

WORK SHEET
UNIT-II

1. Fatigue failure occurs due to:
 - A) Static loading
 - B) Impact loading
 - C) Fluctuating loading
 - D) Thermal loadingAnswer: C) Fluctuating loading
2. Stress concentration occurs due to:
 - A) Uniform sections
 - B) Sudden changes in cross-section
 - C) Smooth surfaces
 - D) Constant loadAnswer: B) Sudden changes in cross-section
3. Theoretical stress concentration factor is denoted by:
 - A) K_f
 - B) K_t
 - C) K_s
 - D) K_eAnswer: B) K_t
4. Fatigue stress concentration factor is denoted by:
 - A) K_t
 - B) K_f
 - C) K_e
 - D) K_mAnswer: B) K_f
5. Notch sensitivity is defined as the ratio of:
 - A) K_t/K_f
 - B) K_f/K_t
 - C) Stress/strain
 - D) Load/stressAnswer: B) K_f/K_t
6. Endurance limit is the stress below which the material can withstand:
 - A) One cycle
 - B) Finite cycles
 - C) Infinite cycles
 - D) Static loadAnswer: C) Infinite cycles
7. The endurance limit is generally defined for:
 - A) All materials
 - B) Only brittle materials
 - C) Only ductile materials
 - D) Ferrous materialsAnswer: D) Ferrous materials

WORK SHEET

8. Goodman's line represents a relation between:
A) Stress and strain
B) Mean stress and alternating stress
C) Load and deformation
D) Time and stress
Answer: B) Mean stress and alternating stress
9. Gerber's curve is:
A) Linear
B) Parabolic
C) Exponential
D) Logarithmic
Answer: B) Parabolic
10. Soderberg's line is based on:
A) Ultimate strength
B) Yield strength
C) Shear strength
D) Compressive strength
Answer: B) Yield strength
11. The endurance strength can be estimated using:
A) Empirical relations
B) Exact formulas
C) Only experiments
D) Only assumptions
Answer: A) Empirical relations
12. Notch sensitivity depends on:
A) Material only
B) Geometry only
C) Both material and notch size
D) Temperature only
Answer: C) Both material and notch size
13. In fatigue design, safety factor is applied to:
A) Mean stress
B) Alternating stress
C) Endurance limit
D) Yield stress only
Answer: C) Endurance limit
14. Which failure criterion is most conservative?
A) Gerber
B) Goodman
C) Soderberg
D) None
Answer: C) Soderberg
15. Stress concentration factor is always:
A) Less than 1
B) Equal to 0

WORK SHEET

- C) Greater than or equal to 1
- D) Negative

Answer: C) Greater than or equal to 1

FILL IN THE BLANKS

1. Fatigue failure is caused by _____ stresses.
Answer: fluctuating
2. The theoretical stress concentration factor is denoted by _____.
Answer: K_t
3. The fatigue stress concentration factor is denoted by _____.
Answer: K_f
4. Notch sensitivity is represented by _____.
Answer: q
5. The endurance limit is also known as _____ limit.
Answer: fatigue
6. Goodman's line is a _____ relation.
Answer: linear
7. Gerber's curve is _____ in shape.
Answer: parabolic
8. Soderberg's line uses _____ strength as reference.
Answer: yield
9. Stress concentration is caused by geometric _____.
Answer: discontinuities
10. Endurance strength is estimated using _____ factors.
Answer: modifying



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