

NPTEL Video Lecture Topic List - Created by LinuXpert Systems, Chennai

NPTEL Video Course - Mechanical Engineering - NOC:Failure Analysis and Prevention

Subject Co-ordinator - Dr. D. K. Dwivedi

Co-ordinating Institute - IIT - Roorkee

Sub-Titles - Available / Unavailable | MP3 Audio Lectures - Available / Unavailable

- Lecture 1 - Introduction: Need and scope of failure analysis and prevention
- Lecture 2 - Introduction: Engineering disasters and understanding failures
- Lecture 3 - Fundamental sources of failures: Deficient design - I
- Lecture 4 - Fundamental sources of failures: Deficient design - II
- Lecture 5 - Fundamental sources of failures: Deficient design III and upgrading of a part
- Lecture 6 - Fundamental sources of failures: Imperfections in base metals
- Lecture 7 - Fundamental sources of failures: Improper Manufacturing - I
- Lecture 8 - Fundamental sources of failures: Improper Manufacturing - II
- Lecture 9 - Fundamental sources of failures: Improper Manufacturing - III
- Lecture 10 - Fundamental sources of failures: Improper Manufacturing - IV and improper service conditions
- Lecture 11 - Fundamental sources of failures: Poor assembly, service and maintenance
- Lecture 12 - Industrial engineering tool for failure analysis: Pareto diagram
- Lecture 13 - Industrial engineering tool for failure analysis: Fishbone diagram and FMEA
- Lecture 14 - Industrial engineering tool for failure analysis: FMEA
- Lecture 15 - Industrial engineering tool for failure analysis: Fault tree analysis
- Lecture 16 - Industrial engineering tool for failure analysis: Reliability - I
- Lecture 17 - Industrial engineering tool for failure analysis: Reliability - II
- Lecture 18 - General procedure of failure analysis: Steps
- Lecture 19 - General procedure of failure analysis: Background information collection
- Lecture 20 - General procedure of failure analysis: Preliminary examination
- Lecture 21 - General procedure of failure analysis: NDT for failure analysis
- Lecture 22 - General procedure of failure analysis: Destructive testing
- Lecture 23 - General procedure of FA: DT, selection, preservation, cleaning and sectioning of samples
- Lecture 24 - General procedure of failure analysis: Macroscopy of fracture surfaces - I
- Lecture 25 - General procedure of failure analysis: Macroscopy of fracture surfaces - II
- Lecture 26 - General procedure of failure analysis: Macroscopy of fracture surfaces - III
- Lecture 27 - General procedure of failure analysis: Macroscopy of fracture surfaces - IV
- Lecture 28 - General procedure of failure analysis: Microscopy of fracture surfaces
- Lecture 29 - General procedure of failure analysis: Metallography of failed components

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- Lecture 30 - General procedure of failure analysis: Determination of type of fracture - I
- Lecture 31 - General procedure of failure analysis: Determination of type of fracture - II
- Lecture 32 - General procedure of FA: Determination of type of fracture III and chemical analysis
- Lecture 33 - General procedure of failure analysis: Application of fracture mechanics - I
- Lecture 34 - General procedure of failure analysis: Application of fracture mechanics - II
- Lecture 35 - General procedure of FA: Simulated test service conditions and analysis of evidences
- Lecture 36 - General procedure of failure analysis: Question for analysis
- Lecture 37 - General procedure of FA: Reporting failure analysis and failure analysis of welded joint
- Lecture 38 - General procedure of failure analysis: Failure analysis of weld joint
- Lecture 39 - General procedure of failure analysis: Examples of failure analysis
- Lecture 40 - General procedure of failure analysis: Embrittlement of steels
- Lecture 41 - Failure Analysis of Casting: Common Causes
- Lecture 42 - Failure Analysis of Casting: Cast Iron Sluice Valve
- Lecture 43 - Failure Analysis of Casting: Basics of Al-Si Alloys
- Lecture 44 - Failure Analysis of Casting: Al Alloy Casting
- Lecture 45 - Failure Analysis of Casting: Steel Casting
- Lecture 46 - Failure Analysis of Forming: Forming Related Issues
- Lecture 47 - Failure Analysis of Forming: Rolling Related Issues
- Lecture 48 - Failure Analysis of Forming: Defects in Formed Components
- Lecture 49 - Failure Analysis of Forming: High Strength Steel
- Lecture 50 - Failure Analysis of Forming: High Strength Steel Weld Joints
- Lecture 51 - Failure Analysis of Gear: Material, Manufacturing and Surface Condition - I
- Lecture 52 - Failure Analysis of Gear: Material, Manufacturing and Surface Condition - II
- Lecture 53 - Failure Analysis of Steel: Improper Heat Treatment
- Lecture 54 - Failure Analysis of Steel: Improper Case Hardening Treatment
- Lecture 55 - Failure Analysis of PH Aluminium Alloy: Improper Heat Treatment
- Lecture 56 - Failure Analysis of Weld Joints: Common Causes of Weld Joint Failure
- Lecture 57 - Failure Analysis of Weld Joints: Carbon Steel
- Lecture 58 - Failure Analysis of Weld Joints: Cracking of Steel Weld Joints
- Lecture 59 - Failure Analysis of Weld Joints: Austenitic Stainless Steel Weld Joints
- Lecture 60 - Failure Analysis of Weld Joints: Dissimilar Steel Weld Joints