Total No. of Questions – [06] Total No. of Printed Pages: 02

G.R. No.	

DECEMBER 2021 - ENDSEM EXAM

S. Y. B. TECH. (MECH) (SEMESTER - I)

COURSE NAME: Material Science & Engineering Metallurgy

COURSE CODE: MEUA21203 (PATTERN 2020)

Time: [1 Hour] [Max. Marks: 30]

(*) Instructions to candidates:

1) **Answer Q.1 OR Q.2, Q.3 OR Q.4, Q.5 OR Q.6.**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1) a) Compare and contrast between Austenite and Ferrite. [4 marks]

b) Classify steels and Cast Irons on the basis of the Iron Carbon Equilibrium Diagram Drawing [6 marks]

OR

Q.2) a) Classify the steel based deoxidation method used. [4 marks]

b) Estimate percentages of individual phases in AISI 1055 at eutectoids and room temp and draw the proper structure at room temperature. [6 marks]

Q.3) a) Determine why the transformation of Martensite is different from pearlite? [4 marks]

b) Consider TTT of AISI 1080 and show [6 marks]
1] 50% fine pearlite and 50% fine Bainite
2] 50% Bainite and 50% fine Martensite

OR

Q.4) a) Compare between Malleable and Chilled cast iron? [4 marks]
(No microstructure needed)

b) Compare and contrast with different Indian Standards used? [6 marks]

Q.5) a) Determine the changes expected in structure after full Annealing? [4 marks]

b) Justify the statement that tempering is necessary after hardening with proper graph and explanation. [6 marks]

OR

Q.6) a) Compare surface hardening processes with their principles. [4 marks]

b) Apply the Knowledge of Iron Carbon Diagram and Decide whether Retained Austenite is preferred after hardening? Determine different methods to avoid it. [6 marks]