

*Student**Class***Section 3 – Structural Strength and Stability****3.1 Materials and Their Properties**

1. The materials in structures can be evaluated according to many properties. The property that describes how easily a material can be shaped is called ...
 - A. ductility
 - B. **plasticity**
 - C. brittleness
 - D. tensile strength

2. The following is an example of a composite material
 - A. tent
 - B. drywall
 - C. a cardboard box
 - D. **reinforced concrete**

3.  This palm tree is demonstrating this property ...
 - A. brittleness
 - B. ductility
 - C. plasticity
 - D. **flexibility**

4. A change of shape in a structure or a structural component, because the material is unable to resist the load acting on it is called ...
 - A. **deformation**
 - B. resistance
 - C. ductility
 - D. brittleness

5. Windows on the top floor of a house are tinted to allow in the light, but keep out ultraviolet radiation. Solar panels used on the roof make the home more energy efficient because they produce ...
 - A. light
 - B. **electricity**
 - C. movement
 - D. availability

3.2 Joining Structural Components

- The place at which structural parts are fastened together is called the ...
 - bridge
 - joint**
 - corner
 - connection
- The force that resists another object when the surfaces of each are in contact is called ...
 - fusion
 - force
 - friction**
 - fissure
- One way landscape architects join stones to make retaining walls and split-rail fences is to use this method ...
 - rivets
 - welds
 - cement
 - mass**
- Adhesives are used to bind materials together. A type of adhesive that hardens when it cools is ...
 - thermosetting glue**
 - therapeutic glue
 - solvent-based glue
 - solvent-enriched glue
- Moveable joints are used to secure materials together in a structure. All of the following joints are examples of moveable joints (allowing movement in a structure) EXCEPT ...
 - a trailer hitch
 - photocopier lid
 - ball and socket joint (shoulder)
 - Lego**

6.



- This unique and imaginative structure built in 1967, can be seen in St. Paul, Alberta. It is the first of its kind in the world. The purpose of this structure is for ...
- town assemblies
 - political rallies
 - UFO landings**
 - displaying artifacts
- Joints are made to withstand forces acting on them for long periods of time. Wear and tear parts of moveable joints are caused by friction. Friction also generates ...
 - deformation
 - fatigue
 - stability
 - heat**

3.3 Properties of Materials

1. The properties that help bones in your body perform their function are ...
 - A. ductility and brittleness
 - B. hardness and flexibility
 - C. rigidity and hardness
 - D. plasticity and brittleness

2. There are 656 muscles in your body. These muscles allow your skeletal frame to move. The contraction and relaxing of these muscles is possible because they are made of ...
 - A. semi-solid fibrous tissue
 - B. solid fibrous tendon
 - C. solid fibrous cartilage
 - D. semi-fibrous ligament

3. The layer of material in a tree trunk that supports the rest of the structure, but does not function to conduct water and materials is the ...
 - A. woody layer
 - B. heartwood
 - C. sapwood
 - D. vascular cambium

4. Science fiction often gives us exciting ideas about materials that can withstand almost any force. In reality, the perfect material has not been discovered yet. One material (if it could be made the thickness of a pencil - could stop a 747 jet). It is currently being synthetically developed and will have widespread use because of its strength. The material is known as ...
 - A. Kelvar®
 - B. spider silk
 - C. industrial bamboo
 - D. rice grain

5. The designers of spinning wheels work to ensure that the fibers, that are twisted together, are done so tightly that they lock together. If the fibers are twisted too much they tangle and shorten, unless you keep pulling them apart. This can be useful if you are wanting to make ...
 - A. stronger fabrics
 - B. lighter fabrics
 - C. more durable fabrics
 - D. stretchy fabrics