

II SEMESTER M.TECH. (ME) END SEMESTER EXAMINATIONS APRIL 2018

SUBJECT: ADVANCED HEAT TREATMENT [MME 5268]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

5

5

Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitably assumed.
- **1A.** How malleable iron is obtained. With suitable heat treatment cycle explain the process.
- **1B.** With part of phase diagram and heat treatment cycle explain **5** precipitation hardening treatment for Al-Cu alloy.
- 2A In the binary Cu-Zn phase diagram, show different types of brasses and 5 briefly explain the importance, property and composition in each case.
- 2B. With suitable heat treatment cycle explain the standard heat treatment for 5 Tungsten grade HSS used for multi-point cutting tool.

3A. Write short notes on: i) Distortion and cracking as heat treatment defect (ii) Characteristic of martensite transformation. 3B. With suitable heat treatment cycle explain the standard post carburizing 5

- With suitable heat treatment cycle explain the standard post carburizing 5 treatment for 1025 steel.
 Write short notes on: 5
- 4A. Write short notes on:i) Nitriding of 3420 steel (ii) Induction hardening and self-quenching.
- **4B.** Explain the following:
 - i) Maraging steel ii) Hadfield steel
- 5A. "Steel is versatile metal for heat treatment." Explain the statement. Also 5 find the composition of cast iron containing 70 weight percentage as pearlite phase.
- 5B. With heat treatment cycle, explain the following thermos-mechanical5 treatments for 6120 steel:
 - i) Zerolling ii) Ausforming