

**Institute of Engineering and Technology (IET-DAVV) Indore**

**II BE PTDC (Mechanical Engineering) CBCS Scheme**

**MEP3C1\_Material Science Assignment**

*Last Date of Submission: 08 APRIL 2017*

*Total Number of questions: 08*

Note: **Attempt any six questions**. Answers should be brief and neatly written in your own handwriting & supplemented by diagrams/sketches/figures wherever required.

1. State the purposes of and describe procedures for the following heat treatments: Annealing, Normalising, Stress-relief Annealing, Liquid Quenching and Tempering
  2. Explain briefly the various methods for the case hardening of steel.
  3. Write short notes on (i) Production of metal powders (ii) Sintering and other secondary operations.
  4. Write short notes on : (i) Tensile test (ii) Fatigue testing (iii) Hardness Testing (iv) Ultrasonic test
  5. Explain briefly the defects which may occur in heat treated parts and suggest how these can be avoided.
  6. Draw and Explain the Iron-Iron Carbide Phase Diagram and explain all the associated phase transformations.
  7. Draw the TTT Diagram for a eutectoid iron-carbon alloy and explain the various obtainable microstructures before, during and after the transformations.
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