

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) EXAMINATION – WINTER 2021****Subject Code:3132107****Date:23-02-2022****Subject Name:Introduction to Materials Engineering****Time:10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

	Marks
Q.1 (a) Differentiate between metallurgy and material science.	03
(b) What do you mean by technological properties? List the properties . and explain any two in detail	04
(c) List the criteria for selection of an engineering materials. Explain any three in detail	07
Q.2 (a) Differentiate between ductility and malleability.	03
(b) Differentiate between stress and strain.	04
(c) Calculate the atomic radius of Simple cubic,FCC and BCC structure.	07
OR	
(c) Distinguish between the properties of ceramics, metals and plastics	07
Q.3 (a) Suggest combination of properties required for the following objects 1.Hammer 2.Al wire 3. Gold ornaments 4. Copper wire for electrical cable	03
(b) Differentiate crystalline and non-crystalline materials	04
(c) write short note on Rolling	07
OR	
Q.3 (a) Draw the schematic figure of extrusion process.	03
(b) Differentiate the edge dislocation and screw dislocation	04
(c) What do you mean by imperfection in crystals? Explain briefly the different types of crystal imperfections	07
Q.4 (a) Write different steps of investigation of material failure.	03
(b) What is casting? Write different steps of production of foundry.	04
(c) Select the material for making handle of screw driver and justify the selection of material in context of properties requirement. according to application	07
OR	
Q.4 (a) Being human of 21 st century it is difficult to survive without metals/materials. Justify the statement.	03
(b) List the advantages and limitation of foundry technology.	04
(c) State the role of metallurgy Engineer in industries. List out various metallurgical industries in India.	07
Q.5 (a) Differentiate between soldering and brazing.	03
(b) State different welding techniques used for fabrication work	04
(c) What is welding? Explain SMAW in detail.	07

OR

- Q.5** (a) List the characteristics of brittle failure in metal alloys. **03**
(b) Write brief note on forging. **04**
(c) Write short note on deep drawing operation. **07**
