Assignment 4

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-02-27, 23:59 IST.

1) Continuum damage mechanics (CDM) based approach is useful for creep life modelling than creep life modelling based on steady state creep rates from a single mechanism because

- CDM approach accounts for the damage process which is not taken into account during modelling based on a single creep mechanism
- CDM approach considers a constant stress while single creep mechanism based approach considers a constant temperature
- CDM approach uses an exponential dependence on stress whereas single creep mechanism based approach uses a power law dependence on stress.
- CDM approach does not account for instantaneous changes in stress whereas single creep mechanism based approach accounts for instantaneous changes in stress.

No, the answer is incorrect.
Score: 0

Accepted Answers:
CDM approach accounts for the damage process which is not taken into account during modelling based on a single creep mechanism

2) In Ti-1100 alloy, the lamellar microstructure provides better creep resistance than the bimodal microstructure because

- The lamellar microstructure has higher elastic modulus than the bimodal microstructure
- The lamellar microstructure has higher stacking fault energy than the bimodal microstructure
- The lamellar microstructure provides greater geometric obstacles for dislocation motion than the bimodal microstructure
3) Addition of Zn to Cu improves the creep resistance of Cu because

- Zn increases the elastic modulus of Cu
- Zn increases the melting point of Cu
- Zn reduces the stacking fault energy of Cu
- Zn increases the grain size of Cu.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Zn reduces the stacking fault energy of Cu

4) Trace elements can sometimes reduce with the creep resistance of materials because

- They reduce the diffusivity of defects in the parent material
- They enhance the diffusivity of defects in the parent material
- They reduce the elastic modulus of the parent material
- None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
They enhance the diffusivity of defects in the parent material

5) A test in which progressive creep deformation and time to rupture are measured is known as a creep

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) rupture test
(Type: String) rupture test

6) The ____________ creep testing technique is less suitable for studying ceramics.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: String) tensile
(Type: String) TENSILE

7) The creep curves obtained from an impression creep test are shown below. If the diameter of the punch is 1 mm, the stress exponent of the creep deformation is ____________
8) Below is the stress vs LMP plot for pure Ti. The LMP value for an applied stress of 200 MPa is ____________

9) The time to failure, if the test temperature is 300 °C and assuming the constant C is 15 for Ti is ____________ hours
The impression creep strain rate is basically the ratio of the

- Steady state punch velocity and diameter of the punch
- Displacement of the punch and the diameter of the punch
- Steady state punch velocity and the displacement of the punch
- Steady state punch velocity and the largest dimension of the sample

The concept of deformation mechanism maps for creep deformation of materials was proposed and developed by _________