

Forming-Welding Class Test -1 : September 6, 2016, Time: 40 mins

Forming [20]

1. Derive the Invariants of total stresses of a body undergoing plastic deformation having 3D stress system. [10]
2. Find-out a relation between shear yield stress (K) and tensile yield stress (Y) by using von-Mises' yield criterion. [5]
3. Draw the Fe-Fe₃C phase equilibrium diagram representing all the reactions among the phases. [5]

Welding [15]

1. The ratio of oxygen and acetylene in oxy-acetylene gas welding can be controlled to give either a neutral flame, oxidizing flame or a reducing flame. Give an application of each of these flame types. [3]
2. Differentiate between pulsed current transfer and spray transfer modes in DC metal arc welding. [6]
3. The shape (form) of the arc column in an arc welding process is an important weld quality parameter and is primarily influenced by the interaction of the arc, plasma and the ambience. Explain. Also indicate if any other factors influence the arc shape. [6]