

B.E Metallurgical Engineering
Final Year, First Semester Examination, 2024
Subject: Alloy Steel

Time Three Hours

Full marks: 100

(Use separate answer Sheets for Group A and Group B)
Group A (50 Marks)

Answer Ques No 1 and any TWO from the followings :

1. Write down the classification of alloys steel with example along with the role of ferro alloy in alloy steel production. [CO1] 6+4
2. Define Secondary steelmaking with the advantages. Briefly describe the deoxidation, desulphurisation and argon injection process. [CO2] 5+5+5+5
3. Describe the production process of HSLA and Ni Steel along with their properties [CO 3] 10+10
4. Name different types of stainless steel. Describe the production process of 18-8 stainless steel highlighting Ce-C equilibrium, AOD/ VOD process. [CO4] 5+15

Group B (50 Marks)

Answer any Five from the following; All questions carry equal marks)

1. With reference to the classification of alloying elements and T-T-T curve discuss the effect of alloying elements on hardenability of steel. [CO3]
2. Discuss the hardening and tempering treatment of High Speed Steel. [CO3]
3. What is Schaeffler Diagram? What is known as Weld decay? What is the reason for Weld decay phenomenon? How is it prevented? [CO3]
4. Give an account for carbides present in alloy steel. [CO4]
5. Write short notes on – (i) TRIP Steel; (ii) Maraging Steel [CO4]
6. What is DP steel? What are the special characteristics of DP steel? Discuss the effect heat treatment process variables on the microstructure and properties of DP steel. [CO5]
7. Discuss the strengthening mechanisms involved in TMCP low-carbon steel. [CO5]