

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2020****Subject Code:2172112****Date:21/01/2021****Subject Name:Physical Metallurgy of Special Purpose Non-ferrous Metals and Alloys****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		MARKS
Q.1	(a) Explain the temper designation of Aluminum alloys.	03
	(b) Justify: Dezincification is not a problem for red alpha Brass.	04
	(c) Using Pb-Sb Phase diagram describe the characteristics of Lead- Babbitts. Give typical composition and applications.	07
Q.2	(a) Justify: Copper is metal of civilization.	03
	(b) Give the composition, properties and applications of 2024 and 1100 aluminum alloys.	04
	(c) Using Al-Cu phase diagram explain general description of Al-Cu alloy system.	07
Q.3	(a) Describe the microstructure and applications of Electrolytic tough pitch (ETP) Copper.	03
	(b) Give the composition, properties and applications of Constantan and Nickel Silvers.	04
	(c) Using Cu-Sn phase diagram explain effect of Sn on properties of Cu in Bronze.	07
Q.4	(a) Justify: Gold can be used for dental capping.	03
	(b) What is season cracking in brass? How it is avoided.	04
	(c) Describe the composition, properties and applications of Copper-Nickel alloys. Explain effect of Ni on properties of Copper-Nickel alloys.	07
Q.5	(a) Explain the Precipitation hardening process for Magnesium alloys.	03
	(b) List the limitations of convention Monel and describe the ways to encountered these.	04
	(c) Give the composition and properties. Explain the Solution treatment and aging process with time and temperature range for Waspalloy.	07
Q.6	(a) Give the composition and properties of AZ91A Magnesium alloy.	03
	(b) Describe the methods to increase high temperature strength of Mg alloys.	04
	(c) Describe the heat treatment for Ti6-Al4-V alloy.	07

- Q.7** (a) Give the Characteristics and applications of Zirconium rare metals and their alloys. **03**
- (b) Describe electrical applications of precious metals. **04**
- (c) Give typical composition, properties, limitations and applications of lead base bearings. **07**
- Q.8** (a) Give the Characteristics and applications of Niobium rare metals and their alloys. **03**
- (b) Give properties and applications of tin base bearings. **04**
- (c) Write a note on heat treatment of Zinc alloys. **07**

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