1. In the O–A region of the stress–strain curve, the material:
   A. Shows plastic deformation B. Obeys Hooke's law
   C. Does not regain its original shape when force is removed
   D. Fractures immediately (B)

Explanation : In the O–A region, stress is directly proportional to strain, following Hooke's law. The material behaves elastically and regains its original shape after the load is removed.

2. The point on the stress–strain curve where the material just stops behaving elastically is called:
   A. Ultimate strength B. Breaking point
   C. Yield point
   D. Elastic energy (C)

Explanation : The yield point is the stress value where elastic behavior ends, and plastic deformation begins.

3. If a material has a large gap between ultimate tensile strength and fracture point, it is classified as:
   A. Brittle B. Ductile
   C. Elastic D. Plastic (B)

Explanation : Ductile materials can undergo large plastic deformation before breaking, resulting in a wide gap between ultimate strength and fracture points.

4. Which of the following best describes elastomers such as rubber?
   A. Show no deformation under stress
   B. Break without elongation
   C. Can be stretched several times their length and still return to original shape
   D. Have very high yield strength but break easily (C)

Explanation : Elastomers undergo large strains and still regain their original shape, unlike brittle materials.

5. Elastic potential energy stored per unit volume of a stretched wire is:
   A. Stress × strain B. 1/2 × stress × strain
   C. Stress / strain D. Strain / stress (B)

Explanation : Work done in stretching is stored as elastic energy. Energy density is half the product of stress and strain.

6. The property of metals that allows them to be drawn into wires is:
   A. Malleability B. Conductivity
   C. Ductility D. Refinement (C)

Explanation : Ductility refers to the ability of metals to be stretched into wires without breaking.

7. Why are girders in bridges made in the shape of an "I"?
   A. To reduce their length
   B. To decrease tensile strength
   C. To reduce buckling and provide strength with less material
   D. To increase flexibility (C)

Explanation : I-shaped girders optimize strength-to-weight ratio and minimize bending.

8. In cranes, the maximum load a steel rope can lift depends upon:
   A. Length of the rope B. Elastic limit of steel and cross-sectional area of rope
   C. Ultimate tensile strength of rubber
   D. Shape of the pulley used (D)

Explanation : The stress on the rope must not exceed the elastic limit. Stress is force per unit area.

9. The depression in a horizontal rod supported at both ends with a weight in the middle is proportional to:
   A. 1/l B. W/l^2
   C. Wl^3 / (b d^3 Y)
   D. W b^3 / (d l Y) (C)

Explanation : Depression depends directly on load and cube of length, and inversely on breadth, cube of depth, and Young's modulus.

10. Which sequence represents the correct order of elasticity among common materials?
    A. Rubber > Glass > Steel
    B. Steel > Glass > Rubber
    C. Glass > Rubber > Steel
    D. Rubber > Steel > Glass (B)

Explanation : Steel has the highest elasticity, followed by glass, and rubber has the least.