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Code No: R1621031 **R16** SET - 1

II B. Tech I Semester Supplementary Examinations, May - 2019
METALLURGY & MATERIALS SCIENCE
(Com to ME & AME)

Time: 3 hours Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answer **ALL** the question in **Part-A**
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Aluminium is FCC, and has an atomic radius of 0.143nm.Calculate its lattice parameter. (3M)
   b) What is the difference between Lever rule and phase rule for a metal system? (2M)
   c) State the composition, Characteristics and applications of Malleable iron. (3M)
   d) What is tempering? List the classification of various tempering process. (2M)
   e) Write any four non ferrous metals (2M)
   f) List the various types of ceramic materials. (2M)

PART -B

2. a) Discuss the effect of gain boundaries on the mechanical properties (7M)
   b) What is Gibb's phase rule? Explain its importance. (7M)

3. a) Explain Al-Cu phase diagram with various reactions in it. (7M)
   b) Draw a neat labeled Iron-Iron Carbide diagram and explain eutectic and eutectoid reaction in it. (7M)

4. a) What is stainless steel? How are they classified? Give their applications (7M)
   b) What is Plain Carbon Steel? Also explain all type of plain carbon steel with the composition and specific application. (7M)

5. a) Write full name of TTT diagram and explain how it is constructed. (7M)
   b) Explain the processes of Nitrading. When do you use it (7M)

6. a) Write a short note on the copper and its alloys. (7M)
   b) Explain the properties and applications of phosphor bronze and aluminium bronze. (7M)

7. a) List the various types of glasses, enumerate its properties and applications. (7M)
   b) Explain the term composite materials with examples. State their advantages and limitations of composites in practice. (7M)

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