body is matched to the workstation. Additionally, the employee should be encouraged to take sufficient and timely work breaks. Rheumatoid arthritis occurs when the Immune system attacks the lining, or synovial membrane, of body joints. Joint damage can become severe and deforming, and involves the whole body. Because rheumatoid arthritis involves the entire body, it is unlikely that only the fingers would be affected, although this preexisting condition might make the carpal tunnel syndrome symptoms worse.
9. “C” Ergonomics is far less expensive to implement in the planning and design stages. If ergonomic considerations must be retrofitted to existing designs, the ergonomic features may be impossible to implement, less than fully successful, and/or significantly more expensive.
10. “A” Since the nerve to the little finger does not run through the carpal tunnel in the wrist, numbness in that finger cannot be a result of carpal tunnel syndrome.